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FOREWORD

This document comprises proceedings in the original languages of a Roundtable on Energy Security and Competition Policy, held by the Competition Committee in February 2007.

It is published under the responsibility of the Secretary General of the OECD to bring information on this topic to the attention of a wider audience.

This compilation is one of a series of publications entitled "Competition Policy Roundtables".

PRÉFACE

Ce document rassemble la documentation dans la langue d'origine dans laquelle elle a été soumise, relative à une table ronde sur la sécurité de l'énergie et la politique de la concurrence, qui s'est tenue en février 2007 dans le cadre du Comité de la concurrence.

Il est publié sous la responsabilité du Secrétaire général de l'OCDE, afin de porter à la connaissance d'un large public les éléments d'information qui ont été réunis à cette occasion.

Cette compilation fait partie de la série intitulée "Les tables rondes sur la politique de la concurrence".

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EXECUTIVE SUMMARY

by the Secretariat

Considering the discussion at the roundtable, the delegates' submissions and the background paper, several key points emerge.

(1) *Nations differ in how they define energy security. All participants appear to include unanticipated disruptions in energy production or importation as threats to energy security, especially if they result in cutoffs of retail customers. Natural disasters, disruptions from terrorism or other forms of political unrest and political boycotts by suppliers are all sources of vulnerability to disruptions. For many nations, price stability and continuation of historical price levels are components of energy security as well.*

Every nation faces some energy security risk. For nations that consume substantial quantities of natural gas, the sources of supply risk vary greatly. Nations with sufficient domestic supply to meet domestic consumption focus on disruptions of internal production or of transportation facilities. For nations with few domestic sources of supply, additional sources of risk include the foreign policies or internal political instability of supplying nations.

To some extent, the meaning of energy security depends on what a nation is accustomed to. When a nation is accustomed to low or stable prices, events or circumstances that result in high or volatile prices are viewed as threats to energy security. This may be because changes in fuel prices can impose costs on customers who have invested in equipment or structures that are optimal with continuation of past energy price patterns. If demand is highly inelastic, higher or volatile energy prices can force consumers to cut back other forms of consumption in order to meet budget constraints.

(2) *There are fairly spectacular examples demonstrating that well-established markets can successfully prevent short-term wholesale supply disruptions from becoming retail customer cutoffs. Demand response to price signals has been shown to be robust in a wide variety of circumstances. Nations that do not facilitate demand response increase their vulnerability to retail customer cutoffs.*

Nations with well-established markets that convey accurate price signals to final consumers report consistent success in avoiding retail cutoffs when wholesale supply disruptions occur. The response of customers in such markets to higher prices reduces aggregate consumption when wholesale supply disruptions occur. Price signals also prompt owners of inventories to release these inventories. Inventory releases also help to alleviate supply disruptions.

If regulations prevent accurate price signals from being passed on, consumers have no incentive to reduce consumption and holders of inventories have not incentives to release supplies. Effectively, such regulations subsidise customers at the very moment when the social costs of consumption are the greatest. The result is commonly a cut off of retail customers or financial distress for suppliers with an obligation to serve.

(3) Strong evidence is also available that profit incentives in well-established competitive wholesale and retail markets can be relied upon to elicit substantial and sufficient levels of investment in energy infrastructure. Where regulation is well designed to support market mechanisms, it can enhance demand response and investments that promote energy security.

Nations with well-established markets that convey efficient price signals also report that the price signals prompt long-term investments that promote energy security. Long-term contracts with fixed prices may or may not be important to investors in these situations. Prior and expected price patterns contribute to determining if investors seek long term contracts before investing. When efficient price signals are not available or allowed, investors lack the information necessary to chose among potential investments.

In some markets characterised by natural monopoly conditions, regulation may be justified in order to prevent market power and avoid inefficient investment. A major challenge in these markets is to provide efficient investment incentives while at the same time curtailing the exercise of market power. Another challenge is to foster efficient price signals in those parts of industry that do not have natural monopoly characteristics.

(4) Diversification of supply sources and interconnection of national transmission systems are key techniques for increasing energy security. Well-established competitive wholesale and retail markets can provide strong incentives to diversify sources of supply if customers value this source of energy security. Interconnecting distribution networks can reduce the risk that a given amount of supply disruption in one area will be so severe that it results in retail cut offs.

Nations with well-developed energy markets report that firms have incentive to diversify sources of supply and commonly do so. Sometimes the diversity of supply stems from different firms picking different sources and sometime the diversity stems from many suppliers picking multiple supply sources. The interest in diversification by wholesalers stems from the diverse risk preferences of customers in well-developed markets. The willingness of retail customers to pay a premium for more secure energy sources creates the incentives for wholesale suppliers to diversify, hold inventories, and to take other steps necessary to match customer preferences. In the absence of market price signals about risk preferences, suppliers or regulators are prone to pick a one-size-fits-all level of energy security. This can cause large costs to customers who prefer higher levels of energy security, but are forced to accept the monopolist's or regulators judgments about energy security risks.

(5) Where transmission and other infrastructure necessary for effective entry are controlled by a downstream or upstream seller, diversification and interconnection incentives can be stifled. The owner of an isolated transmission network can have incentives to discriminate against independent energy merchants and to avoid interconnection because either can increase competition and decrease the profits of the affiliates of the network owner. More nations are becoming convinced that additional unbundling is necessary to prevent anticompetitive discrimination and cross-subsidisation. Behavioural remedies appear to be of limited effectiveness in stemming discrimination and cross-subsidisation or in prompting interconnections between distribution networks.

In order to achieve competitive markets, several structural, legal, or regulatory conditions may have to be met. Many nations report frustration that behaviour rules against discrimination and cross-subsidisation are not sufficient to end these practices. Many nations report increased interest in deep unbundling --- unbundling leading to independent operators of transmission systems --- as a pre-requisite to having a competitive market with significant connections

between national transmission and distribution systems. Other nations are unconvinced about the virtues of deeper unbundling because they are concerned about loss of economies of vertical integration and about loss of potential buyer power in bargaining with energy supplying countries.

(6) Considerable disagreement exists regarding the benefits and costs of long-term gas supply contracts. Some nations believe that long-term supply contracts are crucial in obtaining new sources of supply and preventing supply disruptions. Others believe that shorter term contracts and price signals from spot markets are sufficient for attracting supply investments in many, if not all, situations.

Nations with a history of long-term gas supply contracts that have been part of deals to develop new foreign energy supply sources tend to be convinced that long-term fixed price supply contracts are vital for energy security. They believe that it is worth paying a premium for level prices and assured quantities. Other nations have found that a variety of contract provisions are consistent with long-term energy supply investments. According to these nations, the importance of long-term contracts depends on whether investors expect prices to rise or fall. When prices are expect to rise, investors tend to be less interested in long term contracts because they see upside potential for higher profits without the contracts. Conversely, when prices are expected to decline, investors want the reassurance of long-term contracts so that they can obtain at least a normal rate of return on their investments.

(7) In the case of natural gas, storage facilities and facilities to accept LNG imports can play an important role in security of supply. Storage can be drawn down to avoid retail disruptions and arbitrage activities using stored gas can reduce price volatility. LNG imports can fill in other energy sources are interrupted assuming that LNG facilities and LNG supplies are available. LNG is unique in its transoceanic deliverability.

Nations report a variety of types of storage and a variety of incentives to hold inventories. For example, storage in salt domes provides an ability to bring supply to market quickly in response to even short-term price fluctuations. Other forms of storage are more suitable to slow injections and withdrawals and are often associated with programs to meet seasonal variations in consumption. LNG can function like storage in the sense that LNG imports can quickly supplement supplies in response to price fluctuations if LNG is available outside of long-term contracts. There are increasing signs that LNG allows arbitrage when regional price disparities occur. For example, LNG cargoes can be diverted from low price regions to high price regions. Some nations report increased congruence between regional prices as a result of arbitrage based on diversion of LNG shipments.

(8) *Competition law enforcement involving vertical mergers and long-term supply contracts can be complex because these matters can involve questions of countervailing power (monopsony) and international relations that are outside the realm of the issues usually faced by competition agencies. Vertical mergers are a particularly unsettled aspect of competition law enforcement in the energy sector. The primary concern about allowing a vertical merger can be increased foreclosure of entry by new energy suppliers who would increase energy security by diversifying energy sources. A primary concern about forbidding a vertical merger can be the loss of potential buyer power in bargaining with energy suppliers who are often sovereign entities exempt from competition laws. Forgoing economies of vertical integration is another concern in blocking vertical merger proposals.*

Some nations report that competition agencies' challenges to vertical mergers have been overruled by governments based on the potential gain in bargaining power from such transactions. By and large, competition agencies remain convinced that these reversals are not justified. They believe that benefits of many vertical mergers do not materialise while the predicted costs of these transactions have often due occur in the form of impediments to entry of new energy suppliers.

(9) *Abuse of dominance (monopolisation) cases can enhance energy security by increasing access to essential transmission facilities and preventing gaming of market rules.*

Nations report that owners of essential transmission facilities continue to impede entry by limiting use of transmission facilities and charging discriminatory prices to competitors of the network owners upstream or downstream affiliates. Abuse of dominance cases are one method to challenge such behaviour. Abuse of dominance concepts can also be used to challenge gaming of market rules by incumbent firms. For example, some incumbent firms seek to obtain monopoly prices for supplies that are necessary to maintain system reliability.

(10) *Horizontal merger proposals in the energy sector present fewer unique issues that argue for sector-specific theories of competitive harm or remedies.*

Energy security in the form of competitive prices can be threatened by horizontal mergers. These cases present fewer conceptual difficulties than vertical mergers. One potential challenge is accurately identifying the relevant market when technological advances result in distant demand substitutes becoming closer demand substitutes over time.

SYNTHÈSE

par le Secrétariat

Plusieurs points essentiels ressortent des débats de la table ronde, des contributions des délégués et du document de référence.

(1) *La définition de la sécurité énergétique varie d'un pays à l'autre. Tous les participants semblent ranger les perturbations imprévues de la production ou de l'importation d'énergie parmi les menaces de la sécurité énergétique, en particulier si elles se traduisent par des interruptions de service pour le consommateur final. Les catastrophes naturelles, le terrorisme ou d'autres formes de troubles politiques et les boycotts politiques de la part de fournisseurs sont autant de sources de fragilité face aux perturbations. Pour de nombreux pays, la stabilité des prix et la préservation de l'ancienne politique tarifaire font également partie de la sécurité énergétique.*

La sécurité énergétique de toute nation est confrontée à un certain niveau de risque. Les pays qui consomment de grandes quantités de gaz naturel courent des risques d'approvisionnement très divers. Ceux qui ont une offre nationale suffisante pour satisfaire la consommation intérieure s'intéressent d'abord aux perturbations de la production interne ou des installations de transport. Ceux qui ont peu de sources d'approvisionnement intérieures courent d'autres risques, parmi lesquels figurent les politiques étrangères ou l'instabilité politique interne des pays fournisseurs.

Jusqu'à un certain point, le sens même de la sécurité énergétique dépend des habitudes nationales. Si le pays est habitué à des prix bas ou stables, il considère comme une menace tout événement ou toute circonstance qui entraîne une élévation ou une instabilité des prix, due par exemple à une évolution des prix du pétrole qui renchérit l'énergie pour des clients ayant investi dans des équipements ou des structures dont les caractéristiques restent optimales uniquement si l'ancienne politique tarifaire reste d'actualité. Si la demande fait preuve d'une très faible élasticité, une hausse ou une instabilité des prix de l'énergie peut obliger le consommateur à restreindre d'autres postes de consommation afin de respecter des contraintes budgétaires.

(2) *Quelques exemples assez spectaculaires démontrent que des marchés bien établis parviennent à empêcher les perturbations à court terme de l'approvisionnement de gros de se traduire par des interruptions de service pour le consommateur final. Les réactions de la demande aux indications fournies par les prix apparaissent robustes dans bien des circonstances. Les pays peu enclins à laisser la demande s'exprimer accroissent leur vulnérabilité aux interruptions de service concernant le client final.*

Les pays dont les marchés bien établis transmettent au consommateur final des signaux de prix précis parviennent très souvent à éviter les interruptions de service pour le consommateur final lorsque surviennent des perturbations de l'approvisionnement de gros. Sur ces marchés, la réaction des consommateurs à une élévation des prix diminue la consommation globale lorsque surviennent ces perturbations. Les signaux fournis par les prix provoquent également une

libération des stocks chez ceux qui en détiennent, ce qui contribue aussi à atténuer les perturbations de l'approvisionnement.

Si les réglementations interdisent l'affichage de signaux de prix précis, le consommateur n'est pas incité à réduire sa consommation, et ceux qui détiennent des stocks ne sont pas davantage poussés à les libérer. De fait, de telles réglementations subventionnent le consommateur au moment même où le coût social de la consommation est le plus élevé. Il en résulte le plus souvent une interruption de service pour le client final ou des difficultés financières pour les fournisseurs ayant une obligation de service.

(3) Il apparaît aussi clairement que les incitations aux bénéfices des marchés concurrentiels de gros et de détail bien établis peuvent suffire à susciter des investissements substantiels et suffisants dans les infrastructures énergétiques. Lorsque la réglementation, parce qu'elle est conçue en ce sens, soutient les mécanismes de marché, elle peut renforcer les réactions de la demande et les investissements favorables à la sécurité énergétique.

Les pays jouissant de marchés bien établis qui fournissent des signaux de prix efficients indiquent également que ces signaux suscitent des investissements de long terme favorables à la sécurité énergétique. Dans ces situations, les investisseurs peuvent ou non accorder de l'importance à l'existence de contrats de long terme à prix fixes. Pour l'investisseur, les politiques tarifaires passées et escomptées contribuent à déterminer la nécessité de rechercher, avant d'investir, de tels contrats. En cas d'indisponibilité ou d'interdiction de signaux de prix efficients, il lui manque les renseignements nécessaires pour faire son choix parmi les investissements potentiels.

Sur certains marchés caractérisés par des conditions de monopole naturel, une réglementation peut se justifier afin d'empêcher le pouvoir de marché et d'éviter des investissements inefficients. Sur ces marchés, l'un des grands défis consiste à délivrer des incitations efficaces à l'investissement tout en bridant le pouvoir de marché. Un autre défi consiste à favoriser l'apparition de signaux efficients fournis par les prix dans les branches qui ne sont pas naturellement monopolistiques.

(4) La diversification des sources d'approvisionnement et l'interconnexion des systèmes nationaux de transport sont des techniques essentielles permettant de renforcer la sécurité énergétique. Si les clients sont sensibles à cet aspect de la sécurité énergétique, des marchés de gros et de détail concurrentiels et bien établis peuvent créer de solides incitations à la diversification des sources d'approvisionnement. L'interconnexion des réseaux de distribution peut réduire le risque que des perturbations de l'approvisionnement dans un secteur soient suffisamment graves pour entraîner des interruptions de service pour le consommateur final.

Les pays ayant des marchés énergétiques bien développés indiquent que leurs entreprises bénéficient d'incitations à diversifier leurs sources d'approvisionnement et, le plus souvent, s'y emploient. La diversité de l'approvisionnement tient à l'exploitation de différentes sources soit par différentes entreprises, soit par de nombreux fournisseurs. Cette seconde forme de diversification par les grossistes va de pair avec la prédilection qu'ont les consommateurs des marchés bien développés pour la diversification des risques. La propension du client final à payer une prime pour sécuriser ses sources d'énergie incite les fournisseurs de gros à se diversifier, détenir des stocks et prendre d'autres mesures permettant de coller aux desiderata du marché. En l'absence de signaux fournis par les prix sur ces derniers, les fournisseurs ou les autorités de réglementation sont enclins à opter pour une sécurité énergétique uniforme. Il peut en résulter des coûts élevés pour les consommateurs qui préfèrent une sécurité énergétique supérieure tout en

étant contraints d'accepter l'évaluation des risques effectuée par les fournisseurs en situation de monopole ou les autorités de réglementation.

(5) Le contrôle exercé par un fournisseur en aval ou en amont sur des infrastructures – notamment de transport – nécessaires pour entrer sur le marché peut contrecarrer les incitations à la diversification et aux interconnexions. Le propriétaire d'un réseau de distribution isolé peut être tenté de défavoriser des revendeurs indépendants d'énergie et d'éviter les interconnexions, car les uns comme les autres sont susceptibles d'accroître la concurrence et de diminuer les bénéfices de ses filiales. Les pays sont de plus en plus nombreux à être convaincus de la nécessité de multiplier les séparations entre production, transport et distribution afin d'empêcher les pratiques anticoncurrentielles et les subventions croisées. Les mesures correctrices comportementales semblent relativement peu efficaces pour mettre fin à ces pratiques et susciter les interconnexions de réseaux de distribution.

Différentes conditions structurelles, juridiques ou réglementaires doivent être satisfaites pour aboutir à des marchés concurrentiels. De nombreux pays s'impatientent de l'insuffisance des règles comportementales face aux pratiques anticoncurrentielles et aux subventions croisées. Ils signalent un intérêt accru à l'égard d'une véritable séparation de la production, du transport et de la distribution, qui donnerait naissance à des distributeurs indépendants et serait la condition préalable à l'obtention d'un marché concurrentiel dans lequel les systèmes nationaux de transport et de distribution sont réellement connectés. D'autres pays sont peu convaincus des vertus de cette séparation renforcée car ils redoutent de perdre les économies dues à l'intégration verticale, ainsi qu'un pouvoir de marché potentiel dans les négociations avec les pays fournisseurs d'énergie.

(6) La nature des avantages et des coûts des contrats d'approvisionnement en gaz de long terme donne lieu à des désaccords profonds. Certains pays pensent que de tels contrats sont cruciaux pour disposer de nouvelles sources d'approvisionnement et éviter des perturbations de l'approvisionnement. D'autres estiment que des contrats à plus court terme et les signaux donnés par les prix en vigueur sur les marchés libres sont suffisants pour attirer des investissements dans toutes les situations ou presque.

Les pays habitués à signer des contrats d'approvisionnement en gaz de long terme dans le cadre de stratégies de développement de nouvelles sources d'approvisionnement énergétique à l'étranger sont en général convaincus que les contrats à prix fixes sont essentiels pour la sécurité énergétique. Ils estiment que l'obtention de prix équilibrés et de quantités certaines justifie le paiement d'une prime. D'autres pays ont constaté que les investissements d'approvisionnement énergétique à long terme s'accommodaient très bien d'une certaine diversité des dispositions contractuelles. Selon eux, l'importance de contrats à long terme dépend de l'évolution haussière ou baissière des prix escomptée par les investisseurs. Lorsqu'ils s'attendent à une hausse des prix, leur intérêt pour ces contrats a tendance à décroître car leurs bénéfices potentiels n'en dépendent pas. À l'inverse, lorsqu'ils s'attendent à une baisse des prix, ils cherchent à se rassurer au moyen de contrats à long terme afin de préserver un taux de rentabilité au moins normal de leur investissement.

(7) Dans le cas du gaz naturel, les installations de stockage et d'importation du GNL peuvent jouer un rôle important vis-à-vis de la sécurité de l'approvisionnement. On peut concevoir le stockage de façon à éviter les perturbations de la distribution, et procéder à des arbitrages sur le gaz stocké pour atténuer l'instabilité des prix. À condition de disposer d'installations et d'approvisionnements, les importations de GNL peuvent remplacer d'autres sources d'énergie venant à manquer. Par ailleurs, le GNL se distingue par sa productibilité transocéanique.

Le type de stockage et les incitations à détenir des stocks varient selon le pays. Par exemple, le stockage dans des dômes de sel donne la possibilité d'approvisionner rapidement le marché en réaction à des variations des prix y compris de court terme. D'autres formes de stockage sont mieux adaptées à des injections et des soutirages lents de GNL, et sont souvent associées à des programmes visant à répondre aux fluctuations saisonnières de la consommation. Si le GNL est disponible dans un cadre qui n'est pas celui des contrats à long terme, il peut fonctionner comme s'il était un produit stocké dans la mesure où des importations peuvent rapidement compléter l'approvisionnement en réponse à des variations des prix. Des signaux de plus en plus nombreux indiquent que le GNL permet de procéder à des arbitrages lorsque surviennent des disparités tarifaires régionales. Par exemple, il est possible de détourner au profit de régions aux prix élevés des cargaisons de GNL initialement prévues pour des régions où les prix sont bas. Certains pays signalent une congruence accrue entre les prix régionaux, qui résulte d'arbitrages ainsi fondés sur le redéploiement de cargaisons de GNL.

(8) S'agissant des fusions verticales et des contrats d'approvisionnement à long terme, l'application de la législation de la concurrence peut s'avérer complexe car ces opérations peuvent entraîner des problèmes de pouvoir compensateur (monopsone) et de relations internationales qui sortent de la problématique habituelle des autorités de la concurrence. Les fusions verticales représentent un volet particulièrement instable de l'application de la législation de la concurrence dans le secteur énergétique. Lorsqu'on autorise une fusion verticale, la préoccupation numéro un est le renforcement potentiel du verrouillage du marché à l'égard de nouveaux fournisseurs d'énergie qui augmenteraient la sécurité énergétique en diversifiant les sources d'énergie. Lorsqu'au contraire on interdit une fusion verticale, le souci principal est la perte potentielle du pouvoir de négociation de l'acheteur vis-à-vis de fournisseurs d'énergie qui sont des entités souveraines non soumises à la législation de la concurrence. Le blocage des projets de fusions verticales pose par ailleurs le problème de la renonciation aux économies tirées de l'intégration verticale.

Certains pays indiquent que les objections émises par les autorités de la concurrence vis-à-vis de fusions verticales ont été invalidées par la puissance publique en raison des gains potentiels de pouvoir de négociation qu'elles attendaient de transactions de ce type. Globalement, les autorités de la concurrence demeurent convaincues que ces décisions ne sont pas justifiées. Elles estiment que les avantages de nombreuses fusions verticales ne se matérialisent pas, tandis que leurs coûts prévisibles, eux, prennent souvent la forme d'obstacles à l'entrée de nouveaux fournisseurs d'énergie sur le marché.

(9) Le traitement des affaires d'abus de position dominante (monopole) peut renforcer la sécurité énergétique en augmentant l'accès à des installations de transport essentielles et en empêchant la manipulation des règles du marché.

Des pays indiquent que les propriétaires d'installations de transport essentielles continuent d'empêcher l'entrée sur le marché en limitant leur utilisation et en facturant des tarifs discriminatoires aux utilisateurs concurrent, en amont et en aval, du réseau. Le traitement des cas d'abus de position dominante est l'une des méthodes permettant de remettre ces comportements en cause. La notion d'abus de position dominante peut également servir à remettre en cause les pratiques de manipulation des règles du marché imputables aux opérateurs historiques. Par exemple, certains d'entre eux s'efforcent d'obtenir des prix de monopole pour des approvisionnements qui sont indispensables pour préserver un système fiable.

(10) Les projets de fusion horizontale dans le secteur énergétique présentent moins de problèmes spécifiques justifiant une théorisation sectorielle des préjudices subis par la concurrence ou des mesures correctrices à prévoir.

La sécurité énergétique liée à l'existence d'une concurrence par les prix peut être menacée par les fusions horizontales. Ces dernières présentent moins de difficultés conceptuelles que les fusions verticales. L'une des difficultés potentielles consiste à identifier avec précision le marché concerné lorsque le progrès technologique entraîne, avec le temps, le remplacement de la demande à distance par une demande plus proche.

BACKGROUND NOTE

Introduction

Energy security—where geology meets geopolitics—is back at the top of the policy agenda. Competition policy is influenced by this broader policy environment. For example, anticompetitive mergers are sometimes waved through on the grounds that they improve energy security. This paper examines the links between competition policy and energy security, using the example of natural gas to help focus the discussion.

The key question for energy security is: Which combinations of energy markets and government intervention provide acceptable prices and allocations, both in equilibrium and when the unexpected occurs?

The main questions to be examined in this paper are:

- What is energy security?
- Do markets and the corporate incentives of gas producers result in "the right amount" of energy security?
- What can be done to increase energy security?
- Do competition in markets and competition policy promote energy security?

For competition policy makers, two features of the natural gas sector are notable: time scale and the corporate governance. The time scales over which energy security and competition policy operate are very different. As on observer puts it, "The global energy supply system is a vast, inertia-ridden complex of large, fixed capital assets that take years to plan, sanction and construct, and they tend to be in place for decades." [Skinner 2006, p. 2] As a result, substantial changes in energy infrastructure or shifts in primary energy mixes take decades. At the other end of the time scale, an unexpected energy supply disruption lasting just a few days causes anxiety and sometimes hardship. Competition enforcement, by contrast, is concerned with a term intermediate between these. E.g., a two year threshold defines "timely" entry in merger reviews, but year-to-year changes in market shares are characterised as mere "fluctuations" for long-lived, lumpy products. Structural changes in energy markets are relatively glacial from the perspective of competition policymakers.

The corporate governance of much of the gas and oil sectors implies that governments rather than profit-driven economic actors make many of the economic decisions. National oil and gas companies are the main exploiters of oil and gas in the Middle East, Latin America and Russia, where the overwhelming majority of reserves are located. With few exceptions, their corporate governance is tightly bound up in the political structures of their respective countries. Without either masses of arm's length profit-seeking owners or a solid political consensus for commercial conduct, one can expect broader political objectives to play a role in economic decision making. "Some countries...increasingly tend to see the trade in political terms, or at least through a state-to-state lens with linkages not found in normal commercial arrangements." [Skinner 2006, p. 6] However, some limit on the pursuit of non-economic objectives is imposed by the

major role of gas and oil in total government revenues and in GDP in the relevant countries, though this may be of little comfort to relatively small groups of consumers.

On the demand side, many OECD countries have traditionally had state-owned national companies to buy oil and gas. Many of these have been corporatised and at least partly privatised, and other OECD countries have always had private oil and gas companies. Nevertheless, on both sides of the market, oil and gas companies as denizens of the commanding heights of the economy probably see eye-to-eye with the pinnacles of power.

In short, decisions regarding investment, sales, and purchases are more closely related to political considerations from time to time in energy markets than in most other markets. As a result, energy security involves an unusual blend of economic and political factors. In many instances, the economic considerations centre around how best to react to or prepare for volatility that stems from political considerations.

Gas infrastructure changes at glacial speed. Pipelines, storage, LNG terminals take years to plan, receive permission, and build.

LNG will not provide supply diversity or resilience in the short term. Only 7% of gas is transported as LNG, though this fraction is expected to increase. LNG can make a significant difference in the longer term, for example if it serves to close a gap between projected growth in demand relative to existing supply sources.

The LNG market is highly illiquid, mostly sold under long term contracts; even the few transactions called "spot" are usually not spot transactions in the usual sense. The capacity at LNG regasification terminals is, at least in Europe, concentrated and mostly tied up in long term contracts.

Gas intermediaries who would compete with incumbents require access to infrastructure—pipelines, storage—that is owned and operated by the incumbents. Hence, entry conditions are highly dependent on infrastructure access rules that are a component of competition policy.

1. What is Energy Security?

Energy security is about vulnerability to disruption. Political turmoil, armed conflict, terrorism, piracy, natural disasters, nationalism and geopolitical rivalry threaten, to varying degrees, to interrupt the everyday trade in oil, natural gas, coal and electricity.

Energy security means different things to different people at different times. For decades, energy security was concerned with the physical supply of oil. It now encompasses natural gas and electricity and extends along the supply chain. The concept now includes the price and not just the physical availability of these fuels. Energy exporters concentrate on security of demand, that is, on stable revenues, and energy resources and export facilities are often under political control. Energy users seek reliable supplies at "affordable prices," with developing countries also concerned about the balance of payments effects of energy price changes. Countries' specific foci reflect their specific situations. For example, Japan has very few domestic energy resources so it focuses on diversification, trade and investment. European countries' debates centre on their reliance on imported natural gas. The United States focuses on its increasing reliance on imported oil and the market effects of increased LNG imports.

To understand the concerns about energy security, it is helpful to review where natural gas and oil come from and how it gets to consumers.

1.1 Background: The physical supply chain

The main sources of primary energy consumed in the OECD area are oil, gas, coal and uranium. Different countries and different sectors use substantially different mixes. For example, transport uses a much higher proportion of oil products than do most other sectors.

As for gas, the main countries with gas deposits are Russia (30,5% of the world total gas reserves), Iran (14,8%), Qatar (9,2%), Saudi Arabia (4,1%), United Arab Emirates (3,9%), United States (3,4%), Algeria (2,9%), Venezuela (2,7%) with the remaining 28,5% split among a number of countries.[1]

These numbers do not tell the whole story. Iran is now a net gas importer and the economic value of gas used for oil production (reinjecting gas can increase oil production) far exceeds its value as an exported fuel. Qatar has an unofficial moratorium on new LNG projects. Saudi Arabia's oil minister has said that it will not consider exporting gas until its gas production exceeds a particular level, a level not expected to be exceeded until 2020-2025. [Stern 2006, pp. 14, 13, 11]

Gas and oil reserves are distant from most consumers, thus giving rise to transport costs and risks. Transport costs help to limit the geographic scope of markets. Transporting gas by ship in the form of liquefied natural gas (LNG) costs far more than transporting oil by ship, [2] or transporting gas by pipeline. Thus, currently there is in general a worldwide oil market but regional gas markets.

- Transport risks exist along the supply chain. Once shipping bottlenecks have been navigated, the facilities to receive, store and further transport by pipeline are subject to risk. As noted below, only a small fraction of gas is transported as LNG by ship. But the IEA's reference scenario for 2030 has 4% of world gas production shipped as LNG through the Straits of Hormuz at the mouth of the Persian Gulf. Obviously, the share of LNG is far larger.[3]

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1 Oil reserves are slightly less concentrated: Saudi Arabia (21,6% of total world oil reserves), Canada (14,8%), Iraq (9,3%), United Arab Emirates (8,1%), Kuwait (8,0%), Iran (7,4%), Venezuela (6,4%), Russia (4,9%), with the remaining 19,5% shared among other countries. Coal and uranium present fewer concerns and are not further discussed here.

2 For example, the average cost to transport oil to the United States is about USD 2 per barrel. (Economic Report of the President, 2006, p. 233)

3 The statistics for shipping bottlenecks for oil from Middle Eastern producing countries are available and suggest the risks for LNG originating in the same region. Most oil and LNG from Middle Eastern producing countries is transported by one of three routes:

- The Straits of Hormuz at the mouth of the Persian Gulf. The straits comprise two 3-km-wide inbound and outbound lanes. The IEA estimates that, in 2004, about 17 mb/d, or 21% of the world's total oil supply, was carried this way. Of this, about 13 mb/d is subsequently carried through the Malacca Straits between Indonesia, Malaysia and Singapore, where oil shipments have occasionally been disrupted by accidents and piracy.
- The Bab el-Mandab passage, which connects the Gulf of Aden with the Red Sea. In 2004, around 3.5 mb/d was shipped through this passage en route to the Suez Canal and Sumed Pipeline.
  Both the Suez Canal and Sumed Pipeline connect the Red Sea to the Mediterranean, from whence oil is shipped to Europe and the United States. The canal's and pipeline's capacities are, respectively, about 1.4 mb/d and 2.5 mb/d. This route takes oil from ports on the Persian Gulf and the Red Sea.
- The alternate route is around the Cape of Good Hope at the southern tip of Africa. [IEA 2005, pp. 262-4]

Natural gas is predominantly transported by pipelines; less than 7% is transported as LNG in ships. For gas to be transported as LNG it must be cooled to its liquid state, transported on specialized ships, and off-loaded into a regasification terminal which then feeds the gas into the gas transport network. LNG projects have long lead times, long contract terms and are costly.[4] Examples from Qatar, where the private sector is involved in gas projects, illustrate the point. First deliveries are made five to six years after signing the deal. Contract terms are usually 25 years. Project costs range from USD 5 billion to USD 12 billion.[5] The number of LNG carrying ships is small, 151 in 2003 and the IEA predicts at least 326 such ships by 2010. [EIA 2003 and IEA 2006c, p. 55 respectively]

The IEA predicts that, by 2010, 30% of gas imports into OECD countries will be supplied from non-OECD countries via LNG. Dependence on imports from non-OECD countries in 2010 will vary between regions, from less than 10% in North America to 48% in Europe and 63% for Asia-Pacific. [IEA 2006c, p. 13]

LNG regasification terminals are themselves under relatively concentrated ownership and access is tied up in long term contracts. Europe provides an example. There are 14 LNG regasification terminals in Europe and six new ones under construction. Five are in Spain, two each in Turkey and France, and one each in Italy, Greece, Portugal, the United Kingdom, and Belgium. Like the remainder of the LNG supply system, the capacities of these terminals are commonly contracted for long periods. One issue for regulators has been to determine whether a certain share of capacity should be reserved for non-owners. An Italian Law (Law 23 August 2004, n. 239) , for example, has determined that 20% of the capacity of new terminals should be reserved for third parties. The table below is based on King & Spalding's publication *LNG in Europe*. [King & Spalding (2006)]

4 The rough trade-off between quantity of gas and distance to market is as follows. Small quantities are basically uneconomic to transport. At somewhat higher quantities and shorter distances, gas transformed into high voltage direct current electricity is economic. And at higher quantities, pipelines are more economic over medium distances and LNG over. [Precise figures are in Figure 25 in IEA 2006b, p. 144, reproduced from SINTEF]

5 Greater details on the Qatargas projects are as follows. Qatar 1 mainly supplies eight Japanese gas and power companies by 10 purpose-built LNG vessels under 25-year contracts. The project also supplies Spain's Gas Natural, partly under a contract extended to 2012 and partly under a 20-year contract. Qartargas 1 also supplies Turkey, Italy, the US, France, Korea and the UK under medium-term contracts. Qatargas 2 will supply the United Kingdom by the winter of 2007-8 for 25 years. This follows from a Heads of Agreement signed in June 2002 and a deal signed with ExxonMobil in December 2004. The total cost is estimated at USD 12bn. The deal for Qatargas 3 was signed in July 2003; plant start-up is anticipated in 2009. Cost is estimated at USD 5bn. The deal for Qatargas 4, the deal was signed in February 2005 and deliveries are anticipated to begin around 2010. The expected cost is USD 6 to 7bn. [http://www.qatargas.com/media-room/Marhaba%20wirte-up.htm]

Table 1. LNG Regasification Terminals in Europe

Terminal	Existing or Under Construction?	Owner/Operator	Send out Capacity in bcm/year	Reserved Capacity
Zeebrugge, Belgium	Existing	Fluxys LNG (Suez subsidiary)	4,5 expanding to 9	50% Qatar Petroleum/Exxon Mobil for 20 years 28% Distrigas for 20 years (Suez subsidiary) 22% Tractebel Global LNG for 20 years (Suez subsidiary)
Fos-sur-Mer, France	Existing	GdF	5,5	2007: 100% GDF From 2008, 20% of the total capacity is available Available capacities from 2007 to 2014 are published on GDF's web site http://www.grandesinfrastructures.gazdefrance.com/sicsFront/fr/offre_terminaux/telechargements/DGI_publications_Tonkin25jan2007.pdf
Montoir de Bretagne, France	Existing	GdF	10,2	2007: 84% GDF - 11 % third parties - 5% of the total capacity is available 2008: 64% GDF - 8% third parties - 28% of the total capacity is available Available capacities from 2007 to 2021 are published on GDF's web site http://www.grandesinfrastructures.gazdefrance.com/sicsFront/fr/offre_terminaux/telechargements/DGI_publications_Montoir25jan2007.pdf
Fos Cavaou, France	Under Construction	GdF	8,25	63% GDF 27% Total 10% of the total capacity available for third parties
Revithoussa, Greece	Existing	DEPA	2,26 expanding to 6,5	100% DEPA
La Spezia (Panigaglia), Italy	Existing	GNL Italia (ENI subsidiary by way of Snam Rete Gas)	3,5	Most used by ENI, third party capacity rarely available
Isola di Porto Levante (Rovigo – North Adriatic), Italy	Under Construction	GNL Adriatico, formerly Edison LNG (owners Qatar Petroleum 45%, ExxonMobil 45%, Edison Gas 10%)	8	80% to Edison for 25 years 20% to regulated third-party access
Brindisi, Italy	Under Construction	Brindisi LNG (BG Group subsidiary by way of BG Italia)	8 but 16 in phase 2	80% to BG for 20 years 20% to regulated third-party access

Terminal	Existing or Under Construction?	Owner/Operator	Send out Capacity in bcm/year	Reserved Capacity
Sines – Galp Atlantico, Portugal	Existing	Galp Energia, ultimate owners: Portuguese Government 17,711%, Parpublica – Participacoes Publicas (SEPS) 12,293%, REN – Rede Electrica Nacional 18,3%, Eni Portugal Investment 33,34%, Amorin Energia 13,312%, Iberdrola 4%, Others 1,04%	5,2	100% Galp Energia
Huelva, Spain	Existing	Enagas, owners include Gas Natural 9,2%	7,9 expanding to 11,8	Gas Natural and others
Cartagena, Spain	Existing	Enagas	7,9 expanding to 9,2	Gas Natural and others
Barcelona, Spain	Existing	Enagas	10,5 expanding to 14,5	Gas Natural and others
Bilbao Bahia de Bizkaia, Spain	Existing	Bahia de Bizkaia Gas, owners BP 25%, Iberdrola 25%, Repsol 25%, Ente Vasco de la Energia 25%	7 expanding to 10,5	48% Bahia de Bizkaia Electricidad 38% Gas d'Euskadi 14% others
Sagunto (Valencia), Spain	Existing	Planta de Regasificación de Sagunto, owners Union Fenosa Gas 42,5%, Iberdrola 30%, Endesa 20%, Oman Oil Company 7,5%	6,6 expanding to 11,4	Union Fenosa and others
Ed Ferrol LNG (Mugardos – Galicia), Spain	Under Construction	Regasificadora del Noroeste, owners Union Fenosa 21%, Endesa 21%, Tojeiro Group 18%, Sonatrack 10%, Others 30%	3,6	Union Fenosa and others
Marmara Ereglisi, Turkey	Existing	Botas Petroleum, owner Turkish Petroleum Company	5,2	100% Botas, but under a Parliamentary Act in 2001 Botas must release capacity

Terminal	Existing or Under Construction?	Owner/Operator	Send out Capacity in bcm/year	Reserved Capacity
Aliaga (Izmir), Turkey	Existing	Egegas LNG, owner Colagoglu Group	6	Own use terminal
Grain LNG, United Kingdom	Existing	National Grid	4,6 expanding to 9,3	100% BP/Sonatrach for 20 years from 2005, but phase 2 is Centrica, GdF and Sonatrack for 20 years from 2008
Dragon LNG, United Kingdom	Under Construction	Owners Petroplus 20%, BG 50%, Petronas 30%	6	50% BG 50% Petronas
South Hook LNG, United Kingdom	Under Construction	Owners ExxonMobil 30% Qatar Petroleum 70%	10,5 expanding to 21	100% of Phase 1 to an ExxonMobil/Qatar Petroleum joint venture for 25 years; developing secondary capacity trading

Russia, the world's largest gas exporter and reserves holder, exports exclusively via pipelines. Eighty percent of Russian gas exports to Europe transit Ukraine. Indonesia was the largest exporter of LNG before 2006, but Qatar now is. The vast majority of LNG goes to Japan and Korea (Indonesia supplies a quarter of Japanese and Korean demand). Spain, with two-thirds of demand satisfied by LNG, is the third largest LNG importer. [IEA 2006c, pp. 13, 14]

Heterogeneous technical characteristics of gas restrict gas flow among consumers. [EC 2006a, p. 29]

Storage is a vital link in the gas supply chain. Demand flows can be several times higher in winter than summer. Storage near users buffers the generally smooth production. (The output of some gas fields can be varied but others' cannot.) Gas is stored in disused gas fields, aquifers, and salt caverns. In Europe, Germany (with 30% of European capacity), Italy (20%) and France (17%) have the largest storage capacity. Storage near LNG regasification terminals accounts for only 2% of European gas storage. In 2004, the working volume of European gas storage was equal to about 48 days of average consumption. But, technical constraints mean that gas cannot be quickly withdrawn from storage to replace normal deliveries during a supply disruption. [IEA 2006c, p. 128]

Gas and oil storage are not comparable. Gas costs up to ten times more to transport and store than oil, and the costs depend much more on local geology. Gas pipelines are not normally built to flow both ways. The IEA does not mandate strategic gas storage for its members, as it does for oil. However, some countries do maintain strategic gas storage and others are building it. [IEA 2006c, pp. 127-128]

Ultimate gas consumers are industrial, commercial and residential/household users. (The proportions vary from region to region. See Figure 12 of the IEA Gas Market Review.) Industrial users use gas for heating, melting, and for on-site electricity generation. Some industrial users can switch fuels. Commercial and residential users use gas for heating, cooking, hot water and cooling. Commercial and residential demand can be several times higher in winter than in summer. These users usually cannot switch fuels in the short run but may do so over the long run as they replace worn equipment. Commercial and residential consumers are generally not exposed to short term changes in market prices. In some countries, industrial users are exposed to short term changes in market prices and are therefore able to vary quantity consumed in reaction to those changes; in other countries industrial users, too, are insulated from price changes. [IEA 2006c, p. 21]. In some countries, industrial users may be offered lower prices if they agree to be interruptible customers.

Electricity generation accounts for 60% of recent gas demand growth. Gas-fired generation is expected to continue to grow. Gas is seen as cleaner than, e.g., coal, and far faster and easier to get approved and built than other types of generation. This growth has itself reduced the flexibility of gas demand for electricity generation since the increasing share of gas generators in the generation portfolio makes it increasingly difficult to make short-term switches to other fuels. [IEA 2006c, p. 33]

Having examined the main physical features of the supply chain from production through transport and storage to use, we now examine the incentives on producers of gas to provide reliable supplies.

1.2 The political economy of gas producers

The producers of gas and oil tend to be national oil companies that tend to be integrated into the political leadership of their respective countries. Oil and gas exports tend to be very important in the respective economies. Thus, suppliers may not have entirely commercial objectives, but they also prefer reliable revenues.

A significant feature of the gas and oil markets is that supply tends to be in government hands and demand in private hands. One observer estimates that 75% of hydrocarbon resources are under state

ownership and control, even if there is some minority private sector participation. [Skinner (2006), p. 6] To the extent that national oil companies are under government control—as distinct from having commercial objectives and management—this contrasts with intermediaries in OECD countries that have been corporatised or even privatised, or were always privately owned, and are expected to have commercial objectives and management. One observer notes that "Some countries on the producer side…increasingly tend to see the trade in political terms, or at least through a state-to-state lens often with linkages not found in normal commercial arrangements." [Skinner (2006) p. 6]

It is difficult to draw a straight connection between composition of boards of directors, ownership structure and corporate conduct without at the same time considering all the circumstances including how the ownership function of the state is organised and exercised. But the governance arrangements of some key suppliers may nevertheless point to the potential role of political and non-economic factors in the conduct of these companies.

- In **Russia**, though partially privatised, Gazprom's board of directors consists overwhelmingly of Russian political personalities. Of the eleven members, the Chairman is the First Deputy Prime Minister and the members are two current ministers, two former ministers, the special representative of the president on international energy cooperation, a former deputy minister, and a member from E.ON Ruhrgas (which owns a stake in Gazprom). The remaining three board members are not listed in the annual report as having held political jobs in the preceding six years. [Gazprom 2006] However, board members are subject to the "instruction system" and cannot take decisions at board meetings without first receiving orders from the government. [www.oecd.org] Roskneft even noted in the prospectus for its recent flotation in London that it cannot guarantee that the board (in which the state has a similarly dominant position) would not take decisions not in the interest of, or detrimental to, shareholders.

- In **Iran** "The oil and gas sector is controlled by the state-owned National Iranian Oil Company." "Currently, overall responsibility for the Iranian energy sector lies with the Supreme Energy Council….The Ministry of Petroleum controls the activities of all state-owned oil and gas companies from upstream to petrochemicals." [IEA 2005, pp. 336, 341-2]

- In **Qatar** "State-owned Qatar Petroleum (QP) was established in 1974 and is responsible for all aspects of the oil and gas industry in Qatar." [IEA 2005, p. 460] Foreign investment in gas is through Qatargas, 65% owned by QP. [http://www.qatargas.com/media-room/Marhaba%20wirte-up.htm]

- In **Saudi Arabia** "Large state corporations, including Saudi Aramco, which has a monopoly on Saudi upstream oil development...still dominate the Saudi economy. But there has been some private investment in petrochemicals, the refining sector and gas exploration." [IEA 2005, p. 489]

- In **Algeria**, "Up to now, Sonatrach has effectively acted as an arm of the Algerian government, negotiating licences and contracts with foreign companies and monitoring the performance of each production-sharing contract. This role will now be performed by a new entity...Alnaft...which will report to the energy ministry. Alnaft will also be responsible for promoting investment in exploration." (IEA 2005, p. 292). In 2004, Sonatrach's Conseil d'administration (Board of Directors) was presided over by the president of the Administrative Council and the members consisted of representatives from the Finance Ministry, the Hydrocarbons Ministry, the national union, the Bank of Algeria, one technical appointee, and three or four from the company itself. [Sonatrach 2004]

- In **Kuwait,** "By virtue of Kuwait's constitution, the state now owns and controls all oil resources…. though several majors, including BP, Shell and Chevron, continue to work in the country under limited service contracts....[T]he Supreme Petroleum Council (SPC) was formed to set the general policies of the oil sector….The Kuwait Ministry of Energy exercises policy-making powers in conjunction with the SPC and supervises all public institutions involved in the oil sector….At an operational level, the major player in the Kuwaiti oil sector is the [state-owned] Kuwait Petroleum Corporation (KPC)." [IEA 2005, p. 413]

- In **Norway,** Statoil (70.9% state-owned) has neither political figures nor civil servants on its board of directors. Rather, seven directors are drawn from the Norwegian and, to a lesser extent, foreign business elite and three are employee representatives. [Statoil website] This country maintains a clear distinction between the state as owner and the state as policymaker. Transparency and accountability of the company is emphasised by the state as owner.

- In **Mexico**, PEMEX has a monopoly on much of the oil and gas market and is fully owned by the state. The eleven member board comprises six ministers as well as five members from the highly politicised workers union.

Many oil and gas producing countries are highly dependent on revenues from the sale of oil and gas:

- **Algeria**: "Oil and gas combined accounted for more than 36% of GDP in 2004 and 98% of export earnings." [IEA 2005, p. 282] "The hydrocarbons sector is the backbone of the economy, accounting for roughly 60% of budget revenues, 30% of GDP, and over 95% of export earnings." [CIA World Fact Book]

- **Saudi Arabia**: "Oil contributed 40% of GDP, around 90% of total export earnings and three-quarters of the central government budget in 2004." [IEA 2005, p. 487]

- **Kuwait**: "Petroleum accounts for nearly half of GDP, 95% of export revenues, and 80% of government income." [CIA] "In 2004, oil accounted for around 50% of Kuwait's GDP, over 80% of government revenue and around 95% of export earnings." [IEA 2005, p. 412]

- **UAE:** "Reflecting [a shift toward other sectors], the share of the hydrocarbon sector in GDP declined from around 60% in 1980 to around 20% in 2003, and that in total exports declined from nearly 90% to less than 50%."[IEA 2005, p. 533]

- **Qatar:** "The oil and gas sectors will account for nearly two-thirds of GDP in 2030."[IEA 2005, p. 463]

- **Iran**: "The hydrocarbons sector currently accounts for 22% of GDP [and] export revenues were…80% of total export earnings." [IEA 2005, p. 339]

In light of the composition of the boards of the national gas and oil companies described here, with the exception of Norway it appears that the companies would be subject to significant political control. At the same time, revenues from the sale of gas and oil are important to the national economies and government coffers of these exporting countries. Taken together, these would suggest that the companies would have significant political objectives, but with limits on the scope for non-commercial conduct in general, including unreliable supply, but might not constrain such behaviour with respect to small proportion of buyers or circumstances in which political stakes are high.

Having examined the main physical features of the supply chain from production through transport and storage to use, as well as the incentives on producers of gas to provide reliable supplies, we now turn to the question, What is energy security?

1.3 Various definitions of energy security

Risk and uncertainty form the basis for any definition of energy security. Supply disruptions, either at production or during the course of transport or storage, are the main sources of risk. Price spikes can result from supply disruptions. Beyond that, there is no consensus on whether the price level during non-emergency periods is relevant for energy security. Third, there is likely a psychological aspect to energy security. Energy security may prove to be impossible to define precisely.

Supply disruptions are the classic energy security concern. Physical disruption is translated into a price spike where markets can flexibly operate to re-allocate physical fuels. (Consumers who are exposed to price spikes reduce their consumption, thus reallocating fuels toward those consumers who value it more highly.) But where energy markets are unable to flexibly re-allocate fuels the shortfall is allocated by some other, nonprice mechanism such as an emergency plan agreed with the relevant regulator. Energy consumers and downstream firms and ultimate consumers bear the costs of adjusting either to high prices or, for some users, to no availability. No availability can result in power blackouts and the economy grinding to a halt.

If energy security is about the risk and uncertainty of supply disruptions, then producers and consumers have similar interests. Producing countries are often heavily dependent on revenues from the sale of gas and oil for their state budgets and indeed for their broader economies, as shown in the section above. Lower revenues than projected can have important social and political impacts. Reduced revenue volatility aids in the predictable provision of government services where capital markets do not provide this smoothing function. Consumers, too, express preferences for non-volatile physical supply and prices, especially if energy purchases account for a substantial portion of disposable income.

Support for a supply disruption risk-based definition is provided by the European Commission's recent Green Paper on Energy. The Green Paper refers to "risks from natural catastrophe and terrorist threat, as well as security against political risks including interruption of supply…" [European Commission 2006, part 2.2 (i)] Later, in reference to oil and gas stocks, it refers to "potential supply disruptions." [*ibid*., part 2.2 (ii)] This type of definition is also supported by the oil market events of 1973 (see below).

If energy security is about the level of price during non-emergency periods, then producers and consumers have different interests. Below the monopoly price level, producers prefer higher prices and consumers lower prices. Where there is price discrimination, different consumers have different interests since all wish to be among the buyers being charged the lowest price. If consumers are all charged the same price, then some consumers will be charged a higher price than if there were price discrimination. These differences of interest would suggest that any international consensus to reduce non-emergency prices would be difficult to reach.

Support for a definition that includes the level of price during non-emergency periods comes from the IEA's most recent *World Energy Outlook*. While energy security is not directly defined, the *Outlook* refers to "consuming countries' vulnerability to a severe supply disruption and resulting price shock," dependence on imports, and the increasing market dominance and ability to impose higher prices of a small number of countries. [IEA 2006, pp. 38-39] Later, the *Outlook* refers to "the perceived risk of disruption and the risk that some countries might seek to use their dominant market position to force up prices," as oil and gas production become more concentrated in fewer countries. Decreased imports are seen as mitigating these risks. [*ibid*., p. 186] The inflexibility of demand for oil for transport is seen as increasing the

importing countries' vulnerability. [*ibid.,* p. 187] Heightened energy insecurity has been the principal driver for improved energy efficiency, more indigenous production of fossil fuels, renewable energy sources, and, in some cases, nuclear power. [*ibid.,* p. 50] These quotations from the *Outlook* support the notion that some observers consider the level of price during non-emergency periods to be part of the definition of energy security.

A third possible element in a definition of energy security is psychology. One observer makes this explicit: "The phrase, 'security of supply' embraces a hard and a soft concept: the economic fact of a *quantity* of a *good* or *service* delivered at a *price* and the psychological notion of security, which is a *feeling*...Supply quantity and the degree of dependence can remain unchanged, yet the feeling of security can increase or decrease with time. It becomes clear that the particular political relationship between the trading parties defines the sense of security of that trade." [Skinner 2006, p. 6; emphasis his][1]

Perhaps the most economically literate discussion of energy security is Bohi and Toman's *The Economics of Energy Security*. They applied the principles of welfare economics to define energy security as "the loss of economic welfare that may occur as a result of a change in the price or availability [footnote] of energy. Footnote: Changes in availability may not be captured in changes in the price because of institutional price rigidities that are common in energy sectors such as electricity, natural gas and, before 1980, oil." [Bohi and Toman, p. 1] Bohi and Toman sought to evaluate which arguments for government interventions on the basis of energy security stood up to economic scrutiny. [*ibid.,* p. 1] Applying a welfare standard, they assumed that only externalities justified government intervention in markets, so they screened for energy security externalities [*ibid.,*p. 2] but included the effects of the exercise of market power as an externality [*ibid.,*p. 11]. They went on to screen for externalities where beneficial government intervention would be feasible and cost-effective. [*ibid.,*p. 2] They noted that their analysis was specific to the United States at the time of writing since the arguments would not necessarily apply elsewhere or at another time. [*ibid.,*p. 2] But government intervention in gas and oil markets is pervasive. The government intervention takes the form of oil and gas company corporate governance blending into political governance in many countries, exploitation licensing regimes, transit regimes, taxes, tying energy policy to seemingly unrelated policies like foreign aid, and even intervention in contract negotiations (or military action). Given this government intervention not aimed at internalising externalities, there is no *a priori* reason to expect that internalising externalities would increase total economic welfare. Thus, while an externalities screen for government intervention may be sensible where market conduct is pervasive, the welfare arguments on which it is based do not follow when government is already heavily involved.

Thus, we have three potential parts to a definition: risk and uncertainty of supply disruptions and their resulting price spikes (or shortages), the non-emergency level of prices, and the psychological feeling of riskness of imports.

[1] Another possibility is that energy security is about the threat of using the price or quantity of energy to cause changes in non-energy policies. In principle, consumers could threaten a boycott of particular suppliers or suppliers could threaten a boycott of particular consumers. A boycott is more credible when it is less costly, holding constant the benefit of success, which would be the case if substitute counterparties to those being boycotted are almost as profitable to supply. A boycott is more credible, for example, if a producer threatens to withdraw a special low price or a consumer paying an above-market price threatens to take its custom elsewhere. If psychology is as important as economics in this context, then perhaps even a threat that, upon examination, is not credible would have a political effect.

Box 1. Energy Security Episodes in 1973 and 2006

The events of 1973 have had an important impact on views related to energy security. These were somewhat modified after the events of early 2006. These episodes are briefly reviewed here. (The account of the 1973 events follows that in Daniel Yergin's *The Prize*.)

The 1973 "Arab Oil Embargo" had two parts, a series of production reductions and a total ban on sales to, initially, the United States and the Netherlands. Available Arab oil in early October (before the embargo) was 20.8 mbd (million barrels a day) and in December (at the nadir) was 15.8 mbd. Production increases elsewhere meant that oil available in the "free world" was down about 4.4 mbd as compared with a total of 50.8 mbd in October. This 9% reduction had a severe effect. "America's spare capacity had proved to be the single most important element in the energy security margin in the Western world, not only in every postwar energy crisis but also in World War II. And now that margin was gone." [Yergin, p. 614] The effect of the cuts was made worse by the recent demand growth of 7.5% per year, poor information at the time about how much oil was available, as well as uncertainty about future cuts and embargoes. Panic buying increased demand and thus prices. "The embargo was a political act that took advantage of economic circumstances…." [*ibid.*, p. 626]

Various tensions among countries were engendered. These were exacerbated by the differential treatment of consuming countries and by their different degrees of (pre-embargo) dependence on oil from the Middle East. "Even as its traditional allies gave way to Arab demands, the United States tried to promote a coordinated response among the industrial countries. Washington feared that a resort to bilateralism—state-to-state barter deals—would result in a much more rigid, permanently politicised oil market." [Yergin, p. 629] A conference was called in February 1974 "to assuage fears about competition over supplies, heal the deep rifts in the alliance, and ensure that oil did not become a lasting source of division in the Western alliance." [*ibid.*, p. 629] Agreement was reached to develop consensus on international energy matters, establish an emergency sharing programme and to establish the International Energy Agency as a vehicle. [*ibid.*, p. 630]

In 2005, Russia/Gazprom supplied over a quarter of gas demand to Western Europe. On 1 January 2006, following a lengthy commercial dispute, Gazprom markedly reduced gas supplies to Ukraine. This reduced deliveries to many Western European countries as well, for about 1,5 days. In OECD Europe, the shortfall was made up relatively easily because the duration of the interruption was short. "The dispute and consequent interruptions did cause serious concerns over security of supply and gas dependence on Russia in many European countries. A number of measures were discussed in the aftermath of the dispute, including increased strategic gas stocks, diversification of the fuel mix (with higher dependence on coal and nuclear being the most prominent options), diversification of gas supply by calling on other pipeline gas suppliers, increased fuel-switching capacities, and energy efficiency. Discussions also focused on additional LNG terminals, including in Poland, Germany, the Netherlands and the Adriatic, or at least the acceleration of existing proposals." (IEA 2006 pp. 25-26)

2. The Keys to Energy Security

Diversification is a key to energy security, however defined. First Lord of the Admiralty Winston Churchill, explaining how he proposed to maintain a secure supply of oil after switching British warships to insecure Persian oil from safe Welsh coal, said "Safety and certainty in oil lie in variety and variety alone."

More recently the IEA has said:

> "Reducing dependence on oil and gas through diversification of fuels and their geographic sources and more efficient use of energy must be central to long term policies aimed at enhancing energy security….It is not the proportionate dependence on any one fuel type which counts, but the extent of alternative sources of that fuel and the practicability of switching fuels in a crisis. In that respect, the prospects for consumers are worsening." (IEA 2005, pp. 267-8)

Investment to develop energy sources and to increase capacity of transport is the second key to energy security. Government is involved, both directly through national oil companies (in some countries) and indirectly in providing an appropriate framework for private investment. The competition policy stance toward sharing of infrastructure, vertical separation of natural monopoly from potentially competitive activities, and more generally reducing barriers to entry into these markets are particularly relevant. But other policy areas such as economic regulation, taxation, and the more general "investment climate" are also relevant.

Whether the needed investment will be forthcoming is uncertain. The IEA states that "it is far from certain that all the investment needed [for gas-supply capacity additions] *beyond 2010* will in fact occur." It cites environmental policies and not-in-my-backyard resistance,[2] as well as the fewness of countries from which the bulk of the increase is expected to come, the large investments needed by Russia simply to maintain levels of production, and concern that oil exporters may agree to limit capacity increases to maintain higher prices. [IEA 2006, pp. 121-123] Highlighting that causality between investment and security can go both directions, the EC in reference to production and transport of gas in Russia to Europe, notes that security and predictability on both the consuming and producing sides would promote long-term investments in new capacity. [EC 2006 2.6(ii)(a)][3]

In the European Commission's 2006 Energy Green Paper, the security of supply objective would be met by "tackling the EU's rising dependence on imported energy through (i) an integrated approach – reducing demand, diversifying the EU's energy mix with greater use of competitive indigenous and renewable energy, and diversifying sources and routes of supply of imported energy, (ii) creating the framework which will stimulate adequate investments to meet growing energy demand, (iii) better equipping the EU to cope with emergencies, (iv) improving the conditions for European companies seeking access to global resources, and (v) making sure that all citizens and business have access to energy." [EC 2006, part 3]

The energy security literature provides four standard responses for increasing energy security:

- increase diversification of supply;
- increase resilience, e.g., through spare capacity and emergency stocks;
- recognise interdependence, e.g., that there is only one oil market and that the few regional gas markets may be melding into one;
- ensure timely information exchange, so that hoarding does not exacerbate shortages.

These are examined in turn below.

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2 A technological response to the NIMBY (not in my back yard) resistance has been the development of offshore regasifaction terminals. Being offshore and over the horizon, they do not seem to attract the same resistance. See http://www.excelerateenergy.com/energy_bridge.php.

3 The IEA also expresses concern. "Current IEA projections suggest that Gazprom could face a gradually increasing supply shortfall against its existing contracts beginning in the next few years if timely investment in new fields is not made [excluding any Russian exports to Asia]." [IEA 2006b, pp. 32-33]

2.1 Increased diversity of supply

Diversity of supply traditionally refers both to diversity of primary fuel types and diversity of sources of a given fuel. Given the importance of transport, it should also refer to diversity of transport infrastructure.

Diversity of primary fuel types, given the focus of this note on natural gas, implies increasing the use of fuels whose risks are not highly correlated with those of gas and making those fuels closer substitutes, e.g., by investing in more fuel switching capacity.

Electricity generation is another mechanism for diversifying fuel types. Electricity generated by coal or nuclear or wind or falling water is usually a perfect substitute for electricity generated by gas.[4] However, as noted above, the increased share of gas generation in the generation portfolio has diminished the possibility to switch generation to alternative fuels in the event of a gas supply disruption.

Better integration of electricity systems, e.g., across European borders, helps to diversify fuel types. If, for example, gas deliveries to generators in one country are interrupted, then other generators fuelled by uranium or coal or other gas suppliers can replace at least some of the missing electric power if the transmission systems are robust to such transfers.

Such an insurance mechanism requires the appropriate transmission design, capacity and use, and the spare generation capacity that is not fuelled by natural gas. Returns to induce the appropriate investments must exceed the returns of alternative actions. Price spikes increase the returns to investments; limiting them reduces returns although can relieve consumers in the short run. Also, returns to incumbent generators/transmission owners may be higher if they retain market power made possible *inter alia* by transmission design and generation capacity that limits the flow of electricity across traditional service areas, rather than investing in transmission that increases flow across borders. One question is how the regulatory environment can encourage appropriate investments. Recently, the European Commission DG-Competition has addressed this in its Energy Sector Enquiry and finds that the investment for cross-border electricity transmission has been inadequate. Relevant questions include: Can price spikes alone provide the impetus for the needed investments, even when there is market power that would be eroded by such investments? Does there need to be regulatory intervention, such as mandating investments—whether by the incumbents or merchant providers—and charging users via a fee to cover the cost?

Diversity of sources of gas is necessarily linked to gas transport infrastructure. For example, gas from multiple sources delivered by the same pipeline is subject to correlated risks associated with transport. The same is true for gas delivered through the same LNG regasification terminal or stored in the same storage facility.

The DTI, in its review of security of gas and electricity supply find that commercial buyers of gas have the appropriate incentives to reduce the risk of supply interruption. "The sourcing of gas supplies from overseas is a matter for market participants. Commercial operators have every incentive to make their own assessment of the merits of supplies from different countries and thereby to ensure diverse sources of gas, supply routes and entry points so as to reduce the risks arising from supply interruption from any one source. [DTI 2006, para. 4.10]

[4] They differ in marginal costs and in their capability to be used to balance the system, so they are not always perfect substitutes.

It is often implicitly assumed that domestic sources are more secure than foreign sources. But some informed observers argue that domestic sources provide no greater security than foreign sources. A survey of gas security incidents in Europe since 1980 concludes that there have not been many and those that did occur were divided among three main causes, source, transit and facility. "[I]t is difficult to think of any historical incident involving political instability which has prevented gas from being delivered to Europe." "[N]o empirical experience would lead to the conclusion that a country with substantial dependence on imported gas supplies is necessarily less secure, in other words, more prone to disruption, than one which is self-sufficient."[Stern 2006, p. 18][5]

Various strategies may be available to diversify sources and infrastructure:

- Larger storage capacity near users can provide some insurance against short term disruptions in production and long distance transport. But gas reserves are expensive, and licensing is time-consuming and difficult. Most existing gas reserves buffer the seasonal swings in demand and are not designed as strategic gas reserves.

- Higher capacity interconnections among users may help diversify sources, but their value depends on different consumers having different sources with uncorrelated supply difficulties, and those sources having some spare production capacity available within the relevant time frame.

- Higher capacity of pipelines and LNG regasification terminals can also increase diversity, but like the larger interconnections strategy this presupposes spare production capacity and spare LNG liquefaction capacity, all of which can ramp up production within the relevant time frame.

- Developing gas fields and linking them to consumers via pipelines or LNG, especially where these are subject to risks uncorrelated with the risks to which other fields and pipelines are subject.

Many of these points are taken up in the European Commission's 2006 Green Paper. In this paper, in a paragraph on diversification of energy supply, the Commission suggests that a strategic EU energy review

> "could propose clearly identified priorities for the upgrading and construction of new infrastructure necessary for the security of EU energy supplies, notably new gas and oil pipelines and liquefied natural gas (LNG) terminals as well as the application of transit and third party access to existing pipelines. Examples include independent gas pipeline supplies from the Caspian region, North Africa and the Middle East into the heart of the EU, new LNG terminals serving markets that are presently characterised by a lack of competition between gas suppliers, and Central European oil

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5 Note that the level of imports does not affect price spikes or price levels. International trade transmits price shocks and price levels, regardless of the proportion of demand satisfied by imports. In the event that domestic and foreign prices were different, taking into account taxes and transport costs, they would be rapidly arbitraged away. Import quotas and autarky do not insulate a domestic market; they just transform price increases into shortages and regulatory evasion. Thus, reduced import dependence does not reduce importing countries' exposure to price shocks or high international price levels.

"Green" energy and energy security are often conflated in policy discussions. "Green" energy sources are often coincident with domestic energy sources in many countries, especially in those that are poor in natural resources. The Energy Sector Enquiry finds that security of supply and [environmental] sustainability are complementary, along with competitiveness. However, clarity of discussion is promoted by distinguishing between security and environmental sustainability.

> pipelines aiming at facilitating Caspian oil supplies to the EU through Ukraine, Romania and Bulgaria. In addition, the Review could acknowledge the concrete political, financial and regulatory measures needed to actively support the undertaking of such projects by business. The new EU-Africa Strategy, envisaging interconnections of energy systems as a priority area, could also help Europe to diversify its oil and gas supply sources." [EC 2006, 2.4 (i)]

Worldwide, LNG is one way to increase diversity of sources and, from the producers' point of view, diversity of revenues. To state the obvious, LNG allows consumers to be located further away than pipelines do, though both must have access, which may be via pipeline, to the sea. However, the LNG market is small in comparison with gas delivered via pipeline. Also, the LNG market is illiquid. (See below). This suggests that LNG's role in supply diversity is, at least in the short run, limited.

2.2 Increased resilience

The second standard response to increase energy security is to increase resilience, e.g., through spare capacity, surge capacity and emergency stocks. But increasing the responsiveness of price to market conditions and increasing the price responsiveness of demand would also increase resilience. Indeed, competitive markets naturally increase resilience in the sense of inducing other producers to increase output and consumers to cut back during a shortage. But a regulatory requirement for a certain degree of resilience, universal service obligations, needs to be altered when a sector is switched from legal monopoly to competition.

Spare capacity and emergency stocks—or their absence—have played an important role in the oil market. Yergin's account of the 1973 Arab Oil Embargo points to the disappearance of spare oil production capacity in the United States as a key reason the embargo was so effective. Skinner points out that the historical reliability of oil supplies from the Middle East depended on spare capacity in Saudi Arabia, which the country is actively restoring. [Skinner 2006, p. 6] Emergency stocks of oil are required to be held by members of the International Energy Agency. Under the 1974 Agreement on an International Energy Program (IEP), members must "hold oil stocks equivalent to at least 90 days of net oil imports and [agree] to release stocks, restrain demand, switch to other fuels, increase domestic production and share available oil, if necessary, in the event of a major oil supply disruption." ["About the IEA," on iea.org] Thus, spare capacity and emergency stocks have been important in oil supply security. Skinner, in remarks before the Finance Deputies of the G20 in 2006, says his "core recommendation to governments is that strategic stocks should be increased." [Skinner, p. 10]

Part of the loss of resilience over the past few years has been the secular increase in demand from the growing economies of China and India. Their increased demand raises capacity utilisation along with price, all else being equal.

But as noted above, spare capacity in gas presents greater challenges. The production at many but not all gas sources cannot be varied according to demand. Gas storage is expensive and is somewhat limited by local geology. Finally, there are technical limitations on how fast gas can be withdrawn from a storage facility so even if there is enough gas in storage it cannot be drawn down at a rate to match the rate of normal usage.

Regarding gas, the European Commission is questioning "whether Europe's gas stocks can meet the challenge of shorter term supply disruptions." [EC 2006, 2.2(ii)] European Union member states vary in their interest in maintaining strategic gas storage, and many states with such storage facilities are "reluctant to open them to other member states in times of emergency. The EU believes this issue of 'solidarity' is critical to the overall energy security of all member states and has insisted that available supplies be shared within the Union when needed. Any future EU-led energy security strategy would have to include a

minimum level of oil and gas stocks to meet any type of disruption, an agreed upon plan for member state contributions to the storage requirements and an emergency withdrawal and distribution scheme." [CRS 2006, p. 26]

Box 3. The Role of Spare Capacity: A Cautionary Tale

Uranium provides a recent example of how an absence of a safety margin increases price variability. In 2005, global demand outstripped global supply (180m pounds versus 108m pounds) and demand continues to grow. Prices had more than tripled between the end of 2003 and November 2006. On October 23, 2006, a new mine, Cigar Lake, expected to supply about 15% of the global mine supply, experienced technical difficulties that delayed its expected opening. The news increased spot prices to the highest level in the market's 38 years. "There is almost a perfect storm forming with supply delays." [*Financial Times*, "Uranium prices set for further increases," 6 November 2006, p. 15]

Increased secondary trading and capacity for secondary trading can also increase resilience to some disruptions. Where there is secondary trading and a capacity to support it, e.g., spare transport capacity[6] and trade in capacity, local disruptions can be addressed by diversion of supplies from neighbouring areas. In principle, a local disruption would result in a price spike; traders would rush to buy gas where it is cheaper and arrange capacity to transport gas the gas to the high-priced location. But incumbents may have limited incentives to expand secondary trading and gas transport capacity, particulary capacity that facilitates rival supply.

Resilience would also be increased if LNG markets were more liquid and, therefore, better able to respond to local supply disruptions. But LNG is an illiquid market. Overwhelmingly, LNG is sold under long-term take-or-pay contracts. The few "spot" market transactions very often are cargoes diverted on the agreement of the contractual buyer and seller where they split the resulting profit. The share of such "spot" transactions is expected to grow to 20% over the coming years. [IEA 2006c, pp. 55, 57] This suggests that LNG does not provide the resilience that, say, trade in oil provides in the oil market. Traditionally, long-term take-or-pay contracts are signed before ground is broken on LNG facilities. This raises the question of whether financial innovations and the development of markets for short-term transactions and true spot transactions could increase the liquidity of LNG markets.

Turning from the supply to the demand side, increasing the price responsiveness of demand would improve resilience of gas markets. The argument is as follows. If there is a supply disruption, then cutting off those users who value the gas the least is the least costly way to allocate the shortfall. There are two ways to identify those low-value users. First, offer users contracts in which the users can be cut-off in times of high demand. Those users who can afford to be cut-off will select these contracts. Second, raise the price of gas charged users. Low value users will reduce or eliminate their demand.

Many gas markets do not allow prices to change freely to equilibrate supply and demand. Rather, some markets have an independent regulator who sets prices to prevent the exercise of market power. Slow adjustment of allowed prices can mean that prices do not adjust to reflect a supply disruption. There may also be reluctance on the part of politicians to pass on price spikes to consumers. In other markets, the practice of gas suppliers is to set price in reference to the price of oil averaged over a period of some months. While this sort of limit pricing to the closest substitute fuel may be sensible to influence fuel switching by customers over the long term, it does not in the short term allocate shortfalls in a supply disruption to the lowest value users. (If there is a liberalised secondary market and adequate transport infrastructure, and contracts allow for secondary trading, then the shortfalls can be reallocated.)

6 Note that pipelines are often built for the gas to flow in one direction only. Bi-directional pipelines usually have different capacities in the two directions.

Note that the price responsiveness of demand affects other consumers. That is, if some consumers are insulated from supply shortfalls by constant prices, then other consumers face larger price spikes than if all consumers were exposed to higher prices.

The price responsiveness of demand is also increased when it is easier to substitute other fuels or other sources of the same fuel.

Universal service obligations often included a responsibility to ensure reliable supplies. Legal monopolists thus were compelled to invest in capacity that was excess under normal conditions but which would be available to be used during emergencies. Regulators ensured that they were compensated for these investments in the revenues monopolists received from users. But where competition rather than regulation determines prices and suppliers are profit seeking, suppliers who do not invest in excess capacity can offer lower prices and enjoy higher profits. Further, it may be difficult for a regulator to assign responsibility for supply shortfalls on any particular supplier. Hence, under competition, regulators must design an explicit means of paying for capacity to be used during emergencies and an explicit obligation to provide it. This traditional regulatory requirement for a certain degree of resilience needs to be altered when the regulation of a sector is switched from legal monopoly to competition.

If investments to increase supply security are provided under regulation, outside of market incentives, then the question arises of how much to buy and at what price. The concept of the value of lost load from the electricity sector may be useful to identify how much investment at what price would be economic. The idea is that users have a value for uninterrupted electricity supply. Investments that increase reliability sufficiently below a certain cost should be undertaken; others should not. Estimating the value of lost load is difficult. Surveys of customers are often used to form an estimate. One type of survey asks users what mitigating actions they would take to avoid interruption. The cost of the mitigation is taken as the cost of the interruption. Another type of survey provides customers with a menu of prices and reliability and asks which choice they prefer. For industrial or commercial customers, observing the cost of investments actually undertaken by users to improve reliability, e.g., for electricity, the cost of installing emergency generators, could be useful. Not all investments to improve energy security are worth undertaking and determining a value of a given improvement in energy security will help to identify economic investments.

The timing of investments in production and infrastructure can create capacity issues. Investment in energy infrastructure is lumpy. If demand increases are relatively smooth, this implies that there are periods with little spare capacity and other periods when there is a lot. This increases price volatility. Where investment decisions are made on a commercial basis and where rules are reasonably predictable over the economic lifetime of an investment, then investment will be forthcoming provided the predicted future prices make the project profitable. But the interim prices needed to induce investment may not suit everybody. On the other hand, investment may be slowed when less investment means more market power, e.g., where more investment would mean that competitors can better supply a company's usual customers, or when there is greater uncertainty about future rules, or the company has non-commercial objectives and is therefore less responsive to price signals.

2.3 Recognise interdependence

There is only one gas market in each region, and these will begin to influence each other. This implies that a disruption in another country, whether producing or consuming, has repercussions on other participants in the market, whether or not they are counterparties to the disrupted participant.

International trade in a commodity transmits price volatility or level from abroad to the domestic market, if that market is not subject to economic regulation. The "world price" is the opportunity cost for domestic sales of domestically produced oil or gas or electricity. (To rephrase, a profit-maximising

domestic producer unrestricted by price regulation would give up getting the world price on the last unit of a commodity if it sold that commodity domestically.) If the world price rises, then domestic producers will raise their prices to domestic buyers, if not constrained by regulation.

An example of international trade transmitting prices is predicted by the IEA. As both the Atlantic (North America and Europe) and Pacific (Japan and Korea) LNG markets are predicted to be supplied *inter alia* by common Middle East LNG sources, the prices in those markets are expected to become linked. IEA 2006c]

Where the domestic market is subject to binding price ceilings, the volatility or high price will be manifested in a number of ways, depending on what is feasible for the domestic suppliers. One possibility is for the gas to be unavailable or in very short supply through legal channels. If supply at below-market prices can be compelled, then another possibility is for investment for domestic supply to suffer, so the bottleneck appears to be in transport rather than in supply. The world or regional market can be affected in two ways. First, consumers who do not face market prices will consume more, shifting out world demand and increasing world prices. Second, if transport is shared between below-market and market-based customers, capacity will be lower than it would be without sharing. (The decision whether to increase capacity depends on expected profits of so doing. If increased capacity implies increased sales to loss-inducing consumers, this reduces returns from expansion.)

In Europe, interdependence is being recognised across energy markets. In particular, it is recognised that one country's increasing use of natural gas to generate electricity combined with greater interconnection between electricity grids increases the exposure of consumers in the second country to gas supply disruptions. Similarly, one country's increasing use of nuclear power generation combined with greater interconnection between electricity grids reduces the exposure of consumers in the second country to gas supply disruptions. [EC 2006, 2.3]

The conclusion is that policies in one market affect other markets (convergence). Where the effect is sufficiently large, coordination of policies will make the objectives easier to achieve. For more than a quarter century, the IEA has also been involved in governments and regulators coordinating over cross-border energy issues. The EC's Energy Sector Enquiry finds one fundamental deficiency in the electricity and gas markets to be "a persistent regulatory gap particularly for cross-border issues" and recommends "[r]einforced coordination between national energy regulators, with a stronger role for Community oversight to ensure the Internal Market interests." [EC 2007, p. 14, 15]

2.4 Timely information exchange

Information changes the effectiveness of markets. Consumers who are confident that they can buy tomorrow do not need to hoard today. Information about future market conditions can help potential investors make economically rational decisions. But, information can also help competitors reach an understanding or even to form an anticompetitive cartel.

During the 1973 oil embargo, shortages were exacerbated by panic buying—oil users taking independently rational actions to buy available oil beyond their immediate needs in the fear that oil would not be available later. It is thought that accurate, timely information provided to the broader market may be able to reduce such conduct.

The International Energy Agency provides a forum for the regular exchange of information among governments of energy consuming countries. This helps to develop coordinated energy policies and responses in energy emergencies. During an energy emergency, the IEA is a forum for real-time exchange

of information. National governments, too, publish information on energy production, trade and consumption.

Companies involved in the energy markets can probably make more rapid and useful adjustments to a supply disruption if they can exchange information. During non-emergency periods, companies can make more efficient investments when better information can feed into modelling of future market conditions.

However, competition authorities could become concerned that information can help support possible cartels or other antitrust offences. Recognising the importance of coordination during a supply emergency, a limited antitrust exemption under United States law has been granted in 42 USC 6271, et seq. that allows energy industry participants to voluntarily coordinate their activities, with monitoring, participation, and supervision by the antitrust agencies, as part of the U.S. response to an international energy emergency. However, the US government can stop transfers of information to the IEA if it would lead to anticompetitive effects or antitrust violations.

To conclude this section, diversity of supply and sufficient investment are the keys to energy security. Diversity includes not only alternative sources but also means of transport. Investment provides the elements for resilience, i.e., spare capacity, surge capacity and emergency stocks. Secondary trading can provide incentives for some spare and surge capacity, as well as provide liquidity with which to respond to local disruptions. The other two standard responses for increasing energy security are to recognise interdependence and to ensure timely information exchange.

3. Does applying competition policy to energy markets harm or help energy security?

Competition policy can have some bearing on aspects of the four major energy security responses—diversity, resilience, recognition of interdependence and information. The major tools of competition policy are law enforcement with respect to mergers, cartels, and abuses of dominance and the soft tool of advocacy for more competitive regulation.

One prominent commentator suggests that competition in a market with broad geographic scope will deliver energy security.

> "This is not a challenge than can be dealt with effectively by 27 independent micro-markets. It has to be met by European companies big enough to negotiate with large suppliers, but must also be met by a united voice. Europe is the world's second largest energy consumer—the benefits of negotiating with a single voice are obvious.
>
> "Scale counts in ensuring future energy security, but so does source diversity.
> …..
> "It is also plain that existing legislation has failed to create a competitive market….Current legislation has allowed many incumbents to maintain dominant positions, often justified by appealing to the need for security of supply. This is short-sighted and wrong-headed. Competition and security of supply are not mutually exclusive. In fact, it is only full competition across a unified market that will deliver the efficiencies and investment to keep energy secure, affordable and sustainable." [Conti 2006]

The European Commission's Energy Sector Enquiry supports this: "[T]he creation of a competitive internal market will allow the Union's energy companies to operate in a market of a larger dimension, which will improve their ability to contribute to security of supply." [EC 2007, p. 5]

3.1 Mergers

Two types of arguments for horizontal mergers are examined here. One argument is that they might increase diversity of supply and the second is that they might increase bargaining power against a monopolist supplier. Vertical mergers are also discussed, especially where potentially competitive activities are vertically integrated with essential facilities and non-discriminatory access to essential facilities is not guaranteed.

3.1.1 Horizontal mergers

Mergers among intermediaries could increase diversity of supply in some circumstances. The intermediaries will continue to be bound by their long term supply contracts, so they will not in general change their sources of supply. Diversity is not changed in the short- to medium term. But longer term, a merger may create sufficient economies of scale for a new source of supply to become feasible, e.g., to enter into new contracts with other producers and to make investments for pipelines or LNG facilities. But the standard merger evaluation would only consider those efficiencies specific to a merger to be relevant. Thus, if the two parties could have formed a joint venture for such sourcing without engaging in a full-scale merger then these would not be taken into account in the merger evaluation. A second question is whether reducing the number of management teams from two to one due to a merger would change the corporate strategy in a way that increases or decreases diversity of sources. The answer is unclear.

It is sometimes argued that mergers among intermediaries will increase their "bargaining power" vis-à-vis gas producers. Two points can be made in this regard.

First, gas intermediaries only have a derived demand, derived from the demand of consumers in the territories where they resell gas. In Europe, "incumbents [gas intermediaries] remain dominant on their traditional markets, by largely controlling upstream gas imports and/or gas production." [EC 2006a, p. 4] Thus, a gas intermediary's demand is the sum of the demand of end-users on its territory. A merger among gas intermediaries serving different territories thus extends the summation of end-user demand across the two territories. Where could the increased bargaining power come from? Will the merged intermediary be more patient in negotiating a deal? Will it be bolder in taking a chance on negotiations breaking-down? Will it have different beliefs about the environment in which it is negotiating? (These questions come from the economic theory of bargaining, see box 4.)

One possibility is that a merger among gas intermediaries changes the pattern of price discrimination. A reseller, in order to estimate whether it would get a better price if it merges, must determine whether it is marginal or inframarginal in the post-merger entity. If marginal, then it does better to stay separate and negotiate a separate deal. But changing the pattern of price discrimination does not change economic efficiency in a predictable way. (The economic model would be different and yield different outcomes if resellers competed with each other downstream.)

Second, if gas intermediaries are regulated in such a way that they pass through to end-users changes in their costs of gas, how does a merger increase their incentives to become tougher negotiators? On the other hand, if a merger increases their efficiency and the regulator requires at least some of these gains to be passed through, then this would benefit consumers.

In sum, the economic theory of bargaining suggests that the outcome of bargaining is not related to size in a simple way.

Box 4: The Economics of Bargaining

The economics literature on bargaining yields few robust results. Obviously, the value of what the parties can get if negotiations break down constrains what agreement, if any, can eventually be reached. Essentially, the parties are negotiating over how to split the surplus created by an agreement. The Nash bargaining solution (NBS) from cooperative game theory satisfies plausible axioms, but the theory does not explain how parties would reach that solution. Various non-cooperative game theory-based models have been developed (see e.g., Binmore, Rubenstein and Wolinsky 1986 and Rubinstein, Safra and Thomson 1992) and they yield the results that, under complete information—the bargaining parties know the other's valuation—risk-averse or impatient bargainers get a worse deal, and outside options—alternatives—can preclude a deal or improve the deal for one party. If the bargaining parties do not know the other's valuation—the case of incomplete information—then the outcome is inefficient. I.e., both parties would like to engage in more trading, but do not. Institutional change may improve efficiency. (See Fudenberg and Tirole, Ch. 10.) Since a monopolist and monopsonist can be expected to be able to make a binding contract to get to an improved outcome, the outcomes from the naïve monopolist-monopsonist game are seen as unrealistic. [Friedman 1989]

3.1.2 Vertical mergers

Vertical mergers—electricity generators and gas suppliers, gas producers and gas networks, gas networks and local gas distributors/suppliers, and gas networks and LNG regasification plants—could affect energy security.

Where a merger involves vertical integration between an essential facility such as storage, pipeline and regasification facilities and a potentially competitive activity such as production or supply, and where competitors' access to the essential facility is discriminatory, then diversity could be reduced as non-integrated rivals are discouraged. Consider a potential non-integrated rival. If it must have access to the essential facility such as a pipeline, but expects to face discrimination or excessive access fees, then the potential rival will make fewer investments than if it had "reasonable access." Indeed, perhaps the potential rival is discouraged from entering the relevant market and makes no relevant investment. Where the potential rival could produce gas, then this reduces diversity of sources.

For example, arguments are made that the access conditions imposed by Gazprom by virtue of its monopoly on gas pipelines and gas exports from Russia discourage oil companies with associated gas (gas that is found along with oil) operating in Russia from producing that gas. Instead, they flare gas that is excess to their own needs at the site because the alternative, transporting it via Gazprom's pipelines to consumers, is uneconomic. (See below on access to essential facilities.)

Norway provides an interesting contrast, where the subsea hydrocarbon transport networks are jointly owned by the oil companies that are exploiting the relevant field. This ensures "reasonable access" terms and encourages exploration and production in the area.

Where a merger involves vertical integration of two essential facilities, then the effect depends on details of regulation and efficiency gains. Standard economic models tell us that vertical integration of successive unregulated profit-maximising monopolists increases economic efficiency, but these models may be less relevant in practice: Pipelines and storage are increasingly regulated in Europe, and long term successive monopolists may well have devised pricing strategies that are more efficient than those posited in standard economic models. Diversity is obviously not an issue given the assumption of monopoly, but perhaps better operations made possible by merger increases resilience.

A merger between an electricity generator and its upstream gas supplier, besides being potentially anticompetitive in the electricity and gas markets, may also reduce source diversity as the electricity generator tends to source more gas from its upstream division rather than shop around for gas.

One example of such a merger involved companies in Detroit in the United States. The Federal Trade Commission reviewed a 1999 merger between the sole electric company and the sole gas company operating in the same area. The merger was between DTE Energy Company ("DTE") the local electric generation, transmission, distribution, and retailer, and MCN Energy Group Inc. ("MCN"), the local gas producer to distributor, in Detroit and surrounding areas. While the FTC did not directly assess the effect on reliability—it reviews mergers under a competition standard—one comment does relate to diversity of supplies. In particular, the FTC found that the merger would eliminate competition to supply those consumers who can choose either natural gas or electricity for specific energy needs.[7]

A second example, the 2002 E.ON/Ruhrgas merger in Germany, demonstrated the importance of defining energy security, particularly when energy security is traded off against other policy objectives such as those of competition laws. The merger integrated a major electricity generator-transmitter-supplier with the dominant supplier of natural gas in Germany. The E.ON/Ruhrgas merger received Ministerial Authorisation, subject to some commitments, despite the opposition of the Bundeskartellamt and against the recommendation of the Monopolies Commission.

The Ministerial Authorisation was granted on the basis of energy security and increasing competitiveness of German firms. In particular, the Ministry for the Economy and Technology indicated that there was a need for investment in order to ensure supply from Russia and the Central Asian republics, and that these investments were unlikely to be forthcoming without massive involvement by companies from the consuming countries. [Federal Ministry for Economy and Technology, Germany ("BMWi") 2002, para. 125] The Ministry found that the combination of E.ON and Ruhrgas expanded the possibilities to invest directly in gas fields [BMWi 2002, para. 128] and to take a strategic stake in Gazprom that would entitle Ruhrgas to a seat on the board of directors, which in turn would allow Ruhrgas to influence pricing and investment decisions. [BMWi 2002, para. 129] In its discussion on competitiveness, the Ministry said that the mere increase in financial means was not, in itself, sufficient for approval. Rather, only an energy company would have the incentives to make appropriate investments in the energy sector. [BMWi 2002, para. 112]

The German Monopolies Commission wrote, in its Biennial Review, "In the E.ON/Ruhrgas case, the concept of security of supply was presented as a public-interest concern without there being any direct connection with either of the merging parties." [Monopolies Commission, Germany 2003, para. 80*, English translation]

The Ministry's argument relies on: (1) upstream investments in gas infrastructure in Russia being important to increase energy security in Germany; (2) Gazprom—as distinct from other gas producers, a regulator, or the government—making decisions regarding upstream investments in gas infrastructure in Russia; (3) the merger substantially increasing E.ON/Ruhrgas's *ability* to influence Gazprom's upstream investment decisions; (4) the E.ON/Ruhrgas merger being better than alternative ways to influence upstream investment, such as increasing the profitability of investment or increasing the cost of not investing, such as larger penalties for non-supply. Given the corporate governance and ownership of Gazprom, with government ministers dominating the board of directors and majority state ownership, it is not clear why assumptions 2, 3 or 4 would be met. Additionally, if the board seat allowed Ruhrgas to

[7] The FTC's complaint alleged that the merger would reduce competition in the local distribution of electricity and the local distribution of natural gas in the area where both firms operated in three ways. First, since natural gas is the fuel of choice for new electricity generation in the area and MCN had been distributing gas to self-generators, the merger would eliminate competition between the firms in electricity distribution and in the distribution of natural gas used for the self-generation of electricity. Second, the merger would facilitate raising the costs of a local competitor in electricity generation. Third, the merger would eliminate competition to supply those consumers who can choose either natural gas or electricity for specific energy needs. [See http://www.ftc.gov/os/2001/03/dteanalysis.htm]

receive a lower transfer price than otherwise, if Ruhrgas passed on at least some of the lower price, and if low non-emergency prices are considered to be part of the definition of energy security, then the deal would have increased energy security for Ruhrgas's customers.

Note, however, that Gazprom has announced a broader strategy of vertical integration. The company has written that, in the interest of consolidating its position in the European natural gas market and improving reliability and flexibility of gas supplies, Gazprom intends to expand the use of underground gas storage facilities in Europe and increase its shareholding in the companies engaged in the sale of gas and electric power to ultimate consumers. [Gazprom 2005, p. 16]

In sum, mergers do not seem to promote diversity of sources or resilience. To the extent that competitive markets promote diversity and resilience, then anticompetitive mergers would harm these elements of energy security.

3.2 Abuse of Dominance

Abuse of dominance, here limited to exclusionary single firm conduct, could also affect energy security. One prominent means is through discriminatory access or denial of access to infrastructure such as pipelines, storage, and LNG regasification terminals. Other potential abuses are related to long term contracts, impeding secondary trading, and pricing.

3.2.1 Access to essential facilities

Denial of access to essential facilities can harm competition in downstream markets. Thus, such denial can be considered a violation of competition law as an abuse of dominance. In gas, pipelines, storage, and LNG regasification terminals have been considered to be essential facilities. But, mandating access can discourage investment. For this reason, many regulatory regimes seek a balance between incentives for investment and promotion of downstream competition.

Downstream competition can be harmed by denial of access to essential facilities. Potential downstream competitors can be discouraged from entering if they expect to be charged "high" prices or to face discrimination in other terms such as timeliness and quality of access. Even when access is granted, the terms may mean that actual competitors have higher costs than the vertically-integrated rival or are unable to offer higher quality services to their customers. The result is that access oversight is a main task of energy regulators.

But on the other hand, granting or mandating access to costly infrastructure can discourage building the infrastructure in the first place. Profit maximising enterprises may choose not to build infrastructure, or not to build larger capacity infrastructure, if they expect that they will later be required to provide access at a "low" price. They may be unwilling to run the commercial risk of failure if they do not also get the upside risk of high profit from a successful monopoly. A predictable access regime that provides for risk reflective pricing will be less discouraging of these investments. There are other alternatives such as club ownership, where two or more owners build the facility together, bearing the risk but also enjoying access. (See the relevant OECD Best Practice Competition Roundtables.)

Non-discriminatory access to infrastructure is easier to ensure when the owner has neither the incentives nor the ability to discriminate. Common ownership with a company active in a potentially competitive vertically-related market can provide incentives for discrimination. While some argue for operational separation between the monopoly and potentially competitive activities to reduce the ability to discriminate, ownership separation eliminates both the incentive and ability to discriminate.

The European Commission finds that new entrants in gas markets often lack access to networks, storage and LNG terminals. The infrastructure operators are suspected of discrimination, including making operational and investment decisions in the interest of the vertically-integrated company. "This is highly damaging to security of supply." [EC 2007, pp. 7-8] The EC finds that ensuring that network owner/operators do not have incentives that are distorted by supply interests is crucial, and particularly important when large investments for security of supply and market integration are needed. Decisive reinforcement of the current inadequate level of unbundling is needed to achieve this. [*ibid.,* p. 14]

Further upstream, access to gas pipelines is part of the European Commission's plans to increase energy security. "[A true partnership between the EU and Russia] would also mean fair and reciprocal access to markets and infrastructure including in particular third party access to pipelines." [EC 2006 2.6(ii)(a)]

Access to upstream gas pipelines would aid security of supply in terms of diversity of supply. Non-Gazprom companies hold just under a third of Russia's gas reserves. [IEA, 2006b, p. 32] But significant quantities of gas associated with oil extraction are being flared because non-Gazprom producers do not have reliable and transparent access to the gas transport network and gas-processing capacity controlled by Gazprom. The Russian Energy Strategy, approved in August 2003, projects non-Gazprom production accounting for 20% of total Russian production in 2020. [*ibid.*, p. 16] "In the past Gazprom used the lack of spare capacity as justification to deny third party access to its transmission system." [*ibid.*, p. 32] By 2004, 99,9 bcm of natural gas not produced by Gazprom had gained access to Gazprom's pipelines, mostly Turkmen gas transiting to Ukraine and purchases by Gazprom from independent producers under long term contracts. [*ibid.,* p. 32]

Access to upstream gas pipelines would aid security of supply also in terms of increasing investment. Some independent producers would have incentives to increase the capacity of the pipelines as it would be more profitable to transport and sell the gas than to flare it.[8] These incentives are dulled, of course, if they receive a lower price. In general, selling directly to consumers would yield a higher price than selling to a monopsonist intermediary, even if the monopsonist has downstream market power.

Access to storage and to LNG regasification facilities present similar economic issues to those for pipelines, but the technical characteristics differ. As a result, what access is feasible and what is discriminatory also differs. With respect to LNG facilities, the large proportion of new facilities under construction and in earlier stages of consideration brings to the fore the need to balance downstream competition with incentives to invest in these facilities. In Europe, many new LNG regasification terminals have not had to grant access to rivals, whereas in Italy 20% of the new capacity has been reserved to competitors of the facility owner.

In sum, essential facilities such as pipelines, storage, and LNG regasification terminals can constrain downstream competition. Incumbents may have market power that derives in part from control over these

8 "[T]he overall efficiency of the gas sector in Russia is impeded in part by its monopolistic structure limiting upstream gas investments by independent gas producers and oil companies. More transparent and reliable third party access to both domestic and export markets would prove a major step forward. The Russian government's current attempts to promote this through various legislative initiatives and through efforts by the Anti-monopoly Service are welcome signs of an awareness. Unfortunately, this Service is grossly under-resourced." [IEA 2006b, p. 41]

"The IEA considers that large volumes of gas produced by oil companies are still being flared because Gazprom declines to buy it, or because the terms of access to processing plants and the transmission network are uneconomic. [IEA 2004b] This is consistent with the assessments made by the GGFR in their Russia-related work (GGFR[8] 2003)." [IEA 2006b, p. 145]

facilities and that is enhanced by limiting their capacity. The essential facilities can limit the quantities the incumbent and rivals can sell in the downstream market. Increasing the capacity of the essential facilities may erode the first source of market power—after expanding capacity the incumbent will have incentives to expand its usage—and expanding the capacity combined with granting access to rivals erodes the second source of market power.

While there is precedent for mandating access to rivals', there is little for mandating expanding capacity. Regulatory interventions to do so would be quite complex.[9] However, competition to provide additional capacity may be feasible, if the regulator can determined how much expansion is desirable and at what price. In the United States, for example, regulators require interstate pipeline applicants to offer an "open season" in which pipeline customers can contract for capacity rights above and beyond the capacity initially proposed by the applicant. The applicant is obliged to expand the capacity of the project accordingly. Once the project is completed, customers who have rights to a portion of the capacity can trade these rights. The settlement in the DTE/MichCon merger case (previously discussed) gave the new entrant the right to have the incumbent expand the local distribution system or the right to expand facilities on its own initiative.

3.2.2 Longterm Contracts

Another means of abusing dominance is to for incumbents to enter into long term contracts in a way that excludes new entrants. The idea is that, depending exactly on what is contracted—receiving gas, selling gas to final users, access to infrastructure—new entrants would have no access to gas, customers or to infrastructure. New entrants may bring with them efficiency-enhancing innovations, which in turn put pressure on incumbents and increases overall efficiency.

The vast majority of gas bought by gas intermediaries is bought under long-term contracts. Many of these contracts were entered when the intermediaries were national monopolies [EC 2006a, p. 30] and they are often extended when the contract is still far from expiry. [EC 2007, p. 48][10]

Long term contracts can facilitate investment. Often, funding for large, sunk investments cannot be found unless long term contracts have already been signed with buyers. Examples are LNG investments and pipeline investments, where the long term contracts ensure a long term stream of revenues to pay for the investment. According to the EC, long term gas supply contracts were often linked with infrastructure investment such as a pipeline or gas-fired power station. [EC 2007, p. 39]

Different market participants have different views on long term supply contracts. Gazprom says, with respect to its European market, "The fundamental principle of the export strategy is to maintain "a single-channel" export system. These objectives are planned to be achieved through developing relationships with traditional customers on a long-term contractual basis and using new forms of trade based on long-term and medium-term sales, as well as gas exchange transactions." [Gazprom, p. 16] And, indeed, over the past several months many European gas intermediaries have entered into or extended long term gas agreements with Gazprom.

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9 But regulatory intervention is not impossible. The Italian competition authority adopted a decision on 15 February 2006 (Case No. A358) which found that ENI had abused its dominant position by discontinuing works, which had been started by the network branch in view of increased gas capacity requirements, to expand an import pipeline. The discontinuance decision was taken by the parent company after complaints by the supply branch, and after several ship-or-pay contracts had been signed with independent shippers. [EC 2007, pp. 58-9]

10 An example is one contract that, in 2006, was extended from 2020 to 2035. [EC 2007, p. 48 footnote 78]

The restrictions on resale and the flexibility of volumes taken in these long term supply contracts reduce liquidity in the secondary gas market. And this limits the entry of new gas resellers because they cannot provide reliable supplies to their customers. But one can argue that upstream gas producers have a choice as to whom they deal with, including with whom they enter into long term supply contracts, unless they are found to be dominant.

Regarding the main reason provided for long term contracts, one question is why financial innovation, which has been so prominent in many markets, has not developed a substitute for long term supply contracts? As gas markets become more liquid—recall that only a very small fraction of LNG is sold in a true "spot market" and only a fraction of gas in Europe is not sold under long term contracts—perhaps financial instruments will be developed.

There are also long term contracts between gas resellers and gas consumers. In some cases, these facilitate the building of, e.g., gas-fired power generators. The long term contracts provide some guarantee as to supply terms over several years, reducing some of the project risk. But in other cases there does not appear to be a related infrastructure. Such long term contracts exclude new gas resellers. They do so because gas resellers have economies of scale and the long term contracts remove, usually large, customers from the market for several years. The result is that the scale economies are less likely to be realised and entry is more likely to be uneconomic. This exclusion of entrants extends dominance into a period when competition was envisaged.

Longterm contracts can, conversely, facilitate entry. For example, long term contracts for access to essential facilities combined with secondary market liquidity can make entry economic.

Longterm contracts, however, do not guarantee supply. First, during the term of the contract governments may change the rules on which contract terms are acceptable, including the term of the contract. Second, parties to the contracts may negotiate their way out of the contracts when it suits them. Third, even when gas supply has uninterrupted, as supply from Russia to Western Europe during the Cold War, this was not necessarily due to the long term nature of the contract. [Skinner, pp. 7-8] Rather, if security of supply rests on diversity, resilience, recognition of interdependence and timely information, then long term contracts facilitate security only if they increase diversity of supply or if they facilitate investments that promote resiliency.

3.2.4 Secondary Trading

Impeding secondary trading can also be seen as abusive of dominance. The European Commission has brought cases on gas destination clauses in sales agreements that impede secondary trading.

Secondary markets have competition roles. First, liquidity in the secondary market can help the entry of new gas resellers, as noted above. But, second, they can limit the extent of feasible price discrimination among consumers.

In terms of security of supply, secondary markets provide part of the resilience during a supply emergency. In the short run, secondary markets help to reduce price spikes and problems of non-availability. But over the longer term, the regular practice of secondary trading helps to fund spare capacity in transport network in and among consuming countries.

3.2.5 Pricing

A notable aspect of the gas markets in Europe and in the Pacific is the link of gas prices to oil prices. In contracts, gas prices are indexed on oil prices, smoothed over some months. Oil price indexation is widespread in the gas market. The IEA estimates the global share at "probably one-third and maybe as

much as half of gas that is traded," "almost all" of long-term gas contracts in continental Europe and "virtually all" long-term LNG contracts. But, in North America and the United Kingdom, most gas is priced against spot or forward gas-price indices. [IEA 2006, p. 63]

Generally, one expects gas prices to be constrained by oil prices since oil products are substitutes to gas in the long run. Where there is competition among gas suppliers, maximum and minimum market prices are constrained by the prices of substitute fuels—one for summer (alternative fuel for electricity generation for cooling) and another for winter (alternative fuel for heating).

Oil price-indexed pricing makes gas consumption less responsive to supply in the gas market. In a market where price is responsive to demand and supply conditions in that market, then price changes signal to users and to producers whether to increase or decrease their consumption or production. But in gas, price does not perform that function. If there is a supply disruption, price will not give incentives to consumers to cut back.

In other words, oil-index pricing reduces security of supply. First, the shortfall resulting from a supply disruption will not be borne by those consumers most able to cut back but by other consumers. This follows the same reasoning as provided in the discussion on increasing price-responsiveness of demand. Second, during non-emergency periods when gas demand follows a seasonal pattern, the price of gas does rise and fall with demand. This reduces incentives to invest in gas storage, which itself reduces resilience and hence security of supply.

One argument made in favour of oil price-indexed gas prices is that it smoothes gas prices. But, financial instruments could also do so, and the premium for such risk-reduction in highly competitive financial markets is likely to be lower than in the relatively concentrated gas market.[11]

In sum, oil-price indexing reduces demand responsiveness to supply disruptions and reduces incentives to invest in seasonal storage. There is not yet sufficient evidence as to its effects on competition.

3.3 Cartelisation

As noted in the above discussion on information exchange, information can also help competitors reach an understanding or even to form an anticompetitive cartel. One jurisdiction that has weighed the benefits of international policy coordination via the IEA during a supply emergency has granted a limited antitrust exemption, but the government can stop transfers of information to the IEA if it would lead to anticompetitive effects or antitrust violations.

Cartelisation by governments or by entities acting under the direction of governments is addressed in the section below on limits to what competition law can do.

3.4 Improving the competitive environment

Competition and security of supply are complementary policies, a finding in the EC's Energy Sector Enquiry. Thus improving the competitive environment can help supply security. The earlier sections on vertical and horizontal mergers dealt with many competitive environment issues. But barriers to entry has been scattered in a number of discussions and is brought together here. In addition, demand responsiveness improves the competitive environment.

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[11] Interestingly, the EC writes, "We suspect that, on a volume-weighted basis, there was not clear commercial advantage either way [oil-indexed versus gas-indexed price contracts]," but notes that the period examined was short relative to the contract durations so the situation may have changed. [EC 2007, p. 108]

There are significant barriers to entry in the downstream gas sector. Essential facilities are often in the hands of rivals and independent regulators may be unable to ensure fair and non-discriminatory access. It is time consuming and costly to build infrastructure. In part this is due to neighbours blocking proposed infrastructure despite its value to all gas users.[12] Much gas is sold under long term contract to incumbent intermediaries. One result, depending on the terms of those contracts, is that markets in some locations, such as continental Europe, are illiquid. This makes it is significantly more difficult for small scale suppliers—which entrants often are—to deal with varying demand than for large suppliers. Longterm contracts with large users can foreclose, for a significant time, significant fractions of total demand.

Barriers to entry upstream were mentioned above in connection with the gas producers needing fair and non-discriminatory access to pipelines.

Increased price responsiveness of demand promotes competition. More responsive demand makes raising price less profitable, or unprofitable. This gives suppliers incentives to compete more strongly. Promoting the use of interruptible contracts for large users and the use of market-clearing pricing would help to increase responsiveness of demand. Gas meters with real-time prices could also encourage consumption cutbacks during high price periods like supply emergencies, or indeed promote fuel switching when new investments are made. The political difficulty of gas price spikes can perhaps be examined more closely: Given the short duration of spikes (by definition), perhaps only the poorest members of society need to be shielded. If there is sufficient demand from users to reduce exposure to price risk, financial instruments may well emerge that transfer price risk as they have in other markets.

In general increasing competition increases energy security by diversifying supply.

4. Limits on what competition law can do

The involvement of states in the gas and oil industries may restrict the application of competition law. States can engage in two types of behaviour that might ordinarily offend competition laws. First, states can take actions and make agreements that harm competition. Second, states can direct enterprises to take actions and make agreements that harm competition. Because the actions of many national gas and oil companies are bound up in the governance of their respective states, it can be difficult to distinguish these two types of behaviour. The important point is that state involvement of either type may trigger defences that shield the conduct in question from competition laws. When non-economic factors prevail in determining supply conditions, there may still be an important role for competition and markets in minimising the adverse effects in both the short- and long-terms.

The applicability of US antitrust law, for example, against foreign sovereigns is governed by the Foreign Sovereign Immunities Act (FSIA). Foreign sovereigns are presumptively immune to American laws unless a specified exception to immunity applies. One of the exceptions is that the foreign sovereign is engaged in a commercial activity having a certain nexus to the US. Whether an activity is commercial is determined by its nature, rather than its purpose. The Supreme Court held in *Republic of Argentina v. Weltover, Inc.* that "[T]he issue is whether the particular actions that the foreign state performs (whatever the motive behind them) are the *type* of actions by which a private party engages in 'trade and traffic or commerce.'" [504 U.S. 607, 614 (1992) (emphasis in original); for additional exemptions, see ABA, II Antitrust Law Developments (Fifth) (hereafter "ALD") 1136-1144 (2002).]

[12] The NIMBY attitude is rational, as neighbours of proposed facilities will bear most of the risk of accidents, however small. But many more gas users will benefit from the gain in energy security. In principle, monetary transfers can be used to internalise the externalities, but it can be difficult to set the level of compensation as neighbours have incentives to exaggerate their cost.

Does foreign sovereign immunity extend to intermediate subsidiaries of foreign states? US courts are divided. The factors they use to determine whether the FSIA applies include: "(1) whether the foreign state created the entity for a national purpose; (2) whether the foreign state actively supervises the entity; (3) whether the foreign state requires the hiring of public employees and compensates them; (4) whether the entity holds exclusive rights in the country; and (5) whether the entity is treated as a part of the government under the laws of the foreign state." [ALD 1143 n.171.]

Another defence to antitrust liability that is available to foreign states is the "act of state" doctrine. Unlike foreign sovereign immunity, which exempts the sovereign itself from liability, the act of state doctrine exempts particular acts by sovereigns. Specifically, it exempts acts of foreign sovereigns that were taken within their own jurisdictions. [ALD 1144.]

Finally, if a private party is compelled by a foreign sovereign to engage in conduct that would violate the antitrust law, then generally the acts "become effectively acts of the sovereign" and courts do not impose antitrust liability. But if the compelled conduct takes place in the United States, then the US antitrust enforcement agencies will not recognise either the foreign sovereign compulsion defence or the act of state doctrine. [ALD 1156.]

In contrast to the United States, the EC does not have an explicit legislative act dealing with the immunity of foreign sovereigns. However, a sovereign immunity defence in antitrust cases was implicitly recognised by the European Commission in *Aluminium Imports* of 1984 [Commission case IV/26.870, OJ 1985 L 92/1] even though the defence was ultimately unsuccessful in that case. It concerned restrictive agreements between western European aluminium producers on the one hand and foreign trade organisations dealing with aluminium in the ex-socialist states of Poland, Hungary, Czechoslovakia, the German Democratic Republic and the USSR on the other. The agreements restricted the sales of primary aluminium by these foreign trade organisations to the involved group of Western producers, who undertook not to sell the product to other prospective purchasers in the western world. The foreign trade organisations had argued that they could not be qualified as "undertakings" within the meaning of Art. 81 EC due to the international law doctrine of sovereign immunity, as under socialist law they had no separate status from the State. The Commission recognised that such a defence may defeat the applicability of Art. 81 EC. However, it held that claims of sovereign immunity "are properly confined to acts which are those of government and not of trade." [Decision section 9.2.] The Commission argued that each of the foreign trade organisations had been specifically established for and was engaged in selling aluminium. "Entities which engage in the activity of trade are to be regarded as undertakings for the purposes of Article [81], whatever their precise status may be under domestic law and even where they are given no separate status from the State . . . . Even if the foreign trade organisations were indistinguishable under Socialist law from the State, no sovereign immunity would attach to their participation in the . . . agreements since this was an exclusively commercial activity." [Decision section 9.2.] The Commission further relied on the fact that the governments of the States were not signatories to the agreements nor did they oblige the undertakings to enter into the agreements in order to reject the argument that the agreements were acts of the undertakings' governments. The enforcement action in this case was limited to declaring that the relevant parts of the agreements infringed Art. 81 (1) EC and rejecting an exemption under Art. 81(3).

Aluminium Imports suggests a rather narrow application of the sovereign immunity defence. This question arose in several other cases concerning EU entities in which the European Court of Justice recognised that a distinction has to be drawn "between a situation where the State acts in the exercise of official authority and that where it carries on economic activities of an industrial or commercial nature by offering goods or services on the market." [Case C-343/95 Diego Cali, [1997] ECR I-547, para. 16]. To qualify as the former and consequently fall outside the scope of the competition rules, the Court required that the activity in question "forms part of the essential functions of the State" and that "by its nature, aim and the rules to which it is subject it is typically that of a public authority." [Case Diego Cali, para. 23;

Case C-364/92 Eurocontrol, [1994] ECR I-43, para.30]. This "state act defence" so far has been applied by the courts to areas outside the energy sector (anti-pollution services, control of air space).

EC law establishes state liability for genuine state acts restricting competition. Art. 86 EC requires the states to refrain from measures contrary to the Treaty's competition rules in the case of public undertakings and undertakings to which they grant special or exclusive rights, and submits undertakings entrusted with the operation of services of general economic interest or having the character of a revenue-producing monopoly to the competition Articles. In addition, the European Courts established that a state is liable under the Competition Articles if it requires or favours the adoption of acts contrary to the competition rules, reinforces their effects or deprives its own legislation of its official character by delegating to private traders responsibility for taking economic decisions affecting the economic sphere. [Case 267/86 Van Eycke v ASPA [1988] ECR 4769, para.16; case C-2/91 Meng, [1993] ECR I-5797, para.14]. However, these obligations are binding on EC Member States only, given that they are derived from provisions of the EC Treaty. Consequently, any such acts performed by non-Member States fall outside EU antitrust liability.

Anti-competitive acts by undertakings having an "immediate, substantial and foreseeable" effect in the Community are subject to antitrust liability, even if the undertakings are situated and the acts have been committed outside the EU territory [Case T-102/96 Gencor v Commission, [1999] ECR-II 753, para.90; C-89/85 Woodpulp [1988] ECR 5193, para.16, 17]. But as in US law, the EC legal system recognises a "state compulsion defence" in cases where the anti-competitive act in question cannot be qualified as an autonomous decision by the undertaking. The Commission and courts defined a rather narrow scope of application of this defence and require that the conduct has been made compulsory in a legal provision by the state and that there remains no latitude for individual choice for the undertakings as to the implementation of the state policy; mere support or encouragement by the government is not sufficient to trigger the exemption. [Commission case IV/32.450 French-West African shipowners' committees, OJ 1992 L 134/1 para.38; ECJ case 240/82 SSI v Commission [1985] ECR 3831 para.38].

In conclusion, many obstacles exist in both Europe and the U.S. that hamper the full application of competition law in the energy sector in cases of state involvement.

5. Concluding remarks

Main points

Energy security is about vulnerability to disruption. It means different things to different people at different times. The risk of supply disruptions and associated price spikes are surely part of the definition, but there is no consensus on whether the price level during non-emergency periods is relevant, and there is also likely a psychological aspect. Energy security may prove to be impossible to define precisely.

The corporate governance of many national gas and oil companies and the role of gas and oil sales in national GDP may mean that these companies may not have entirely commercial objectives, but at the same time they prefer reliable revenues which are associated with reliable supplies.

The keys to energy security, however defined, are diversity of supply and investment. Investment can provide increase resilience, e.g., through spare capacity, surge capacity and emergency stocks. Other keys are to recognise the interdependence of markets and market participants and ensure timely information exchange.

Regarding the application of competition policy, horizontal mergers do not in general increase energy security, though they may in some instances where a merger is the only way to be able to enter contracts with other producers or invest in new infrastructure. Horizontal mergers of gas intermediaries, given their

current low level of competition, are unlikely to increase bargaining power vis-à-vis gas producers. Vertical mergers that integrate potentially competitive activities with essential facilities can hinder non-discriminatory access to essential facilities, which may harm resilience and thus energy security. To the extent that competitive markets promote diversity and resilience, anticompetitive mergers would harm these elements of energy security.

Various types of abuses of dominance can discourage investment that increases spare capacity or surge capacity and thus resilience. Further, denial of access to pipelines can discourage diversity of supply by discouraging small gas producers from participating in the market. However, it may be complex and difficult to require incumbents to build larger capacity infrastructure, but competition to provide such expansion may be feasible if the regulator can determine how much at what price and impose a scheme for payment by consumers. Longterm contracts can facilitate infrastructure investment, which promotes security, but can also exclude entrants, and do not obviously directly promote security of supply.

In general, improving the competitive environment improves energy security by diversifying supply sources. The principle that multiple suppliers make it more difficult for any single firm to exercise market power or induce enough others to withhold output in order to exercise market power, applies equally well to markets supplied by firms or by governments.

But there are limits to what competition law can do. State involvement either by directly taking actions and making agreements that harm competition, or by directing enterprises to take actions and make agreements that harm competition, may trigger defences that shield the conduct in question from competition laws.

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Note on terminology:

GTL (gas to liquids) is completely different from LNG. Natural gas is converted to hydrocarbon liquids using a chemical process. These liquids are lube basestocks, diesel fuel and chemical feedstocks, which are entirely different from the markets supplied by LNG. GTL is usually used to get stranded natural gas to market using pipelines, tankers, etc.

LNG refers to natural gas that has been cooled to its liquid state. It is restored to ambient temperature in a regasification terminal.

NOTE DE RÉFÉRENCE

Introduction

La sécurité énergétique— là où la géologie rejoint la géopolitique —est redevenue une priorité stratégique. La politique de la concurrence est influencée par cet environnement politique général. Par exemple, des fusions anticoncurrentielles sont parfois tolérées au motif qu'elles améliorent la sécurité énergétique. Ce document examine les liens entre politique de la concurrence et sécurité énergétique, en s'appuyant sur l'exemple du gaz naturel afin de cibler l'analyse.

La question fondamentale que pose la sécurité énergétique est la suivante : comment concilier au mieux les lois du marché de l'énergie et l'intervention des pouvoirs publics pour garantir des prix acceptables et un approvisionnement suffisant, tant dans une situation d'équilibre que lorsqu'un événement imprévu survient ?

Les grandes questions abordées dans cette étude sont les suivantes :

- Qu'est-ce que la sécurité énergétique ?
- Les marchés et les incitations économiques des producteurs de gaz permettent-ils d'atteindre « le juste niveau » de sécurité énergétique ?
- Que peut-on faire pour accroître la sécurité énergétique ?
- La concurrence sur les marchés et la politique de la concurrence sont-elles des instruments de promotion de la sécurité énergétique ?

Pour les responsables de la politique de la concurrence, deux caractéristiques du secteur du gaz naturel sont remarquables : l'échelle de temps et la gouvernance d'entreprise. Les échelles de temps qui régissent la sécurité énergétique et la politique de la concurrence sont très différentes. Comme le constate un observateur, « le système d'approvisionnement énergétique mondial est un ensemble vaste et pesant d'infrastructures de grande taille qu'il faut des années pour planifier, valider et construire, et qui restent généralement en place pendant des décennies » [Skinner 2006, p. 2]. Par conséquent, les changements importants dans les infrastructures énergétiques ou les transformations dans la composition du mixte énergétique prennent des décennies. À l'autre extrême de l'échelle de temps, une rupture inattendue de l'offre énergétique de seulement quelques jours est une cause d'inquiétude et parfois de difficultés. Par contraste, les autorités chargées d'appliquer le droit de la concurrence travaillent sur un calendrier qui se situe à mi-chemin entre ces deux extrêmes. Par exemple, dans les examens des fusions, un délai de deux ans est considéré comme normal pour une entrée sur le marché, mais les variations des parts de marché d'une année sur l'autre sont qualifiées de simples « fluctuations » pour des produits à longue durée de vie. Les transformations structurelles sur les marchés de l'énergie sont extrêmement lentes du point de vue des responsables de la politique de la concurrence.

La gouvernance d'entreprise des secteurs du gaz et du pétrole fait que ce sont les pouvoirs publics, plutôt que les acteurs économiques en quête de profits, qui prennent l'essentiel des décisions économiques. Les compagnies nationales de gaz et de pétrole sont les principaux exploitants des gisements de gaz et de

pétrole au Moyen-Orient, en Amérique latine et en Russie, qui regroupent la très grande majorité des réserves. À quelques exceptions près, leur structure de gouvernance est étroitement liée aux structures politiques de leurs pays respectifs. En l'absence d'un grand nombre de propriétaires mus par la recherche du profit et opérant dans des conditions de pleine concurrence ou d'un consensus politique solide en faveur d'un comportement commercial, on peut s'attendre à ce que des objectifs politiques plus larges jouent un rôle dans les décisions économiques. « Certains pays... ont de plus en plus une vision politique du commerce, ou du moins le considèrent à travers le prisme des relations d'État à État, avec des liens qui n'existent pas dans les accords commerciaux normaux » [Skinner 2006, p. 6]. Toutefois, le rôle prépondérant du pétrole et du gaz dans les recettes publiques totales et dans le PIB des pays producteurs tempère la poursuite d'objectifs non économiques, même si c'est une maigre consolation pour des catégories de consommateurs relativement réduites.

Du côté de la demande, de nombreux pays de l'OCDE comptent traditionnellement des entreprises publiques chargées d'acheter du gaz et du pétrole. Un grand nombre d'entre elles ont été transformées en sociétés commerciales et ont été au moins partiellement privatisées, tandis que d'autres pays de l'OCDE ont toujours possédé des entreprises pétrolières et gazières privées. Néanmoins, quelle que soit la structure du marché, les entreprises pétrolières et gazières, qui comptent en leur sein les principaux dirigeants économiques, voient probablement les choses du même œil que les tenants du pouvoir.

En résumé, les décisions en matière d'investissement, de ventes et d'achats sont plus étroitement liées à des considérations politiques sur les marchés de l'énergie que sur la plupart des autres marchés. Par conséquent, la sécurité énergétique fait intervenir un ensemble inhabituel de facteurs économiques et politiques. Très souvent, les considérations économiques s'articulent autour de la meilleure manière de réagir ou de se préparer à la volatilité qui résulte des considérations politiques.

Les infrastructures gazières changent très lentement. Il faut des années pour planifier, obtenir les autorisations et construire les gazoducs, installations de stockage et terminaux de GNL.

Le GNL ne sera pas en mesure de garantir la diversité de l'offre ou la résilience sur le court terme. Seulement 7 % du gaz est transporté sous forme de GNL, même si ce pourcentage devrait augmenter. Le GNL peut faire la différence à plus longue échéance, par exemple s'il sert à combler l'écart entre l'augmentation prévue de la demande et les sources d'approvisionnement existantes.

Le marché du GNL est fortement illiquide, les ventes s'effectuent principalement en vertu de contrats à long terme ; même les quelques transactions dites « au comptant » ne le sont généralement pas au sens habituel du terme. Les capacités des terminaux de regazéification du GNL sont, en Europe du moins, très concentrées et gérées selon des contrats de longue durée.

Les intermédiaires susceptibles d'entrer en concurrence avec les sociétés en place doivent pouvoir accéder aux infrastructures — gazoducs, installations de stockage — qui sont possédées et exploitées par les entreprises en place. Les conditions d'entrée dépendent donc étroitement des règles d'accès aux infrastructures, qui constituent un volet de la politique de concurrence.

1. Qu'est-ce que la sécurité énergétique ?

La sécurité énergétique désigne la vulnérabilité aux ruptures d'approvisionnement. Les troubles politiques, les conflits armés, le terrorisme, les actes de piraterie, les catastrophes naturelles, le nationalisme et les rivalités géographiques menacent, à des degrés divers, d'interrompre les échanges quotidiens de pétrole, gaz naturel, charbon et électricité.

La signification de la sécurité énergétique varie selon les personnes et les époques. Pendant des décennies, elle désignait l'offre physique de pétrole. Elle englobe désormais le gaz naturel et l'électricité, et couvre toute la chaîne d'approvisionnement. Ce concept inclut aujourd'hui les prix et pas seulement la disponibilité physique de ces combustibles. Les exportateurs d'énergie se soucient de la sécurité de la demande, c'est-à-dire de la stabilité de leurs recettes, et les ressources énergétiques ainsi que les infrastructures d'exportation sont souvent contrôlées par les autorités politiques. Les consommateurs d'énergie recherchent des carburants à « prix abordables », tandis que les pays en développement se préoccupent également des conséquences des variations des prix de l'énergie sur leur balance des paiements. Les priorités des pays reflètent leur situation particulière. Par exemple, le Japon privé de ressources énergétiques se concentre sur la diversification, les échanges et l'investissement. Les pays européens débattent de leur dépendance à l'égard des importations de gaz naturel. Les États-Unis se soucient de leur dépendance accrue vis-à-vis du pétrole importé et des effets sur le marché de la hausse des importations de GNL.

Pour comprendre les enjeux de la sécurité énergétique, il est utile de rappeler d'où proviennent le gaz naturel et le pétrole et comment ils sont distribués aux consommateurs.

1.1 Rappel : la chaîne de distribution physique

Les principales sources d'énergie primaire consommée dans la zone de l'OCDE sont le pétrole, le gaz, le charbon et l'uranium. La part respective de ces produits dans le panier énergétique diffère sensiblement d'un pays et d'un secteur à l'autre. Par exemple, le transport consomme une proportion beaucoup plus élevée de produits pétroliers que la plupart des autres secteurs.

Concernant le gaz, les principaux pays qui possèdent des gisements sont la Russie (30.5 % des réserves mondiales de gaz), l'Iran (14.8 %), le Qatar (9.2 %), l'Arabie Saoudite (4.1 %), les Émirats arabes unis (3.9 %), les États-Unis (3.4 %), l'Algérie (2.9 %), le Venezuela (2.7 %), tandis que les 28.5 % restants se répartissent entre plusieurs pays[1].

Ces chiffres ne donnent qu'une image partielle de la situation. L'Iran est aujourd'hui un importateur net de gaz et la valeur économique du gaz utilisé pour la production de pétrole (l'injection de gaz accroît la productivité) dépasse de beaucoup sa valeur en tant que combustible exporté. Le Qatar applique un moratoire non officiel sur les nouveaux projets de GNL. Le ministre du pétrole d'Arabie Saoudite a déclaré qu'il n'envisageait pas d'exporter de gaz tant que la production nationale n'aura pas dépassé un certain niveau, qui ne devrait pas être atteint avant 2020-25 [Stern 2006, pp. 14, 13, 11].

Les réserves de gaz et de pétrole étant le plus souvent éloignées des consommateurs, leur acheminement engendre des coûts de transport et des risques. Les coûts de transport contribuent à limiter l'étendue géographique des marchés. Le transport du gaz par bateau sous forme de gaz naturel liquéfié (GNL) coûte beaucoup plus cher que le transport de pétrole par bateau[2] ou que le transport de gaz par gazoduc. Il existe donc un marché mondial du pétrole, mais des marchés régionaux du gaz.

- Des risques liés au transport existent le long de la chaîne d'approvisionnement. Une fois franchis les goulots d'étranglement du transport maritime, les infrastructures permettant de recevoir, de

[1] Les réserves de pétrole sont un peu moins concentrées : Arabie Saoudite (21.6 % des réserves mondiales de pétrole), Canada (14.8 %), Iraq (9.3 %), Émirats arabes unis (8.1 %), Koweït (8.0 %), Iran (7.4 %), Venezuela (6.4 %), Russie (4.9 %), tandis que les 19.5 % restants se divisent entre d'autres pays. Le charbon et l'uranium suscitent moins de préoccupations et ne sont pas traités dans ce document.

[2] Par exemple, le coût moyen de transport du pétrole vers les États-Unis est d'environ 2 USD le baril. (Economic Report of the President, 2006, p. 233)

stocker et de réacheminer le gaz par gazoducs sont elles aussi soumises à des risques. Comme indiqué ci-dessous, une petite partie seulement du gaz est transportée sous forme de GNL par bateau. Selon les prévisions de l'AIE pour 2030, 4 % de la production mondiale de gaz transitera sous forme de GNL par le détroit d'Ormuz à l'embouchure du golfe Persique. La part du GNL est bien évidemment beaucoup plus élevée[3].

Le gaz naturel est principalement transporté par gazoducs ; moins de 7 % est transporté par bateau sous forme de GNL. Pour que le gaz puisse être transporté sous forme de GNL, il doit être refroidi à l'état liquide, transporté sur des navires spécialisés, puis déchargé dans un terminal de regazéification qui réinjecte ensuite le gaz dans le réseau de distribution. Les projets concernant le GNL sont coûteux, supposent des délais d'exécution à longue échéance et des contrats de longue durée[4]. Le Qatar, où le secteur privé participe à des projets gaziers, en est un exemple. Les premières livraisons interviennent cinq à six ans après la signature du contrat. Les contrats ont généralement une durée de 25 ans. Les coûts de projet vont de 5 milliards USD à 12 milliards USD[5]. Les navires de transport du GNL sont peu nombreux (151 en 2003), et l'AIE mise sur au moins 326 navires de ce type d'ici 2010 [AIE 2003 et AIE 2006c, p. 55 respectivement].

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3 On dispose de statistiques relatives aux goulots d'étranglement dans le transport de pétrole par bateau depuis les pays producteurs du Moyen-Orient, qui laissent imaginer les risques pour le GNL provenant de la même région. La plus grande partie du pétrole et du GNL produits au Moyen-Orient est transportée par l'une des trois routes suivantes :

- Le détroit d'Ormuz à l'embouchure du golfe Persique. Le détroit comprend deux rails de navigation de 3 km de large chacun. L'AIE estime qu'en 2004, environ 17 mb/j, soit 21 % de l'offre mondiale de pétrole, transitaient par ce détroit. Sur ce total, environ 13 mb/j sont ensuite acheminés par le détroit de Malacca entre l'Indonésie, la Malaisie et Singapour, où accidents et actes de piraterie perturbent occasionnellement le trafic de pétrole.
- Le passage de Bab el-Mandab, qui relie le Golfe d'Aden à la Mer Rouge. En 2004, environ 3.5 mb/j étaient transportés par ce passage à destination du Canal de Suez et de l'oléoduc Sumed. Le Canal de Suez et l'oléoduc Sumed relient la Mer Rouge à la Méditerranée, d'où le pétrole est acheminé vers l'Europe et les États-Unis. Les capacités du canal et de l'oléoduc sont respectivement de 1.4 mb/j et 2.5 mb/j. Cette route permet de transporter le pétrole depuis les ports du golfe Persique et de la Mer Rouge.
- L'autre itinéraire consiste à contourner le Cap de Bonne-Espérance à la pointe sud de l'Afrique. [AIE 2005, pp. 262-4]

4 L'arbitrage entre la quantité de gaz et la distance du marché est le suivant. Il n'est pas rentable de transporter de petites quantités. Lorsque les quantités augmentent et les distances raccourcissent, le gaz transformé en courant électrique continu à haute tension devient rentable. Lorsque les quantités sont importantes, les gazoducs sont plus économiques sur les distances moyennes et le GNL sur les longues distances [pour des chiffres précis, voir la figure 25 dans AIE 2006b, p. 144, reproduite de SINTEF].

5 Voici des informations plus précises sur les projets de la société Qatargas. Qatar 1 approvisionne pour l'essentiel huit compagnies japonaises de gaz et d'électricité grâce à 10 navires de transport de GNL en vertu de contrats sur 25 ans. Ce projet fournit également du gaz naturel à l'Espagne, en partie aux termes d'un contrat prolongé jusqu'en 2012 et en partie en vertu d'un contrat sur 20 ans. Qartargas 1 approvisionne également la Turquie, l'Italie, les États-Unis, la France, la Corée et le Royaume-Uni en vertu de contrats à moyen terme. Qatargas 2 approvisionnera le Royaume-Uni d'ici l'hiver 2007-08 pendant 25 ans. Un protocole d'entente a été conclu en ce sens en juin 2002 et un accord a été signé avec ExxonMobil en décembre 2004. Le coût total est estimé à 12 milliards USD. L'accord relatif au projet Qatargas 3 a été signé en juillet 2003 ; l'usine devrait entrer en fonction en 2009. Les coûts sont chiffrés à 5 milliards USD. L'accord relatif au projet Qatargas 4 a été signé en février 2005 et les livraisons devraient débuter vers 2010. Le coût correspondant oscille entre 6 et 7 milliards USD. [http://www.qatargas.com/media-room/Marhaba%20wirte-up.htm]

L'AIE prévoit que, d'ici 2010, 30 % des importations de gaz vers les pays de l'OCDE proviendront de pays non membres de l'OCDE, sous la forme de GNL. La dépendance à l'égard des importations de pays non membres de l'OCDE en 2010 variera d'une région à l'autre, de moins de 10 % en Amérique du Nord à 48 % en Europe et 63 % pour la région Asie-Pacifique [AIE 2006c, p. 13].

Les terminaux de regazéification du GNL se caractérisent également par une structure de propriété relativement concentrée, et leur accès est régi par des contrats à long terme. L'Europe en donne un exemple. Elle compte 14 terminaux de regazéification, et six nouveaux sont en cours de construction. Cinq se situent en Espagne, deux en Turquie et en France, et un en Italie, en Grèce, au Portugal, au Royaume-Uni et en Belgique. Comme le reste du système d'approvisionnement en GNL, les capacités de ces terminaux sont généralement concédées en vertu de contrats portant sur de longues périodes. Les organismes de réglementation doivent déterminer si un certain pourcentage des capacités doit être réservé aux non propriétaires. Une loi italienne (loi du 23 août 2004, n°239) stipule par exemple que 20 % des capacités des nouveaux terminaux doivent être réservées aux tiers. Le tableau ci-dessous est basé sur l'ouvrage de King & Spalding intitulé *LNG in Europe* [King & Spalding (2006)].

Tableau 1. Terminaux de regazéification de GNL en Europe

Terminal	Existant ou en construction ?	Propriétaire/Exploitant	Capacité en bcm/an	Capacités réservées
Zeebruge, Belgique	Existant	Fluxys LNG (filiale de Suez)	4,5 passant à 9	50 % Qatar Petroleum/Exxon Mobil pendant 20 ans 28 % Distrigas pendant 20 ans (filiale de Suez) 22 % Tractebel Global LNG pendant 20 ans (filiale de Suez)
Fos-sur-Mer, France	Existant	GdF	4,55	100 % GdF
Montoir de Bretagne, France	Existant	GdF	10,2	100 % GdF
Fos Cavaou, France	En construction	GdF	8,25	6 bcm à GdF 2,25 bcm à Total
Revithoussa, Grèce	Existant	DEPA	2,26 passant à 6,5	100 % DEPA
La Spezia (Panigaglia), Italie	Existant	GNL Italia (filiale de ENI via Snam Rete Gas)	3,5	Utilisées principalement par ENI, capacités pour des tiers rarement disponibles
Isola di Porto Levante (Rovigo – Adriatique du Nord), Italie	En construction	GNL Adriatico, anciennement Edison LNG (propriétaires : Qatar Petroleum 45 %, ExxonMobil 45 %, Edison Gas 10 %)	8	80 % à Edison pendant 25 ans 20 % en accès réglementé à des tiers
Brindisi, Italie	En construction	Brindisi LNG (filiale du groupe BG via BG Italia)	8 mais 16 en phase 2	80 % à BG pendant 20 ans 20 % en accès réglementé à des tiers
Sines – Galp Atlantico, Portugal	Existant	Galp Energia, derniers propriétaires : État portugais 17,711 %, Parpublica – Participacoes Publicas (SEPS) 12,293 %, REN – Rede Electrica Nacional 18,3 %, Eni Portugal Investment 33,34 %, Amorin Energia 13,312 %, Iberdrola 4 %, Autres 1,04 %	5,2	100 % Galp Energia
Huelva, Espagne	Existant	Enagas, les propriétaires incluent Gas Natural 9,2 %	7,9 passant à 11,8	Gas Natural et autres
Carthagène, Espagne	Existant	Enagas	7,9 passant à 9,2	Gas Natural et autres

Terminal	Existant ou en construction ?	Propriétaire/Exploitant	Capacité en bcm/an	Capacités réservées
Barcelone, Espagne	Existant	Enagas	10,5 passant à 14,5	Gas Natural et autres
Bilbao Bahia de Bizkaia, Espagne	Existant	Bahia de Bizkaia Gas, propriétaires : BP 25 %, Iberdrola 25%, Repsol 25 %, Ente Vasco de la Energia 25 %	7 passant à 10,5	48 % Bahia de Bizkaia Electricidad 38 % Gas d'Euskadi 14 % autres
Sagunto (Valence), Espagne	Existant	Planta de Regasificación de Sagunto, propriétaires : Union Fenosa Gas 42,5 %, Iberdrola 30 %, Endesa 20 %, Oman Oil Company 7,5 %	6,6 passant à 11,4	Union Fenosa et autres
Ed Ferrol LNG (Mugardos – Galice), Espagne	En construction	Regasificadora del Noroeste, propriétaires : Union Fenosa 21 %, Endesa 21 %, Tojeiro Group 18 %, Sonatrack 10 %, autres 30 %	3,6	Union Fenosa et autres
Marmara Ereglisi, Turquie	Existant	Botas Petroleum, propriétaire : Turkish Petroleum Company	5,2	100 % Botas, mais une loi parlementaire de 2001 oblige Botas à mettre des capacités à disposition
Aliaga (Izmir), Turquie	Existant	Egegas LNG, propriétaire : Colagoglu Group	6	Terminal à usage privé
Grain LNG, Royaume-Uni	Existant	National Grid	4,6 passant à 9,3	100 % BP/Sonatrach pendant 20 ans à compter de 2005, mais Centrica, GdF et Sonatrack se partageront les capacités pendant 20 ans à compter de 2008 (phase 2)
Dragon LNG, Royaume-Uni	En construction	Propriétaires : Petroplus 20 %, BG 50 %, Petronas 30%	6	50 % BG 50 % Petronas
South Hook LNG, Royaume-Uni	En construction	Propriétaires : ExxonMobil 30 % Qatar Petroleum 70 %	10,5 passant à 21	100 % de la phase 1 à une coentreprise entre ExxonMobil/Qatar Petroleum pendant 25 ans ; développement des transactions secondaires de capacités

La Russie, le premier exportateur de gaz au monde et le pays qui possède les réserves les plus importantes, exporte exclusivement par des gazoducs. 80 % des exportations de gaz russes vers l'Europe transitent par l'Ukraine. L'Indonésie était le premier exportateur de GNL jusqu'en 2006, mais le Qatar la devance désormais. L'essentiel de son GNL est à destination du Japon et de la Corée (l'Indonésie couvre un quart de la demande japonaise et coréenne). Avec les deux tiers de la demande couverte par le GNL, l'Espagne en est le troisième importateur [AIE 2006c, pp. 13, 14].

Les caractéristiques techniques hétérogènes du gaz limitent sa diffusion parmi les consommateurs [CE 2006a, p. 29]

Le stockage est un maillon vital de la chaîne d'approvisionnement du gaz. La demande peut être plusieurs fois plus élevée en hiver qu'en été. Le stockage près des utilisateurs permet de compenser une production généralement linéaire (certains gisements de gaz peuvent moduler leur production, mais pas tous). Le gaz est stocké dans des gisements épuisés de gaz, des aquifères et des cavités salines. En Europe, l'Allemagne (avec 30 % des capacités européennes), l'Italie (20 %) et la France (17 %) possèdent les plus grandes capacités de stockage. Le stockage à proximité des terminaux de regazéification du GNL représente seulement 2 % du stockage de gaz en Europe. En 2004, le volume opérationnel du stockage de gaz en Europe équivalait à environ 48 jours de consommation moyenne. Néanmoins, les contraintes techniques ne permettent pas d'extraire rapidement le gaz des réservoirs afin de suppléer aux livraisons normales en cas de rupture de l'offre [AIE 2006c, p. 128].

Les conditions de stockage du gaz et du pétrole ne sont pas comparables. Le gaz coûte jusqu'à dix fois plus cher à transporter et à stocker que le pétrole, et les coûts sont beaucoup plus tributaires des conditions géologiques locales. Les gazoducs ne sont généralement pas conçus pour permettre un acheminement dans les deux sens. L'AIE n'oblige pas à ses membres à conserver des stocks stratégiques de gaz comme elle le fait pour le pétrole. Néanmoins, certains pays conservent des stocks stratégiques de gaz, et d'autres en constituent [AIE 2006c, pp. 127-128].

Les consommateurs finaux de gaz sont des utilisateurs industriels, commerciaux et résidentiels (ménages) (leurs proportions varient d'une région à l'autre ; voir la figure 12 du *Gas Market Review* de l'AIE). Les utilisateurs industriels consomment du gaz pour le chauffage, la fonderie et la production d'électricité sur site. Certains utilisateurs industriels peuvent remplacer un carburant par un autre. Les utilisateurs commerciaux et résidentiels se servent du gaz pour se chauffer, cuisiner, alimenter leurs installations d'eau chaude ou de refroidissement. La demande de ces catégories d'usagers peut être plusieurs fois plus élevée en hiver qu'en été. Ils ne peuvent pas substituer une source d'énergie à une autre, à moins de remplacer des équipements usagés. Ils ne sont généralement pas exposés aux variations soudaines des prix sur le marché. Dans certains pays, les utilisateurs industriels sont vulnérables à ces variations et modulent ainsi leur consommation en réaction à ces changements ; dans d'autres pays, les utilisateurs industriels sont eux aussi protégés de tels écarts de prix [AIE 2006c, p. 21]. Dans certains pays, les utilisateurs industriels peuvent bénéficier de prix réduits s'ils acceptent les risques de rupture.

La production d'électricité représente 60 % de l'augmentation récente de la demande de gaz. La production d'électricité à partir du gaz devrait continuer de progresser. Le gaz est considéré comme plus propre que le charbon par exemple, et les centrales électriques fonctionnant au gaz sont plus simples et plus rapides à construire et à homologuer que d'autres types de centrales. Cette croissance réduit la flexibilité de la demande de gaz destinée à la production d'électricité, car la part croissante des générateurs à gaz dans le mixte de production fait qu'il est de plus en plus difficile de passer rapidement à d'autres types de carburant [AIE 2006c, p. 33].

Après avoir examiné les principales caractéristiques physiques de la chaîne d'approvisionnement, depuis la production jusqu'à l'utilisation en passant par le transport et le stockage, nous allons maintenant étudier les facteurs qui incitent les producteurs de gaz à assurer une offre stable.

1.2 L'économie politique des producteurs de gaz

Les producteurs de gaz et de pétrole sont souvent des compagnies nationales qui ont tendance à être intégrées au pouvoir politique de leur pays respectif. Les exportations de pétrole et de gaz sont généralement très importantes pour ces pays. C'est pourquoi les fournisseurs ne poursuivent pas toujours des objectifs strictement commerciaux, mais privilégient néanmoins des recettes stables.

Les marchés du gaz et du pétrole sont caractérisés par le fait que l'offre est généralement contrôlée par l'État et la demande par des sociétés privées. Un observateur estime que 75 % des réserves d'hydrocarbures sont contrôlées et possédées par les États, en dépit d'une participation minoritaire du secteur privé [Skinner (2006), p. 6]. La situation dans laquelle les entreprises pétrolières nationales sont contrôlées par l'État, et ne sont donc pas soumises à des objectifs et à des principes de gestion commerciaux, contraste avec celle des pays de l'OCDE, où les intermédiaires ont été constitués en société ou même privatisés, ou ont toujours été à capitaux privés, et sont par conséquent supposés poursuivre des objectifs économiques selon des règles de gestion commerciale. Un observateur fait remarquer que « certains pays... ont de plus en plus une vision politique du commerce, ou du moins le considèrent à travers le prisme des relations d'État à État, avec des liens qui n'existent pas dans les accords commerciaux normaux » [Skinner (2006) p. 6].

Il est difficile de tracer une ligne droite entre la composition des conseils d'administration, la structure de propriété et la gestion des entreprises sans examiner dans le même temps toutes les autres circonstances, notamment le mode d'organisation et d'exercice de la propriété par l'État. Néanmoins, les structures de gouvernance de certains grands fournisseurs peuvent éclairer le rôle potentiel de facteurs politiques et non économiques dans la gestion de ces entreprises.

- En **Russie**, bien que Gazprom soit partiellement privatisée, son conseil d'administration se compose principalement de personnalités politiques russes. Sur les onze membres, le président est le vice premier ministre et les membres comptent deux ministres en exercice, deux anciens ministres, le représentant spécial du président chargé de la coopération énergétique internationale, un ancien ministre adjoint et un membre de E.ON Ruhrgas (qui détient une participation dans Gazprom). D'après le rapport annuel, les trois autres membres ne semblent pas avoir exercé de fonctions politiques au cours des six années précédentes [Gazprom 2006]. Toutefois, les membres du conseil sont soumis à un « système d'instruction » et ne peuvent pas prendre de décision lors des réunions du conseil sans recevoir d'abord des ordres du gouvernement [www.oecd.org]. Roskneft a même indiqué, dans le prospectus relatif à sa récente entrée à la bourse de Londres, qu'il ne pouvait pas garantir que le conseil (dans lequel l'État occupe là aussi une position dominante) ne prendrait pas de décisions non conformes aux intérêts des actionnaires, ni même préjudiciables à leurs intérêts.

- En **Iran**, « le secteur du pétrole et du gaz est contrôlé par la société publique *National Iranian Oil Company*. » « À l'heure actuelle, la responsabilité globale du secteur iranien de l'énergie incombe au Conseil suprême de l'énergie… le ministère du Pétrole contrôle les activités de toutes les entreprises publiques pétrolières et gazières, depuis l'extraction jusqu'à la fabrication de produits pétrochimiques. » [AIE 2005, pp. 336, 341-2]

- Au **Qatar,** « l'entreprise publique Qatar Petroleum (QP) a été fondée en 1974 et est responsable de tous les aspects relatifs à l'industrie du pétrole et du gaz dans le pays » [AIE 2005, p. 460].

L'investissement étranger dans le secteur du gaz est géré par Qatargas, possédé à 65 % par QP. [http://www.qatargas.com/media-room/Marhaba%20wirte-up.htm]

- En **Arabie Saoudite,** « de grandes entreprises d'État, dont Saudi Aramco, qui détient le monopole de la production de pétrole saoudienne… continuent de dominer l'économie du pays. Mais des investissements privés existent dans le secteur pétrochimique, celui du raffinage et de l'exploration de gaz ». [IEA 2005, p. 489]

- En **Algérie**, « jusqu'à ce jour, Sonatrach agit en qualité d'agent du gouvernement algérien, négocie les licences et les contrats avec les entreprises étrangères et supervise l'exécution de chaque contrat de partage de production. Ce rôle sera désormais assumé par une nouvelle entité... Alnaft... qui rendra compte au ministère de l'Énergie. Alnaft sera également responsable de la promotion des investissements dans l'exploration » (AIE 2005, p. 292). En 2004, le conseil d'administration de Sonatrach était dirigé par le président du Conseil administratif, tandis que ses membres se composaient de représentants du ministère des Finances, du ministère des Hydrocarbures, du syndicat national, de la Banque d'Algérie, d'un responsable technique et de trois ou quatre cadres de l'entreprise proprement dite [Sonatrach 2004].

- Au **Koweït,** « en vertu de la constitution nationale, l'État possède et contrôle désormais toutes les ressources pétrolières…. bien que plusieurs grandes compagnies pétrolières, dont BP, Shell et Chevron, continuent d'opérer dans le pays aux termes de contrats de service de portée limitée... [L]e *Supreme Petroleum Council* (SPC) a été mis en place afin de définir les grandes stratégies du secteur pétrolier…. Le ministère koweitien de l'Énergie exerce son pouvoir d'élaboration des politiques en concertation avec le SPC, et supervise toutes les entités publiques impliquées dans le secteur du pétrole… Au niveau opérationnel, le principal acteur du secteur pétrolier koweitien est la société [publique] Kuwait Petroleum Corporation (KPC). » [AIE 2005, p. 413]

- En **Norvège,** Statoil (contrôlée à 70.9 % par l'État) ne compte ni personnalité politique, ni fonctionnaire dans son conseil d'administration. Sept administrateurs sont désignés parmi l'élite des milieux d'affaires norvégiens et, dans une moindre mesure, étrangers, et trois sont des représentants des salariés [site Web de Statoil]. Ce pays établit une distinction claire entre le statut de propriétaire de l'État et son rôle d'élaboration des politiques. En sa qualité de propriétaire, l'État insiste sur la transparence et la responsabilité de l'entreprise.

- Au **Mexique**, PEMEX exerce un monopole presque exclusif sur le marché du pétrole et du gaz, et est entièrement à capitaux publics. Les onze membres de son conseil comprennent six ministres et cinq membres du syndicat des travailleurs, très lié aux milieux politiques.

De nombreux pays producteurs de pétrole et de gaz sont très dépendants des recettes tirées de la vente de ces énergies :

- **Algérie** : « Cumulées, les ventes de pétrole et de gaz représentaient plus de 36 % du PIB en 2004 et 98 % des recettes à l'exportation. » [IEA 2005, p. 282] « Le secteur des hydrocarbures est l'épine dorsale de l'économie, puisqu'il génère environ 60 % des recettes budgétaires, 30 % du PIB et plus de 95 % des recettes d'exportation. » [CIA World Fact Book]

- **Arabie Saoudite** : « En 2004, le pétrole générait 40 % du PIB, près de 90 % des recettes totales à l'exportation et les trois quarts du budget du gouvernement central. » [IEA 2005, p. 487]

- **Koweït** : « Le pétrole représente près de la moitié du PIB, 95 % des recettes à l'exportation et 80 % des recettes publiques. » [CIA] « En 2004, le pétrole a généré environ 50 % du PIB

koweitien, plus de 80 % des recettes publiques et 95 % des recettes à l'exportation. » [AIE 2005, p. 412]

- **EAU** : « Reflet [d'une diversification dans d'autres secteurs], la part des hydrocarbures dans le PIB a baissé d'environ 60 % en 1980 à environ 20 % en 2003, et celle des exportations totales a diminué de près de 90 % à moins de 50 %. » [AEI 2005, p. 533]

- **Qatar** : « Les secteurs pétrolier et gazier représenteront près des deux tiers du PIB en 2030. » [AIE 2005, p. 463]

- **Iran** : « Le secteur des hydrocarbures génère actuellement 22 % du PIB [et] les exportations d'hydrocarbures représentaient… 80 % des recettes totales à l'exportation. » [AIE 2005, p. 339]

À la lumière de la composition des conseils d'administration des entreprises gazières et pétrolières nationales décrites dans cette section, et à l'exception de la Norvège, il apparaît que ces entreprises sont soumises à un contrôle politique considérable. Parallèlement, les recettes des ventes de gaz et de pétrole sont importantes pour l'économie nationale et les budgets publics de ces pays exportateurs. En résumé, les entreprises poursuivent des objectifs politiques importants, mais leur capacité à agir selon des motivations non commerciales se heurte à certaines limites, notamment en ce qui concerne la sécurité des approvisionnements, limites qui n'ont cependant pas d'effet lorsque les enjeux politiques sont importants.

Après avoir étudié les principales caractéristiques physiques de la chaîne d'approvisionnement (production, transport, stockage et utilisation), ainsi que les facteurs qui incitent les producteurs de gaz à assurer une offre stable, venons-en à la question suivante : qu'est-ce que la sécurité énergétique ?

1.3 Différentes définitions de la sécurité énergétique

Le risque et l'incertitude constituent les fondements de la définition de la sécurité énergétique. Les ruptures d'approvisionnement, soit au niveau de la production, soit au cours du transport ou du stockage, sont les principaux facteurs de risque, car elles peuvent provoquer une flambée des prix. Au-delà de cet aspect, aucun consensus ne se dégage pour reconnaître que le niveau des prix en dehors des périodes de crise est pertinent pour la sécurité énergétique. Troisièmement, la sécurité énergétique revêt probablement une dimension psychologique. Il peut s'avérer impossible d'en donner une définition précise.

Les ruptures d'approvisionnement constituent la principale préoccupation au plan de la sécurité énergétique. Elles se traduisent par une hausse des prix lorsque les marchés disposent de la souplesse nécessaire pour réaffecter les flux de carburants (les consommateurs exposés aux hausses de prix réduisent leur consommation, et les marchés réaffectent les carburants vers les consommateurs qui acceptent de les payer plus cher). Mais lorsque les marchés de l'énergie ne sont pas en mesure d'opérer cette réaffectation dynamique, la pénurie est répercutée par d'autres mécanismes non monétaires, comme un plan d'urgence décidé avec l'organisme de réglementation compétent. Les consommateurs d'énergie, les entreprises en aval et les consommateurs finaux supportent les coûts de l'ajustement à des prix plus élevés ou, pour certains utilisateurs, à l'absence d'approvisionnement. L'absence d'approvisionnement peut se traduire par des coupures de courant et paralyser l'économie.

Si la sécurité énergétique désigne le risque et l'incertitude de ruptures d'approvisionnement, les producteurs et les consommateurs partagent des intérêts communs. Les pays producteurs sont souvent fortement dépendants des recettes tirées des ventes de pétrole et de gaz pour leur budget public et leur économie au sens large, comme l'explique la section ci-dessus. Des recettes inférieures aux prévisions peuvent avoir de lourdes répercussions sociales et politiques. La diminution de la volatilité des recettes

contribue à une offre prévisible de services publics lorsque les marchés des capitaux ne jouent pas ce rôle compensateur. Les consommateurs recherchent eux aussi la stabilité de l'offre et des prix, surtout si les achats énergétiques absorbent une fraction élevée de leur revenu disponible.

Le Livre vert sur l'énergie récemment publié par la Commission européenne appuie une définition basée sur les risques de rupture d'approvisionnement. Le Livre vert évoque les « risques de catastrophe naturelle et d'attaque terroriste, ainsi que la sécurité face aux risques politiques, comme l'interruption des approvisionnements… » [Commission européenne 2006, partie 2.2 (i)]. Plus loin, en référence aux réserves de pétrole et de gaz, il évoque des « ruptures d'approvisionnement » [*ibid*., partie 2.2 (ii)]. Le choc pétrolier de 1973 (voir ci-dessous) plaide également en faveur d'une telle définition.

Si la sécurité énergétique recouvre le niveau des prix en dehors des périodes de crise, alors les producteurs et les consommateurs ont des intérêts différents. Au dessous du niveau de prix monopolistique, les producteurs préfèrent des prix élevés et les consommateurs des prix bas. Lorsqu'une discrimination par les prix s'opère, les intérêts des consommateurs s'opposent dans la mesure où tous souhaitent faire partie des acheteurs à qui le prix le plus bas est facturé. Si le même prix est facturé à tous les consommateurs, certains paieront plus cher qu'en situation de discrimination par les prix. Ces divergences d'intérêt suggèrent que tout consensus international visant à réduire les prix en dehors des situations d'urgence serait difficile à atteindre.

Le *World Energy Outlook 2006* publié par l'AIE apporte un soutien à une définition qui englobe le niveau des prix au dehors des périodes de crise. Bien que ce document ne définisse pas directement la sécurité énergétique, il n'évoque pas moins « la vulnérabilité des pays consommateurs à une rupture brutale de l'approvisionnement et la hausse des prix qui en résulterait », la dépendance à l'égard des importations, ainsi que le renforcement de la position dominante sur le marché et de la capacité d'un petit nombre de pays d'imposer des prix plus élevés [AIE 2006, pp. 38-39]. Plus loin, l'étude mentionne « le risque perçu de perturbation et le risque que certains pays n'utilisent leur position dominante sur le marché pour faire monter les prix », à mesure que la production de pétrole et de gaz se concentre dans un nombre réduit de pays. La baisse des importations est considérée comme un moyen d'atténuer ces risques [*ibid*., p. 186]. La rigidité de la demande de pétrole pour les transports accroît la vulnérabilité des pays importateurs [*ibid.,* p. 187]. L'insécurité énergétique grandissante est le principal moteur de l'amélioration de l'efficacité énergétique, du développement de la production locale de combustibles fossiles, des sources d'énergie renouvelables et, dans certains cas, de l'énergie nucléaire [*ibid.,* p. 50]. Ces citations du *World Energy Outlook* confirment que certains observateurs estiment que le niveau des prix en dehors des périodes de crise fait partie de la définition de la sécurité énergétique.

La psychologie est un troisième paramètre possible dans la définition de la sécurité énergétique. Un observateur l'exprime de façon claire : « Le concept de sécurité d'approvisionnement englobe des aspects objectifs et subjectifs : la réalité économique de la *quantité* d'un *bien* ou d'un *service* vendu à un certain *prix*, et la notion psychologique de sécurité, qui désigne un *sentiment*... La quantité d'approvisionnement et le degré de dépendance peuvent rester inchangés, mais le sentiment de sécurité peut augmenter ou diminuer avec le temps. Il est clair que la relation politique particulière entre les partenaires commerciaux détermine le sentiment de sécurité de cette transaction. » [Skinner 2006, p. 6 ; c'est lui qui souligne][1]

[1] Il se peut également que la sécurité énergétique recouvre la crainte d'utiliser les prix ou la quantité d'énergie pour imposer des changements dans des politiques non énergétiques. En principe, les consommateurs pourraient alors boycotter un ou plusieurs fournisseurs en particulier ou les fournisseurs pourraient menacer de boycotter une catégorie spécifique de consommateurs. Un boycott est plus crédible lorsqu'il est moins coûteux, avec des avantages constants, ce qui serait le cas si l'approvisionnement des remplaçants des catégories boycottées serait pratiquement aussi rentable. Un boycott est plus crédible si, par exemple, un producteur menace de supprimer un tarif spécialement bas ou si un consommateur qui paie

L'ouvrage de Bohi et Toman, *The Economics of Energy Security*, contient peut-être l'analyse économique la plus poussée de la question de la sécurité énergétique. Ils appliquent les principes de l'économie du bien-être pour définir la sécurité économique en tant que « perte de bien-être économique susceptible de résulter d'un changement du prix ou de l'offre [note de bas de page] d'énergie. Note de bas de page : les changements dans les conditions de l'offre ne se reflètent pas forcément dans les changements de prix, à cause des rigidités de prix institutionnelles qui sont habituelles dans les secteurs de l'énergie tels que l'électricité, le gaz naturel et, avant 1980, le pétrole » [Bohi and Toman, p. 1]. Bohi et Toman cherchent à déterminer, parmi les arguments en faveur de l'intervention des pouvoirs publics basés sur la sécurité énergétique, ceux qui résistent à un examen économique [*ibid.,* p. 1]. En appliquant un critère de bien-être, ils supposent que seuls des facteurs externes justifient l'intervention de l'État sur les marchés, ce qui les conduit à rechercher les externalités liées à la sécurité énergétique [*ibid.,* p. 2], mais à inclure les effets de l'exercice de la puissance sur le marché en tant qu'externalité [*ibid.,* p. 11]. Ils sélectionnent alors les externalités pour lesquelles une intervention publique bénéfique serait réalisable et rentable [*ibid.,* p. 2]. Ils précisent que leur analyse est spécifique aux États-Unis au moment de la rédaction de leur étude, car les arguments ne seraient pas forcément valables ailleurs et à un autre moment [*ibid.,* p. 2]. Néanmoins, l'intervention des pouvoirs publics sur les marchés du gaz et du pétrole est insidieuse. Elle peut prendre différentes formes : confusion entre la gestion des entreprises gazières et pétrolières et la gouvernance politique dans de nombreux pays, régimes de licences d'exploitation, régimes transitoires, taxes, association de la politique énergétique avec des politiques sans lien apparent telle que l'aide extérieure, et même l'ingérence dans les négociations contractuelles (ou une action militaire). Étant donné que cette intervention publique n'a pas pour objet d'internaliser les externalités, il n'y a pas de raison *a priori* de s'attendre à ce que l'internalisation des externalités améliore le bien-être économique général. Aussi, rechercher des externalités pour justifier l'intervention publique peut être opportun lorsque l'ingérence sur le marché est insidieuse, mais les arguments en faveur du bien-être sur lesquels cette théorie s'appuie ne sont pas fondés lorsque les pouvoirs publics sont déjà fortement impliqués.

La définition comporte donc trois volets potentiels : le risque et l'incertitude de ruptures d'approvisionnement et les hausses de prix (ou pénuries) qui en résultent, le niveau des prix en dehors des périodes de crise, et le sentiment psychologique du caractère risqué des importations.

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un prix supérieur à celui du marché menace de changer de fournisseur. Si la psychologie est aussi importante que la logique économique dans ce contexte, même une menace dont l'examen révèle qu'elle n'est pas crédible pourrait avoir un effet politique.

Encadré 1. Les crises de la sécurité énergétique de 1973 et 2006

Les événements de 1973 ont eu un impact considérable sur la vision de la sécurité énergétique. Cette vision a de nouveau été quelque peu modifiée après les événements du début 2006. Ces épisodes sont analysés succinctement ci-après (la relation des événements de 1973 s'inspire de l'ouvrage de Daniel Yergin intitulé *The Prize*).

« L'embargo arabe sur le pétrole » de 1973 comportait deux volets : une série de réductions de la production et une interdiction totale des ventes, dans un premier temps aux États-Unis et aux Pays-Bas. La production de pétrole par les pays arabes début octobre (avant l'embargo) est de 20.8 mbj (millions de barils par jour) et chute à 15.8 mbj en décembre (point le plus bas). Si l'on tient compte des augmentations de la production dans d'autres régions, l'offre de pétrole dans le « monde libre » a chuté d'environ 4.4 mbj, contre un total de 50.8 mbj en octobre. Cette baisse de 9 % a eu de lourdes conséquences. « Les capacités de réserve des États-Unis étaient l'élément décisif pour garantir la marge de sécurité énergétique du monde occidental, non seulement lors des crises énergétiques des périodes d'après-guerre, mais également pendant la Seconde Guerre mondiale. Et soudainement, cette marge avait disparu. » [Yergin, p. 614] L'effet de ces réductions a été aggravé par l'augmentation récente de la demande de 7.5 % par an, de mauvaises informations sur la quantité de pétrole disponible, et l'incertitude sur les réductions et les embargos futurs. La panique suscitée par la pénurie a attisé la demande et fait grimper les prix. « L'embargo était un acte politique qui a su tirer profit de circonstances économiques…. » [*ibid.*, p. 626]

Des tensions éclatèrent entre les pays, exacerbées par les différences de traitement des pays consommateurs et par leur degré variable de dépendance (avant l'embargo) à l'égard du pétrole provenant du Moyen-Orient. « Alors même que les alliés traditionnels des États-Unis accédèrent aux demandes des pays arabes, les États-Unis tentèrent d'organiser une réponse coordonnée des pays industrialisés. Washington craignait qu'un recours à une solution bilatérale — accords de troc d'État à État — ne se solde par un marché du pétrole beaucoup plus rigide et politisé en permanence. » [Yergin, p. 629] Une conférence a été convoquée en février 1974 « afin d'apaiser les craintes concernant les risques de concurrence pour les approvisionnements, contribuer à ressouder l'alliance et faire en sorte que le pétrole ne devienne pas une pomme de discorde au sein de l'alliance occidentale. » [*ibid.*, p. 629] La décision a été prise de parvenir à un consensus sur les questions énergétiques internationales, de mettre en place un programme de partage en cas d'urgence et de fonder l'Agence internationale de l'énergie. [*ibid.*, p. 630]

En 2005, la Russie/Gazprom couvrait plus d'un quart de la demande de gaz de l'Europe occidentale. Le 1er janvier 2006, à l'issue d'un litige commercial de longue date, Gazprom réduisit fortement les livraisons de gaz à l'Ukraine. Cette décision s'est traduite par une baisse des livraisons vers de nombreux pays d'Europe occidentale pendant environ 1,5 jour. Dans les pays européens membres de l'OCDE, cette pénurie a été compensée assez facilement du fait de la brièveté de l'interruption. « Le litige et les ruptures d'approvisionnement qui en ont résulté n'ont pas éveillé d'inquiétudes sérieuses concernant la sécurité de l'offre et la dépendance à l'égard du gaz russe dans de nombreux pays d'Europe. Plusieurs mesures ont été envisagées après cette crise, notamment une augmentation des réserves stratégiques de gaz, une diversification du panier énergétique (en misant davantage sur le charbon et sur le nucléaire), une diversification de l'approvisionnement en gaz en recourant à d'autres fournisseurs de gaz acheminé par gazoduc, l'augmentation des capacités de remplacement des hydrocarbures et l'efficacité énergétique. Les discussions ont également porté sur la construction de terminaux de GNL supplémentaires, notamment en Pologne, en Allemagne, aux Pays-Bas et dans l'Adriatique, ou du moins l'accélération des projets existants. » (IEA 2006 pp. 25-26)

2. Les clés de la sécurité énergétique

La diversification est la clé de la sécurité énergétique, quelle que soit sa définition. Winston Churchill, alors premier lord de l'Amirauté, résumait sa vision du maintien de la sécurité des approvisionnements de pétrole, au moment où les navires de guerre britanniques délaissaient le charbon gallois sûr au profit du pétrole persan incertain : « la sécurité et la certitude reposent sur la diversité, rien que sur la diversité ».

Plus récemment, l'AIE estimait :

> « La réduction de la dépendance à l'égard du pétrole et du gaz par la diversification des combustibles et de leurs origines géographiques et une utilisation plus efficace de l'énergie doit être un élément central des politiques à long terme visant à renforcer la sécurité énergétique… Ce n'est pas la dépendance mesurée à l'égard d'un type de combustible qui compte, mais l'existence de sources d'énergie alternatives et la possibilité de substitution en cas de crise. À cet égard, les perspectives se dégradent pour les consommateurs. » (AIE 2005, pp. 267-8)

L'investissement dans le développement des sources d'énergie et l'accroissement des capacités de transport est le deuxième pilier de la sécurité énergétique. Les pouvoirs publics jouent un rôle à cet égard, directement par le biais des compagnies pétrolières nationales (dans certains pays), et indirectement par l'établissement d'un cadre propice à l'investissement privé. Les objectifs de la politique de la concurrence de mettre en commun les infrastructures, d'effectuer une séparation verticale entre les monopoles naturels et les activités potentiellement concurrentielles, et plus généralement de réduire les barrières à l'entrée sur ces marchés sont particulièrement pertinents. Mais d'autres domaines d'action politique, tels que la réglementation économique, l'imposition et plus généralement le « climat d'investissement » sont aussi importants.

Il n'est pas sûr que les investissements requis se matérialiseront. L'AIE indique qu'il « est loin d'être certain que tous les investissements nécessaires [pour renforcer les capacités d'approvisionnement en gaz] *au-delà de 2010* auront bien lieu. » Elle cite les politiques environnementales et le refus d'accueillir de nouvelles infrastructures sur son sol[2], le faible nombre de pays susceptibles d'accroître leurs capacités, les investissements considérables que la Russie doit effectuer ne serait-ce que pour maintenir ses niveaux de production, et l'inquiétude que les exportateurs de pétrole ne s'entendent pour limiter les augmentations de capacités afin de maintenir des prix élevés [AIE 2006, pp. 121-123]. Soulignant que les liens de causalité entre investissement et sécurité peuvent se manifester dans les deux sens et se référant à la production et au transport de gaz de la Russie vers l'Europe, la CE fait remarquer que la sécurité et la prévisibilité, tant sur les versants de l'offre que de la demande, favoriseraient les investissements à long terme dans de nouvelles capacités. [CE 2006 2.6(ii)(a)][3]

Dans le Livre vert sur l'énergie 2006 de la Commission européenne, l'objectif de sécurité d'approvisionnement passe par la nécessité de « faire face à la dépendance accrue de l'UE envers les importations, au moyen i) d'une approche intégrée consistant à réduire la demande, à rééquilibrer la combinaison énergétique de l'UE en accroissant le recours aux énergies autochtones et renouvelables compétitives, et à diversifier les sources et les voies d'approvisionnement extérieures ; ii) de la création d'un cadre qui stimulera les investissements appropriés pour satisfaire la demande croissante d'énergie ; iii) d'un renforcement des moyens dont dispose l'UE pour faire face aux situations d'urgence ; iv) d'une amélioration des conditions pour les entreprises européennes cherchant un accès aux ressources mondiales ; v) de la garantie d'un accès à l'énergie pour tous les citoyens et toutes les entreprises. » [CE 2006, partie 3]

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2 La construction de terminaux de regazéification offshore constitue une réponse technologique à ce refus d'accueillir de nouvelles infrastructures sur son sol. De par leur construction en mer loin de la vue, ils ne semblent pas rencontrer la même résistance. Voir http://www.excelerateenergy.com/energy_bridge.php.

3 L'AIE exprime une préoccupation similaire. « Les prévisions actuelles de l'AIE laissent penser que Gazprom pourrait se trouver progressivement dans l'impossibilité d'honorer ses contrats d'approvisionnement existants au cours des années à venir si elle n'investit pas rapidement dans de nouveaux gisements [en excluant les exportations russes vers l'Asie]. » [AIE 2006b, pp. 32-33]

Les ouvrages spécialisés proposent quatre solutions pour renforcer la sécurité énergétique :

- accroître la diversification des approvisionnements ;
- augmenter la résilience, notamment par le développement des capacités de réserve et des stocks d'urgence ;
- reconnaître l'interdépendance, à savoir qu'il existe un seul marché du pétrole et que les quelques marchés régionaux du gaz peuvent fusionner en un seul ;
- assurer un échange d'information en temps voulu, afin que le stockage n'aggrave pas les pénuries.

Ces solutions sont examinées tour à tour.

2.1 Accroître la diversité des approvisionnements

La diversité de l'approvisionnement désigne à la fois la diversité des formes de combustibles primaires et celle des sources de chaque combustible. Compte tenu de l'importance du transport, elle recouvre également la diversité des infrastructures de transport.

La **diversité des formes de combustibles primaires**, compte tenu de l'orientation de ce rapport sur le gaz naturel, implique d'accroître l'utilisation des combustibles dont les risques ne sont pas étroitement corrélés à ceux du gaz, et de faire de ces autres combustibles des substituts, par exemple en investissant dans de nouvelles capacités de remplacement.

La production d'électricité est un autre instrument de diversification. L'électricité produite à partir du charbon, de l'énergie nucléaire, du vent ou de l'énergie hydraulique constitue généralement un substitut parfait à l'électricité produite à partir du gaz[4]. Toutefois, l'augmentation de la part de la production de gaz dans le portefeuille global réduit les possibilités de recourir à des combustibles alternatifs en cas de rupture de l'approvisionnement en gaz.

Une meilleure intégration des systèmes d'électricité, par exemple à l'échelle européenne, contribue à diversifier les formes de combustibles. Si par exemple les livraisons de gaz aux générateurs d'un pays sont interrompues, d'autres générateurs alimentés à l'uranium ou au charbon ou d'autres fournisseurs de gaz peuvent prendre la relève et remplacer au moins une partie de l'électricité manquante, à condition que les systèmes de transmission se prêtent à ces transferts.

Un tel mécanisme de garantie nécessite, pour fonctionner, une conception adéquate, des capacités suffisantes et une utilisation correcte des systèmes de transmission, et des capacités de production de réserve qui ne soient pas alimentées au gaz naturel. Ces investissements doivent être plus rentables que ceux d'actions alternatives. Les hausses de prix augmentent le rendement des investissements ; limiter ces hausses les réduit, mais peut soulager les consommateurs sur le court terme. De même, le rendement pour les producteurs en place/propriétaires des systèmes de transmission peut être plus élevé s'ils conservent leur puissance sur le marché, ce qui passe notamment par une conception des systèmes et des capacités de production qui limitent la distribution d'électricité aux zones de service traditionnelles, plutôt que d'investir dans des réseaux de transmission qui augmentent les flux transfrontaliers. La question se pose de savoir comment l'environnement réglementaire peut encourager les investissements adéquats. Récemment,

[4] Ces sources énergétiques présentent des différences au plan de leurs coûts marginaux et de leur capacité à être employées pour équilibrer le système, et ne sont donc pas toujours des substituts parfaits.

la DG Concurrence de la Commission européenne s'est intéressée à ce problème dans son enquête sur les secteurs européens du gaz et de l'électricité, et constate que les investissements dans les réseaux de transmission d'électricité transfrontaliers sont insuffisants. Les questions pertinentes incluent : les hausses de prix peuvent-elles suffire à fournir l'impulsion nécessaire aux investissements, même dans les pays où de tels investissements éroderaient la puissance sur le marché des entreprises en place ? Une intervention réglementaire est-elle nécessaire, en rendant certains investissements obligatoires — par les entreprises en place ou par d'autres opérateurs commerciaux — et en facturant aux usagers des droits qui couvriraient les coûts ?

La **diversité des sources** de gaz est nécessairement liée aux infrastructures de transport de gaz. Par exemple, le gaz provenant de plusieurs sources acheminé par le même gazoduc est soumis à des risques corrélés associés au transport. Il en va de même du gaz livré par le biais du même terminal de regazéification du GNL ou stocké dans le même réservoir.

Dans son examen de la sécurité de l'approvisionnement en gaz et en électricité, le DIT constate que les acheteurs commerciaux de gaz disposent des incitations nécessaires pour réduire les risques de rupture de l'approvisionnement. « L'achat de gaz à l'étranger est une voie à explorer par les participants au marché. Les opérateurs commerciaux ont tout intérêt à procéder à leur propre évaluation des mérites des approvisionnements d'autres pays, garantissant ainsi la diversité des sources de gaz, des voies d'approvisionnement et des points d'entrée afin de réduire les risques engendrés par une rupture d'approvisionnement d'une source. » [DTI 2006, para. 4.10]

On suppose souvent, de façon implicite, que les sources nationales sont plus sûres que celles étrangères. Néanmoins, certains observateurs bien informés pensent que ce n'est pas le cas. Un examen des incidents impliquant la sécurité d'approvisionnement en gaz en Europe depuis 1980 conclut que les rares incidents qui se sont produits ont trois principales causes possibles : source, transit et infrastructures. « On trouvera difficilement un exemple d'incident dans l'histoire impliquant une instabilité politique qui ait empêché la livraison de gaz en Europe. » « Aucun fait concret ne permet de conclure qu'un pays très dépendant des importations de gaz est nécessairement plus vulnérable, en d'autres termes, plus exposé aux ruptures d'approvisionnement, qu'un pays autosuffisant. » [Stern 2006, p. 18][5]

Différentes stratégies peuvent être envisagées pour diversifier les sources et les infrastructures :

- La construction de capacités de stockage à proximité des usagers peut fournir certaines garanties contre les risques de perturbations à court terme dans la production et le transport sur de longues distances. Néanmoins, les réserves de gaz coûtent cher, et l'obtention de licences est un processus

[5] Le niveau des importations n'a pas d'effet sur les hausses de prix ou sur les niveaux des prix. Les échanges internationaux transmettent les hausses et les niveaux de prix, quelle que soit la fraction de la demande couverte par des importations. Si les prix nationaux et étrangers sont différents, une fois pris en compte les taxes et les coûts de transport, la sélection s'opérerait rapidement. Les contingents d'importation et l'autarcie n'isolent pas un marché national, mais ne font que transformer les hausses de prix en pénuries et en évasion réglementaire. Ainsi, la diminution de la dépendance à l'égard des importations ne réduit pas l'exposition des pays importateurs aux chocs de prix ou à des prix internationaux élevés.

Énergie « verte » et sécurité énergétique sont souvent confondues dans les discussions politiques. Les sources d'énergie « verte » coïncident souvent avec les sources d'énergie nationales dans de nombreux pays, surtout dans ceux dépourvus de ressources naturelles. L'enquête sur les secteurs européens du gaz et de l'électricité constate que la sécurité de l'approvisionnement et la durabilité [environnementale] sont complémentaires, parallèlement à la compétitivité. Toutefois, dans un souci de clarté de la discussion, il convient de distinguer sécurité et durabilité environnementale.

difficile et qui prend du temps. La plupart des réserves de gaz existantes atténuent les variations saisonnières de la demande et ne sont pas des réserves stratégiques.

- Le développement des interconnexions des capacités entre les usagers pourrait contribuer à diversifier les sources, mais pour que cette option soit valable, il faut que les consommateurs aient recours à des sources différentes ne présentant pas les mêmes difficultés d'approvisionnement, et ces sources doivent posséder des capacités de production de réserve pendant la période de temps concernée.

- La construction de nouveaux gazoducs et terminaux de regazéification du GNL peut également accroître la diversité, mais comme la stratégie basée sur le développement des interconnexions, cela présuppose l'existence de capacités de production et de capacités de liquéfaction du GNL de réserve, à même d'augmenter la production pendant la période critique.

- L'exploitation de nouveaux gisements de gaz et l'acheminement du gaz ainsi produit jusqu'aux consommateurs par des gazoducs ou sous forme de GNL, notamment là où ils sont soumis à des risques non corrélés aux risques auxquels d'autres gisements et gazoducs sont exposés.

Le Livre vert 2006 de la Commission reprend un grand nombre de ces aspects. Dans un paragraphe de ce document consacré à la diversification de l'approvisionnement énergétique, la Commission suggère qu'une analyse stratégique de la politique énergétique de l'UE

> « pourrait proposer des priorités clairement définies pour la modernisation et la construction des nouvelles infrastructures nécessaires pour la sécurité de l'approvisionnement de l'UE en énergie, notamment de nouveaux oléoducs, gazoducs et terminaux de gaz naturel liquéfié (GNL), ainsi que l'application des dispositions en matière de transit et d'accès des tiers aux oléoducs existants. À titre d'exemple, on peut citer l'approvisionnement par gazoduc indépendant de la région de la mer Caspienne, d'Afrique du Nord et du Moyen-Orient vers le coeur de l'UE, de nouveaux terminaux GNL desservant des marchés qui se caractérisent actuellement par un manque de concurrence entre fournisseurs de gaz, et les oléoducs d'Europe centrale destinés à faciliter l'approvisionnement de l'UE en pétrole de la mer Caspienne en passant par l'Ukraine, la Roumanie et la Bulgarie. En outre, l'analyse pourrait indiquer les mesures politiques, financières et réglementaires concrètes nécessaires pour soutenir activement l'exécution de tels projets par les entreprises. La nouvelle stratégie UE-Afrique, dans laquelle les interconnexions des systèmes énergétiques sont considérées comme un aspect prioritaire, pourrait également aider l'Europe à diversifier ses sources d'approvisionnement en pétrole et en gaz. » [CE 2006, 2.4 (i)]

Au niveau mondial, le GNL représente une solution pour augmenter la diversité des sources et, du point de vue des producteurs, celle des recettes. À l'évidence, le GNL autorise un plus grand éloignement des consommateurs que ne le permettent les gazoducs, bien qu'il doive lui aussi avoir accès à la mer, ce qui passe éventuellement par un gazoduc. Toutefois, le marché du GNL est limité comparé à celui du gaz acheminé par gazoduc. De même, le marché du GNL est illiquide (voir ci-dessous). Cela suggère que le rôle du GNL dans la diversification des approvisionnements est restreint, du moins sur le court terme.

2.2 Résilience accrue

La deuxième réponse type pour renforcer la sécurité énergétique est d'améliorer la résilience, notamment par la constitution de capacités de réserve, de capacités pour faire face à une hausse soudaine de la demande et de stocks d'urgence. Mais accroître la réactivité des prix aux conditions du marché et la réactivité aux prix de la demande constitue également un moyen d'améliorer la résilience. En effet, les marchés concurrentiels ont naturellement tendance à gagner en résilience puisqu'ils incitent d'autres

producteurs à augmenter leur production et les consommateurs à réduire leur consommation en cas de pénurie. Néanmoins, l'exigence réglementaire d'un certain degré de résilience et d'obligations de service universelles doit être révisée lorsqu'un secteur passe d'une situation de monopole à celle de concurrence.

Les capacités de réserve et les stocks d'urgence — ou leur absence — jouent un rôle important sur le marché du pétrole. La relation que Yergin fait de l'embargo arabe sur le pétrole en 1973 souligne que la disparition des capacités de réserve de production de pétrole aux États-Unis était l'une des causes de l'efficacité de cet embargo. Skinner explique que la fiabilité historique des approvisionnements de pétrole du Moyen-Orient dépendait des capacités de réserve en Arabie Saoudite, capacités que ce pays s'emploie activement à restaurer [Skinner 2006, p. 6]. Les stocks d'urgence de pétrole doivent être conservés par des membres de l'Agence internationale de l'énergie. En vertu de l'Accord de 1974 relatif à un programme international de l'énergie (PIE), les membres doivent « conserver des stocks de pétrole équivalents à au moins 90 jours d'importations nettes de pétrole et [s'engager à] débloquer des stocks, restreindre la demande, passer à d'autres combustibles, accroître la production nationale et partager le pétrole disponible, si nécessaire, en cas de rupture grave de l'approvisionnement » [« About the IEA, » sur iea.org]. Les capacités de réserve et les stocks d'urgence sont donc importants pour garantir la sécurité de l'approvisionnement de pétrole. Dans une allocution prononcée devant les ministres des Finances du G20 en 2006, Skinner déclare que « sa recommandation fondamentale aux gouvernements est d'accroître les stocks stratégiques » [Skinner, p. 10].

La perte de résilience subie ces dernières années s'explique en partie par l'augmentation de la demande des économies émergentes chinoise et indienne. Cette hausse de la demande augmente l'utilisation des capacités et les prix, toutes autres choses étant égales par ailleurs.

Mais comme nous l'avons mentionné plus haut, constituer des capacités de réserve de gaz présente de plus grandes difficultés. Il n'est pas toujours possible de moduler la production en fonction de la demande. Le stockage du gaz coûte cher et se heurte parfois aux conditions géologiques locales. Enfin, des contraintes techniques limitent la vitesse à laquelle le gaz peut être extrait d'un site de stockage ; même si la quantité de gaz stockée est suffisante, son rythme d'extraction est inférieur au taux d'utilisation normal.

Concernant le gaz, la Commission européenne se demande « si les stocks de gaz de l'Europe permettraient de faire face à des ruptures d'approvisionnement à brève échéance » [CE 2006, 2.2(ii)]. Les États membres de l'Union européenne n'ont pas tous le même intérêt à conserver des stocks stratégiques de gaz, et de nombreux État dotés de ces stocks sont « réticents à en faire bénéficier d'autres États membres en période d'urgence. L'UE estime que cette question de 'solidarité' est déterminante pour la sécurité énergétique globale de l'ensemble des États membres, et insiste pour que les stocks disponibles soient partagés au sein de l'Union en cas de besoin. Toute stratégie de sécurité énergétique future menée par l'UE devrait inclure un niveau minimum de stocks de pétrole et de gaz afin de faire face à n'importe quelle situation de rupture d'approvisionnement, un plan prévoyant les contributions des États membres aux besoins en stockage, ainsi qu'un système de prélèvement et de distribution d'urgence. » [CRS 2006, p. 26]

Encadré 3. Le rôle des capacités de réserve : mise en garde

L'uranium donne un exemple récent illustrant comment l'absence de marge de sécurité augmente la variabilité des prix. En 2005, la demande mondiale a dépassé l'offre mondiale (180 m livres contre 108 m livres), et la demande continue de croître. Les prix ont plus que triplé entre fin 2003 et novembre 2006. Le 23 octobre 2006, une nouvelle mine, celle de Cigar Lake, qui devait couvrir environ 15 % de l'offre minière mondiale, connaît des difficultés techniques qui reportent son ouverture. Réagissant à la nouvelle, les prix au comptant atteignent les plus hauts niveaux jamais enregistrés au cours des 38 années d'existence de ce marché. « Les retards d'approvisionnement ont déclenché une véritable tempête. » [*Financial Times*, "Uranium prices set for further increases," 6 novembre 2006, p. 15]

L'augmentation des transactions sur le marché secondaire et des capacités correspondantes peut aussi accroître la résilience face à certaines ruptures d'approvisionnement. Lorsque ces transactions et les capacités sous-jacentes existent, telles que des infrastructures de transport de réserve[6] et un échange de ces infrastructures, on peut pallier les ruptures locales en s'approvisionnant dans des régions voisines. En principe, une rupture de l'approvisionnement local entraînerait une hausse des prix ; les négociants s'empresseraient d'acheter du gaz là où il est moins cher et d'organiser le transport du gaz là où il se vend le plus cher. Néanmoins, les opérateurs en place sont parfois peu incités à développer les transactions secondaires et les capacités de transport de gaz, surtout celles qui facilitent l'approvisionnement par leurs concurrents.

La résilience serait également améliorée si les marchés du GNL étaient plus liquides et donc mieux à même de réagir aux ruptures d'approvisionnement locales. Mais le GNL est un marché illiquide. Le GNL est principalement vendu selon des accords de prise ferme sans possibilités de dédit conclus sur le long terme. Les rares transactions « au comptant » sont très souvent du fret détourné d'un commun accord entre l'acheteur et le vendeur contractuels qui se partagent le bénéfice dégagé. La part de ces transactions « au comptant » devrait atteindre 20 % dans les années à venir [AIE 2006c, pp. 55, 57]. Cela montre que le GNL n'offre pas la même résilience que, par exemple, les transactions sur le marché du pétrole. Traditionnellement, les accords de prise ferme sans possibilités de dédit sont conclus avant même d'entamer la construction des infrastructures de GNL. Cela pose la question de savoir si les innovations financières et le développement des marchés des transactions à court terme et des véritables transactions au comptant pourraient accroître la liquidité des marchés de GNL.

Si l'on en vient à la demande, l'augmentation de la réactivité de la demande aux prix améliorerait la résilience des marchés du gaz. L'explication est la suivante : en cas de rupture d'approvisionnement, exclure les usagers qui accordent le moins de valeur au gaz est la manière la moins coûteuse de gérer la pénurie. Il existe deux méthodes pour identifier ces consommateurs à faible valeur. Premièrement, en élaborant des contrats qui prévoient l'exclusion éventuelle de ces usagers dans les périodes de forte demande. Les usagers qui peuvent se permettre de ne plus être approvisionnés opteront pour ces contrats. Deuxièmement, en augmentant le prix du gaz facturé aux usagers. Les consommateurs à faible valeur réduiront ou supprimeront leur demande.

De nombreux marchés du gaz n'autorisent pas les prix à fluctuer librement pour équilibrer l'offre et la demande. Au contraire, certains marchés sont contrôlés par un organisme de réglementation indépendant qui fixe les prix afin d'empêcher l'exercice d'une position de force sur le marché. Un ajustement trop lent des prix autorisés risque d'empêcher les prix de refléter une rupture d'approvisionnement. Les responsables politiques peuvent être réticents à répercuter les hausses de prix sur les consommateurs. Sur d'autres marchés, les fournisseurs de gaz ont pour habitude de fixer les prix en référence au prix moyen du pétrole sur une période de quelques mois. Même si ce type d'indexation des prix sur le combustible de substitution le plus proche peut être un bon moyen d'inciter les clients à changer de combustible sur le long terme, il ne permet pas de répercuter les pénuries sur les consommateurs à plus faible valeur sur le court terme (pour que les pénuries puissent être répercutées, il doit exister un marché secondaire libéralisé et des infrastructures de transport adéquates, et les contrats doivent permettre les transactions secondaires).

La sensibilité de la demande aux prix affecte d'autres consommateurs. Si certains consommateurs sont protégés des pénuries d'approvisionnement grâce à des prix constants, d'autres consommateurs subissent des hausses de prix plus massives que si ces hausses étaient répercutées sur l'ensemble des consommateurs.

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6 Les gazoducs sont souvent conçus pour l'acheminement du gaz dans un seul sens. Les gazoducs bidirectionnels ont généralement des capacités différentes dans les deux sens.

La sensibilité de la demande aux prix est également accrue lorsqu'il est plus facile de substituer d'autres combustibles ou d'autres fournisseurs du même combustible.

Les obligations de service universelles incluent souvent la responsabilité de garantir un approvisionnement fiable. Les monopoles légaux sont donc tenus d'investir dans des capacités superflues en situation normale, mais qui seraient disponibles en cas d'urgence. Les autorités de réglementation veillent à ce que les recettes que ces monopoles perçoivent des usagers les indemnisent de ces investissements. Mais si c'est la concurrence et non la réglementation qui détermine les prix et si les fournisseurs sont en quête de profits, les fournisseurs qui n'investissent pas dans des capacités de réserve peuvent pratiquer des prix inférieurs et réaliser des profits majorés. En outre, il peut être difficile pour une autorité de réglementation d'attribuer la responsabilité d'une pénurie de l'offre à un fournisseur en particulier. C'est pourquoi, dans une situation de concurrence, les autorités réglementaires doivent concevoir un moyen explicite de rémunérer les capacités de réserve en cas d'urgence et imposer l'obligation explicite de fournir ces capacités. Cette exigence réglementaire traditionnelle d'un certain degré de résilience doit être révisée lorsqu'un secteur passe d'une situation de monopole légal à une situation de concurrence.

Si la réglementation prévoit des investissements visant à accroître la sécurité d'approvisionnement indépendamment des incitations du marché, la question se pose de savoir combien acheter et à quel prix. Le concept de la valeur de la charge perdue propre au secteur de l'électricité peut être utile pour répondre à cette question. L'idée est que les utilisateurs valorisent à un certain prix l'approvisionnement continu en électricité. Certains investissements visant à accroître suffisamment la fiabilité en deçà d'un certain coût doivent être engagés ; d'autres non. Il est difficile d'estimer la valeur de la charge perdue. On a souvent recours aux enquêtes auprès des usagers pour parvenir à une estimation. Une de ces enquêtes demande aux usagers quelles mesures d'atténuation ils prendraient pour éviter les ruptures d'approvisionnement. Le coût de l'atténuation est supposé être équivalent au coût de l'interruption. Un autre type d'enquête soumet aux usagers une liste de prix et de niveaux de sécurité et leur demande leur préférence. Pour les clients industriels ou commerciaux, observer le coût des investissements effectivement engagés pour améliorer la sécurité, par exemple le coût d'installation de générateurs d'urgence pour l'électricité, peut être révélateur. Tous les investissements d'amélioration de la sécurité énergétique ne se justifient pas en termes économiques, et déterminer la valeur d'une amélioration donnée contribue à identifier les investissements rentables.

Le calendrier des investissements dans les capacités de production et dans les infrastructures peut entraîner des problèmes de capacité. Les investissements dans les infrastructures énergétiques se font par à-coups. Si les augmentations de la demande sont relativement linéaires, cela implique qu'il y a des périodes où les capacités de réserve sont faibles et d'autres périodes où elles sont abondantes. Cela augmente la volatilité des prix. Lorsque les décisions d'investissement sont prises sur une base commerciale et lorsque les règles sont suffisamment prévisibles sur la durée de vie économique d'un investissement, l'investissement sera effectué à condition que les prix futurs prévus rendent le projet rentable. Mais les prix temporaires nécessaires pour induire les investissements ne conviennent pas nécessairement à tout le monde. D'un autre côté, le projet peut être ralenti si moins d'investissement signifie une plus grande emprise sur le marché, par exemple lorsque plus d'investissement permettrait aux concurrents de mieux approvisionner les clients habituels d'une entreprise, lorsqu'il règne une plus grande incertitude sur les règles futures, ou si l'entreprise poursuit des objectifs non commerciaux et est donc moins réactive aux signaux de prix.

2.3 Reconnaître l'interdépendance

Chaque région compte un seul marché du gaz, et ces marchés commencent à s'influencer les uns les autres. Cela implique qu'une rupture dans un pays, au plan de la production ou de la consommation, a des

répercussions sur d'autres participants sur le marché, qu'ils soient ou non partenaires du participant victime de l'interruption.

Le commerce international de produits transmet la volatilité ou le niveau des prix de l'étranger vers le marché national si ce marché n'est pas soumis à une régulation économique. Le « prix mondial » est le coût d'opportunité pour les ventes nationales de pétrole, de gaz ou d'électricité produits dans le pays (autrement dit, un producteur national cherchant à optimiser ses bénéfices et non soumis à une réglementation des prix renoncerait à obtenir le prix mondial sur la dernière unité d'un produit s'il a vendu ce produit sur son territoire national). Si le prix mondial augmente, les producteurs nationaux relèveront les prix qu'ils facturent aux acheteurs nationaux, sauf si la réglementation les contraint à agir autrement.

L'AIE donne un exemple de transmission internationale des prix. Comme les marchés du GNL atlantiques (Amérique du Nord et Europe) et pacifiques (Japon et Corée) devraient être approvisionnés *en partie* par les mêmes sources au Moyen-Orient, les prix sur ces marchés devraient converger [AIE 2006c].

Lorsque le marché national est soumis à des plafonnements de prix obligatoires, la volatilité ou le niveau élevé des prix se manifesteront de différentes manières selon les possibilités dont disposent les fournisseurs nationaux. Il se peut que l'offre de gaz par les canaux légaux soit nulle ou très faible. Si l'approvisionnement à des prix inférieurs à ceux du marché peut être imposé, une autre possibilité est que l'investissement visant à assurer l'offre nationale en pâtisse, ce qui génère des goulots d'étrangement dans le système de transport plutôt que dans l'approvisionnement. Le marché mondial ou régional peut être affecté de deux manières. Premièrement, les consommateurs qui ne sont pas soumis aux prix du marché consommeront plus, ce qui déplacera la demande mondiale et augmentera les prix mondiaux. Deuxièmement, si les infrastructures de transport sont partagées entre les clients soumis aux prix du marché et les clients qui bénéficient de prix inférieurs à ceux du marché, les capacités seront moindres qu'en l'absence de partage (la décision d'accroître les capacités dépend des bénéfices escomptés. Si l'augmentation des capacités implique une augmentation des ventes aux consommateurs non rentables, les avantages d'une expansion seront réduits).

En Europe, l'interdépendance des marchés de l'énergie est reconnue. Il est notamment admis que l'utilisation accrue du gaz naturel par un pays pour produire de l'électricité, associée à une interconnexion plus poussée des réseaux d'électricité, augmente l'exposition des consommateurs du deuxième pays aux ruptures d'approvisionnement de gaz. De la même façon, l'utilisation accrue par un pays de l'énergie nucléaire associée à une interconnexion plus poussée des réseaux d'électricité réduit l'exposition des consommateurs du deuxième pays aux ruptures d'approvisionnement de gaz [CE 2006, 2.3].

En conclusion, les politiques menées sur un marché ont une incidence sur d'autres marchés (convergence). Lorsque l'effet est suffisamment important, la coordination des politiques facilitera la réalisation des objectifs. Depuis plus d'un quart de siècle, l'AIE s'emploie à coordonner l'action des gouvernements et des organismes de réglementation sur les questions énergétiques transfrontalières. L'enquête sur les secteurs européens du gaz et de l'électricité réalisée par la CE constate que les marchés de l'électricité et du gaz continuent de souffrir d'un « déficit réglementaire, en particulier pour les questions transfrontalières » et préconise « une amélioration de la coordination entre régulateurs nationaux de l'énergie, avec un renforcement du rôle de la surveillance de la Communauté pour défendre les intérêts du marché intérieur. » [CE 2007, p. 14, 15]

2.4 Échange d'informations en temps voulu

L'information influe sur l'efficacité des marchés. Les consommateurs qui ont la certitude de pouvoir acheter demain n'ont pas besoin de stocker aujourd'hui. L'information sur la situation future du marché peut aider les investisseurs potentiels à prendre des décisions plus rationnelles économiquement parlant.

Néanmoins, l'information peut également aider les concurrents à s'accorder ou même à constituer une entente anticoncurrentielle.

Pendant l'embargo sur le pétrole de 1973, les pénuries ont été exacerbées par des achats de panique : les consommateurs de pétrole ont décidé, sans concertation, d'acheter des quantités de pétrole supérieures à leurs besoins immédiats par crainte qu'il n'y ait plus de pétrole plus tard. La fourniture d'informations exactes et en temps voulu à l'ensemble du marché pourrait permettre de lutter contre de tels comportements.

L'Agence internationale de l'énergie constitue un forum d'échange régulier de renseignements entre les gouvernements des pays consommateurs d'énergie, permettant d'élaborer des politiques énergétiques coordonnées et des réponses communes en cas de crise énergétique. Face à une situation d'urgence, l'AIE est une plate-forme d'échange d'information en temps réel. Les gouvernements nationaux publient également des informations sur la production, le commerce et la consommation d'énergie.

Les entreprises actives sur les marchés de l'énergie peuvent probablement procéder à des ajustements plus rapides et plus utiles en cas de rupture d'approvisionnement si elles échangent des renseignements. En dehors des périodes de crise, elles peuvent réaliser des investissements plus rentables dès lors qu'elles disposent d'informations de meilleure qualité pour alimenter leurs systèmes de modélisation des conditions futures sur le marché.

Toutefois, les autorités de la concurrence peuvent s'alarmer du risque que l'information ne soit utilisée pour constituer des ententes ou commettre d'autres infractions à la législation antitrust. Prenant acte de l'importance de la coordination en cas de crise énergétique, une exemption limitée à la législation antitrust des États-Unis a été accordée en vertu de la disposition 42 USC 6271, et seq. qui autorise les participants du secteur de l'énergie à coordonner volontairement leurs activités, sous le contrôle, avec la participation et sous la surveillance des agences antitrust, dans le cadre de la réponse américaine à une crise énergétique internationale. Toutefois, le gouvernement américain peut interrompre les transferts d'informations à l'AIE s'ils sont susceptibles d'entraîner des effets anticoncurrentiels ou des violations des lois antitrust.

En conclusion de cette section, la diversité de l'offre et des investissements suffisants sont les clés de la sécurité énergétique. La diversité englobe non seulement l'existence de sources de remplacement, mais également les moyens de transport nécessaires. L'investissement assure les conditions de la résilience, à savoir des capacités de réserve, des capacités en cas de hausse soudaine de la demande et des stocks d'urgence. L'existence de transactions secondaires peut inciter à construire des capacités de réserve supplémentaires, et offrir la liquidité permettant de réagir aux ruptures locales d'approvisionnement. Les deux autres réponses types consistent à reconnaître l'interdépendance et à garantir un échange ponctuel d'informations.

3. L'application de la politique de la concurrence aux marchés de l'énergie contribue-t-elle à la sécurité énergétique ?

La politique de la concurrence peut exercer une influence sur certains aspects des quatre stratégies en matière de sécurité énergétique : diversité, résilience, reconnaissance de l'interdépendance et information. Les principaux outils de la politique de la concurrence sont l'application de la loi sur les fusions, les ententes et les abus de position dominante, ainsi qu'une action de sensibilisation à la nécessité d'une réglementation plus poussée de la concurrence.

Un observateur éminent estime que la concurrence sur un marché géographiquement étendu permettra d'assurer la sécurité énergétique.

> « Ce n'est pas un défi qui peut être relevé avec succès par 27 micromarchés indépendants. Il doit être pris en charge par des entreprises européennes suffisamment puissantes pour négocier avec de grands fournisseurs et qui doivent parler d'une seule voix. L'Europe est le deuxième consommateur d'énergie au monde ; les avantages de négocier d'une seule voix sont évidents.
>
> « L'échelle est importante pour garantir la sécurité énergétique future, mais la diversité des approvisionnements l'est tout autant.
> …..
> « Il est également évident que la législation existante n'a pas réussi à créer un marché concurrentiel… La législation en vigueur a permis à de nombreuses entreprises en place de conserver leur position dominante, souvent justifiée en invoquant la nécessité d'assurer la sécurité de l'approvisionnement. C'est une vision myope et butée. La concurrence et la sécurité des approvisionnements ne s'excluent pas mutuellement. Seule une pleine concurrence sur un marché unifié sera à même de garantir l'efficience et les investissements nécessaires pour assurer une offre énergétique sûre, durable et abordable. » [Conti 2006]

L'enquête sur les secteurs européens du gaz et de l'électricité réalisée par la Commission européenne va dans le même sens : « la création d'un marché intérieur concurrentiel permettra aux entreprises énergétiques de l'Union d'exercer leurs activités sur un marché plus vaste, et donc de mieux contribuer à la sécurité de l'approvisionnement. » [CE 2007, p. 5]

3.1 Fusions

Cette section examine deux types d'arguments en faveur des fusions horizontales. Le premier est qu'elles peuvent accroître la diversité de l'approvisionnement, et le second qu'elles peuvent renforcer le pouvoir de négociation face à un fournisseur en situation de monopole. Les fusions verticales sont également abordées, notamment lorsque les activités potentiellement concurrentielles sont intégrées verticalement à des infrastructures essentielles, et lorsque l'accès non discriminatoire à ces infrastructures n'est pas garanti.

3.1.1 Fusions horizontales

Les fusions entre intermédiaires pourraient accroître la diversité de l'approvisionnement dans certaines circonstances. Les intermédiaires, toujours liés par leurs contrats d'approvisionnement à longue échéance, ne changeront généralement pas de fournisseur. Il n'y aura pas d'effet sur la diversité à court ou moyen terme. Mais à plus longue échéance, une fusion peut générer des économies d'échelle suffisantes pour qu'une nouvelle source d'approvisionnement soit possible, par exemple en concluant de nouveaux contrats avec d'autres producteurs ou en investissant dans la construction de gazoducs ou d'installations de GNL. Néanmoins, une évaluation type des fusions tiendra uniquement compte des efficiences spécifiques à une fusion. Par conséquent, si les deux parties auraient pu constituer une coentreprise en vue d'un tel approvisionnement sans réaliser une fusion pleine et entière, elles ne seraient pas prises en compte dans l'examen. La deuxième question consiste à savoir si réduire le nombre d'équipes dirigeantes de deux à une suite à une fusion modifierait la stratégie d'entreprise de telle sorte que la diversité des sources d'approvisionnement s'en trouverait accrue ou réduite. La réponse est ambiguë.

On prétend parfois que les fusions entre intermédiaires renforcent leur « pouvoir de négociation » face aux producteurs de gaz. Deux remarques peuvent être formulées à cet égard.

En premier lieu, la demande des intermédiaires dans le secteur du gaz est dérivée de la demande des consommateurs des régions où ils revendent du gaz. En Europe, « les sociétés en place [intermédiaires gaziers] continuent de dominer leurs marchés traditionnels, en contrôlant les principales importations de

gaz en amont et/ou la production de gaz » [CE 2006a, p. 4]. La demande d'un intermédiaire gazier est donc la somme de la demande des utilisateurs finaux sur son territoire. Une fusion entre intermédiaires desservant plusieurs territoires a donc pour effet d'additionner la demande des utilisateurs finaux sur ces territoires. D'où pourrait provenir le pouvoir de négociation accru ? La nouvelle entité issue de la fusion fera-t-elle preuve de plus de patience pour négocier une transaction ? Osera-t-elle prendre le risque de faire échouer des négociations ? Aura-t-elle une vision différente de l'environnement dans laquelle elle négocie ? (Ces questions découlent de la théorie économique de la négociation, voir l'encadré 4.)

Il est possible qu'une fusion entre intermédiaires gaziers modifie le modèle de discrimination par les prix. Pour savoir s'il bénéficiera de prix plus attractifs après une fusion, un revendeur doit déterminer s'il sera marginal ou inframarginal dans l'entité résultant de cette fusion. S'il est marginal, mieux vaut pour lui rester une entité autonome et négocier un contrat distinct. Mais l'effet d'une modification du modèle de discrimination par les prix sur l'efficience économique n'est pas prévisible (le modèle économique serait différent et produirait des résultats différents si les revendeurs étaient en concurrence les uns avec les autres en aval).

En second lieu, si les intermédiaires gaziers sont réglementés de telle manière qu'ils répercutent sur les utilisateurs finaux les changements dans leurs coûts du gaz, comment une fusion peut-elle augmenter leurs incitations à devenir des négociateurs plus intransigeants ? Si en revanche une fusion renforce leur efficience et si l'autorité de réglementation exige que ces gains soient répercutés au moins en partie, les consommateurs en seraient les bénéficiaires.

En résumé, la théorie économique de la négociation suggère qu'il n'y a pas de lien direct entre le résultat d'une négociation et la taille.

Encadré 4 : l'économie de la négociation

Les ouvrages économiques consacrés à la négociation parviennent à quelques conclusions définitives. À l'évidence, la valeur de ce que les parties peuvent obtenir si les négociations échouent conditionne l'accord éventuel susceptible d'être atteint. Fondamentalement, les parties négocient la répartition du surplus obtenu par un accord. La solution de négociation de Nash (NBS) issue de la théorie des jeux coopératifs vérifie des axiomes plausibles, mais cette théorie n'explique pas comment les parties parviendraient à cette solution. Différents modèles basés sur la théorie des jeux non coopératifs ont été élaborés (voir par exemple Binmore, Rubenstein et Wolinsky 1986 et Rubinstein, Safra et Thomson 1992). Ils en concluent que, à condition de disposer d'informations exhaustives — chaque partie connaît l'évaluation des autres parties —, les négociateurs impatients ou réfractaires aux risques obtiennent un accord moins avantageux, et les options extérieures — alternatives — peuvent empêcher un accord ou au contraire améliorer l'issue de la négociation pour une partie. Si les négociateurs ignorent l'évaluation des autres parties — les informations étant incomplètes —, le résultat est alors non efficient : les deux parties souhaiteraient développer leurs transactions, mais ne le font pas. Les transformations institutionnelles peuvent améliorer l'efficience (voir Fudenberg et Tirole, chap. 10). Étant donné qu'un négociateur en situation de monopole ou de monopsone serait en mesure de négocier un contrat contraignant afin d'obtenir un résultat plus favorable, les résultats du jeu naïf monopole/monopsone sont jugés irréalistes [Friedman 1989].

3.1.2. Fusions verticales

Les fusions verticales — producteurs d'électricité et fournisseurs de gaz, producteurs de gaz et réseaux de distribution de gaz, réseaux de gaz et distributeurs/fournisseurs locaux de gaz, et réseaux de gaz et centrales de regazéification de GNL — peuvent avoir un effet sur la sécurité énergétique.

Lorsqu'une fusion implique une intégration verticale entre une infrastructure essentielle, telle que des gazoducs, des installations de stockage ou de regazéification, et une activité potentiellement

concurrentielle comme la production ou la distribution, et lorsque l'accès des concurrents à l'infrastructure essentielle est discriminatoire, la diversité peut être réduite car les rivaux non intégrés sont découragés. Prenons le cas d'un rival non intégré potentiel. S'il a besoin d'un accès à l'infrastructure essentielle, un gazoduc par exemple, mais s'attend à se heurter à une discrimination ou à des droits d'accès excessifs, il réalisera moins d'investissements que s'il bénéficiait d'un « accès raisonnable ». Ce rival potentiel peut même être dissuadé de s'implanter sur le marché concerné et renoncer aux investissements. Si ce rival potentiel pourrait produire du gaz, la diversité des sources d'approvisionnement s'en trouve réduite.

Ainsi, certains prétendent que les conditions d'accès imposées par Gazprom en vertu de son monopole sur les gazoducs et sur les exportations de gaz de Russie dissuadent les compagnies pétrolières susceptibles de produire également du gaz (champs de gaz découverts lors des explorations pétrolières) opérant en Russie d'exploiter ce gaz. En fait, elles brûlent le gaz qui dépasse leurs propres besoins sur le site, parce que la solution alternative, qui consisterait à le transporter par les gazoducs de Gazprom jusqu'aux consommateurs, est antiéconomique (voir le paragraphe ci-dessous consacré à l'accès aux infrastructures essentielles).

La Norvège fournit un contre-exemple intéressant, puisque les réseaux de transport sous-marins d'hydrocarbures sont la propriété conjointe des compagnies pétrolières qui exploitent les gisements concernés. Cela garantit des conditions d'accès raisonnables et encourage l'exploration et la production dans ce secteur.

Lorsqu'une fusion implique l'intégration verticale de deux infrastructures essentielles, l'effet dépend des dispositions réglementaires et des gains d'efficience. Les modèles économiques classiques nous apprennent que l'intégration verticale de monopoles successifs non réglementés et cherchant à maximiser leurs bénéfices accroît l'efficience économique, mais ces modèles peuvent être moins pertinents dans la pratique : les gazoducs et les installations de stockage sont de plus en plus réglementés en Europe, et les monopoles successifs établis de longue date auront probablement élaboré des stratégies de prix qui sont plus efficientes que celles énoncées par les modèles économiques classiques. À l'évidence, l'hypothèse de monopole exclut la question de la diversité, mais il se peut que la rationalisation des opérations résultant de la fusion accroisse la résilience.

Une fusion entre un producteur d'électricité et son fournisseur de gaz en amont, outre qu'elle peut être antiéconomique sur les marchés de l'électricité et du gaz, peut également réduire la diversité de l'approvisionnement, car le producteur d'électricité aura tendance à acheter davantage de gaz auprès de sa division en amont plutôt que de mettre les fournisseurs en concurrence.

Ce type de fusion est illustré par un exemple impliquant des entreprises de Detroit aux États-Unis. La *Federal Trade Commission* a examiné une fusion opérée en 1999 entre la seule compagnie d'électricité et l'unique compagnie de gaz opérant dans la même région. Cette fusion réunissait DTE Energy Company (DTE), la compagnie locale de production, transmission et distribution d'électricité, et MCN Energy Group Inc. (MCN), le producteur et distributeur de gaz local, à Detroit et dans les environs. Même si la FTC n'a pas évalué directement les effets sur la sécurité — elle analyse les fusions sous l'angle de la concurrence —, un de ses commentaires porte sur la diversité des approvisionnements. Elle a ainsi constaté que la fusion supprimerait la concurrence pour l'approvisionnement des consommateurs qui ont le choix entre gaz naturel et électricité pour couvrir leurs besoins énergétiques spécifiques[7].

[7] La plainte de la FTC prétendait que cette fusion réduirait la concurrence dans la distribution locale d'électricité et de gaz naturel dans la région où les deux entreprises exerçaient leurs activités, et ce pour trois raisons. Premièrement, le gaz naturel étant le combustible de prédilection pour les nouvelles centrales électriques de la région et comme MCN distribuait du gaz aux clients qui produisent eux-mêmes leur électricité, la fusion supprimerait la concurrence entre les entreprises de distribution d'électricité et celles

Un deuxième exemple, la fusion E.ON/Ruhrgas réalisée en 2002 en Allemagne, illustre l'importance de la définition de la sécurité énergétique, surtout lorsqu'elle fait l'objet d'un arbitrage avec d'autres objectifs politiques tels que la concurrence. Cette fusion a réuni un grand groupe de production/transport/distribution d'électricité et le plus grand fournisseur de gaz naturel en Allemagne. La fusion E.ON/Ruhrgas a reçu une autorisation ministérielle, sous réserve de certains engagements, malgré l'opposition de l'Office fédéral des cartels et l'avis négatif de la Commission des monopoles.

L'autorisation ministérielle a été délivrée pour des motifs de sécurité énergétique et de renforcement de la compétitivité des entreprises allemandes. Ainsi, le ministère de l'Économie et de la Technologie a fait savoir que des investissements étaient nécessaires pour garantir l'approvisionnement de Russie et des républiques d'Asie centrale, et que ces investissements avaient peu de chances de se concrétiser sans la participation massive d'entreprises des pays consommateurs [ministère fédéral de l'Économie et de la Technologie, Allemagne (BMWi) 2002, par. 125]. Le ministère a jugé que la fusion entre E.ON et Ruhrgas augmentait les possibilités d'investir directement dans les gisements de gaz [BMWi 2002, par. 128] et d'acquérir une participation stratégique dans Gazprom, ce qui permettrait à Ruhrgas de siéger au sein de son conseil d'administration, et ainsi d'influencer les décisions relatives aux prix et aux investissements [BMWi 2002, par. 129]. Dans son examen de la compétitivité, le ministère a estimé que la simple augmentation des moyens financiers ne suffisait pas à justifier une autorisation. Seule une compagnie d'énergie serait incitée à procéder aux investissements adéquats dans le secteur de l'énergie [BMWi 2002, par. 112].

La Commission allemande des monopoles écrit, dans son examen biannuel que, « dans l'affaire E.ON/Ruhrgas, le concept de sécurité de l'approvisionnement a été présenté sous l'angle de l'intérêt général, sans aucun lien direct avec l'une des entreprises fusionnées » [Commission des monopoles, Allemagne 2003, par. 80*, traduction anglaise].

Les arguments du ministère sont les suivants : (1) les investissements en amont dans les infrastructures gazières en Russie sont importants pour renforcer la sécurité énergétique en Allemagne ; (2) Gazprom — en tant qu'entité distincte d'autres producteurs de gaz, de l'autorité de réglementation ou du gouvernement — prend les décisions concernant les investissements en amont dans les infrastructures gazières en Russie ; (3) la fusion renforce considérablement la *capacité* de E.ON/Ruhrgas d'influencer les décisions d'investissement en amont de Gazprom ; (4) la fusion E.ON/Ruhrgas est une solution plus efficace pour influencer l'investissement en amont que d'autres moyens, comme l'augmentation de la rentabilité de l'investissement ou du coût de l'absence d'investissement, ou des pénalités plus élevées en cas de non approvisionnement. Compte tenu de la structure de gouvernance et de propriété de Gazprom, dans laquelle les ministres dominent le conseil d'administration et où l'État est majoritaire dans le capital, il n'est pas sûr que les hypothèses 2, 3 et 4 se vérifient. En outre, si la présence de Ruhrgas au sein du conseil lui permet de bénéficier d'un prix de transfert minoré, si Ruhrgas répercute au moins en partie ce prix réduit et si des prix bas en périodes normales sont considérés comme faisant partie de la définition de la sécurité énergétique, alors la fusion permettrait de renforcer la sécurité énergétique pour les clients de Ruhrgas.

Il faut néanmoins souligner que Gazprom a annoncé une stratégie plus large d'intégration verticale. L'entreprise a écrit que, soucieuse de renforcer sa position sur le marché européen du gaz naturel et d'améliorer la fiabilité et la souplesse des approvisionnements de gaz, elle avait l'intention de développer

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de gaz naturel servant à l'autoproduction d'électricité. Deuxièmement, la fusion favoriserait l'augmentation des coûts des concurrents locaux pour la production d'électricité. Troisièmement, elle supprimerait la concurrence pour l'approvisionnement des consommateurs qui ont le choix entre électricité et gaz naturel pour leurs besoins énergétiques spécifiques [voir http://www.ftc.gov/os/2001/03/dteanalysis.htm].

l'utilisation des installations souterraines de stockage du gaz en Europe et d'accroître sa participation dans les entreprises engagées dans la vente de gaz et d'électricité au consommateur final [Gazprom 2005, p. 16].

En résumé, les fusions ne semblent pas promouvoir la diversité des sources d'approvisionnement ou la résilience. Dans la mesure où les marchés concurrentiels favorisent la diversité et la résilience, les fusions anticoncurrentielles seraient préjudiciables à ces volets de la sécurité énergétique.

3.2 Abus de position dominante

L'abus de position dominante, qui, ici, ne fait référence qu'aux pratiques d'exclusion de la part d'une seule entreprise, pourrait également avoir une incidence sur la sécurité énergétique. À cet égard, l'une des principales stratégies mise en œuvre consiste à imposer un accès discriminatoire ou à refuser l'accès à des infrastructures telles que gazoducs, installations de stockage et terminaux de regazéification de GNL. Une entreprise peut également abuser de sa position dominante à travers la conclusion de contrats à long terme, en entravant l'activité des marchés secondaires et à travers le mode de fixation des prix.

3.2.1 Accès aux installations essentielles

Refuser à des concurrents potentiels l'accès à des installations essentielles peut être préjudiciable à la concurrence sur les marchés situés en aval. Cette pratique peut donc être considérée comme un abus de position dominante et, par conséquent, comme contraire au droit de la concurrence. Dans le secteur du gaz, les gazoducs, les installations de stockage et les terminaux de regazéification de GNL ont été qualifiés d'installations essentielles. Toutefois, du fait qu'un accès obligatoire peut avoir un effet dissuasif sur l'investissement, de nombreux régimes réglementaires ont recherché un compromis entre les mesures destinées à favoriser l'investissement et celles visant à promouvoir la concurrence en aval.

Le refus d'accès à des installations essentielles peut entraver la concurrence en aval. Les concurrents en aval potentiels peuvent en effet être dissuadés d'entrer sur un marché s'ils craignent de se voir imposés des prix « élevés » ou d'être victimes de discrimination eu égard à d'autres aspects, comme le moment ou la qualité de l'accès au marché. En outre, même lorsqu'il est possible, l'accès au marché se fait parfois à des conditions telles que les concurrents doivent assumer des coûts plus élevés que l'entreprise rivale verticalement intégrée ou sont dans l'incapacité d'offrir à leur clientèle des services de meilleure qualité. Il s'ensuit que la surveillance de l'accès au marché constitue l'une des missions essentielles des régulateurs de l'énergie.

Mais d'un autre côté, accorder ou rendre obligatoire l'accès à des infrastructures coûteuses peut purement et simplement compromettre leur construction. Les entreprises qui cherchent à maximiser leurs bénéfices peuvent en effet renoncer à construire une infrastructure ou une infrastructure de capacité supérieure si elles ont la perspective d'être, par la suite, contraintes d'autoriser des concurrents à y accéder à un tarif « bas ». Elles peuvent hésiter à s'exposer à un risque d'échec commercial si elles n'ont pas en contrepartie la perspective de réaliser des bénéfices élevés grâce à un monopole prospère. Un régime d'accès prévisible, fixant des tarifs qui tiennent compte des risques, a un moindre effet dissuasif sur ce type d'investissement. La copropriété, qui consiste en ce qu'au moins deux propriétaires se regroupent pour construire l'installation, assumant le risque mais bénéficiant aussi de l'accès, fait partie des autres solutions envisageables (voir les Tables rondes sur les pratiques optimales des pays de l'OCDE en matière de politiques de la concurrence traitant de ce sujet).

Un accès non discriminatoire aux infrastructures est plus facile à garantir quand le propriétaire n'est ni incité, ni apte à pratiquer une telle discrimination. L'exercice d'un contrôle conjoint avec une entreprise présente sur un marché verticalement lié potentiellement concurrentiel peut inciter à pratiquer une discrimination à l'accès. Bien que certains plaident en faveur d'une séparation opérationnelle entre le

monopole et les activités potentiellement concurrentielles pour réduire la capacité des entreprises à pratiquer une discrimination, la séparation de la propriété permet quant à elle d'éliminer à la fois l'incitation et l'aptitude à discriminer.

Selon la Commission européenne, souvent, les nouveaux entrants sur les marchés du gaz n'ont pas suffisamment accès aux réseaux, aux installations de stockage et aux terminaux GNL. Les opérateurs d'infrastructures sont soupçonnés de pratiquer une discrimination, notamment de prendre des décisions en matière opérationnelle et d'investissement qui servent les intérêts de l'entreprise intégrée verticalement. « Cette particularité compromet fortement la sécurité des approvisionnements » [CE 2007, pp. 7, 8]. « La Commission juge crucial de faire en sorte que les propriétaires et/ou exploitants de réseaux ne soient pas dissuadés d'agir par les intérêts de leurs sociétés de fourniture, en particulier à un moment où l'Europe a besoin d'investissements considérables pour assurer la sécurité des approvisionnements et créer des marchés intégrés et concurrentiels. À cette fin, il est indispensable de renforcer nettement la séparation, actuellement insuffisante. » [*ibid.,* p. 14]

Plus en amont, la question de l'accès aux gazoducs fait partie des moyens envisagés par la Commission pour renforcer la sécurité énergétique. « [Un véritable partenariat entre l'Union européenne et la Russie] signifierait aussi un accès équitable et réciproque aux marchés et infrastructures, notamment l'accès des tiers aux oléoducs et gazoducs. » [CE 2006 2.6(ii)(a)]

L'accès aux gazoducs en amont contribuerait à la sécurité des approvisionnements à travers une diversification des approvisionnements. Les compagnies autres que Gazprom détiennent actuellement un peu moins d'un tiers des réserves gazières russes. [AIE, 2006b, p. 32] Toutefois, d'importantes quantités de gaz associé à l'extraction du pétrole sont torchées parce que ces producteurs ne disposent pas d'un accès sûr et transparent au réseau de transport et aux installations de traitement du gaz contrôlés par Gazprom. D'après la Stratégie énergétique russe approuvée en août 2003, la part des producteurs autres que Gazprom dans la production gazière russe totale devrait être de 20 % à l'horizon 2020. [*ibid.*, p. 16] « Dans le passé, Gazprom invoquait l'insuffisance des capacités disponibles pour justifier son refus de permettre l'accès de tiers à son système de transport. ». [*ibid.*, p. 32] En 2004, 99,9 milliards de mètres cubes de gaz naturel non produits par Gazprom, essentiellement du gaz turkmène transitant par l'Ukraine et acheté par Gazprom à des producteurs indépendants dans le cadre de contrats à long terme, avaient eu accès à des gazoducs contrôlés par Gazprom. [*ibid.,* p. 32]

En outre, l'accès aux gazoducs en amont contribuerait à la sécurité des approvisionnements à travers une augmentation des investissements. Certains producteurs indépendants seraient en effet incités à augmenter la capacité des gazoducs, puisqu'il serait alors plus rentable de transporter et vendre le gaz que de le torcher.[8] Toutefois, s'ils vendent à un prix plus faible, ces incitations perdent de leur efficacité. En

[8] « [L]'efficacité globale du secteur gazier russe est en partie compromise par sa structure monopolistique, qui limite la réalisation d'investissements en amont par des compagnies pétrolières et des producteurs de gaz indépendants. Permettre un accès plus transparent et plus sûr de tiers, tant au marché domestique qu'aux marchés d'exportation serait déjà un grand pas en avant. Les tentatives que le gouvernement russe effectue actuellement dans ce sens à travers diverses initiatives législatives et à travers l'action du Service antimonopole sont des signes encourageants d'une prise de conscience. Toutefois, le Service antimonopole manque cruellement de moyens. » [AIE 2006b, p. 41]

« L'AIE estime que d'importants volumes de gaz produits par les compagnies pétrolières continuent d'être torchés soit parce que Gazprom refuse d'acheter ce gaz, soit parce que les conditions d'accès aux usines de traitement et au réseau de transport ne sont pas intéressantes d'un point de vue économique. [AIE 2004b]. Cette analyse corrobore celle réalisée par le Partenariat mondial pour la réduction des gaz torchés dans le cadre de son étude sur la Russie (GGFR[8] 2003). » [AIE 2006b, p. 145]

principe, il est plus lucratif de vendre directement aux consommateurs que par l'intermédiaire d'un monopsone, même si ce dernier détient un pouvoir de marché en aval.

Le problème de l'accès aux installations de stockage et aux terminaux de regazéification de GNL se pose dans les mêmes termes que celui de l'accès aux gazoducs du point de vue économique, mais pas du point de vue technique. Par conséquent, la question de l'accès possible et de la discrimination à l'accès doit également être envisagée différemment. En ce qui concerne les terminaux de regazéification de GNL, la situation qui prévaut pour une forte proportion des nouvelles installations en construction ou aux premiers stades de l'étude, démontre qu'il est nécessaire de trouver un équilibre entre concurrence en aval et mesures visant à inciter à investir dans ces infrastructures. En Europe, nombre de nouveaux terminaux n'ont pas eu à être accessibles aux concurrents, tandis qu'en Italie, 20 % des nouvelles capacités ont été réservées aux concurrents du propriétaire de l'installation.

En somme, les installations essentielles telles que gazoducs, installations de stockage et terminaux de regazéification de GNL peuvent entraver la concurrence en aval. Les entreprises en place sont susceptibles de détenir un pouvoir de marché, qui découle en partie du fait qu'elles contrôlent ces installations et qui est renforcé par la limitation de leurs capacités. Les installations essentielles peuvent en effet limiter les quantités de gaz que l'entreprise en place et ses concurrents peuvent vendre sur les marchés en aval. L'augmentation de la capacité de ces installations peut induire une érosion de la première source de pouvoir de marché – après avoir augmenté la capacité, l'entreprise en place a également intérêt à en accroître l'utilisation – et l'augmentation de la capacité associée à un octroi de l'accès à des tiers entraîne une érosion de la deuxième source de pouvoir de marché.

Alors qu'il existe des exemples de situations dans lesquelles une obligation de permettre l'accès de concurrents a été imposée, il existe peu d'exemples d'obligation d'augmenter les capacités. En outre, toute intervention réglementaire allant dans ce sens serait particulièrement difficile.[9] Il n'en reste pas moins qu'il n'est pas impossible d'instaurer une concurrence pour l'offre de capacités supplémentaires à condition que le régulateur puisse déterminer dans quelles proportions et à quel prix cette augmentation des capacités doit se faire. Ainsi, aux États-Unis, les régulateurs font obligation aux entreprises qui demandent l'autorisation d'installer des gazoducs inter États de prévoir une période d'appel à candidatures durant laquelle les utilisateurs des gazoducs peuvent passer des contrats pour obtenir des droits à capacité allant au-delà de ceux initialement proposés par l'entreprise demandeuse, qui est alors obligée d'augmenter la capacité de son projet en conséquence. Une fois l'installation construite, les utilisateurs détenant des droits à capacité peuvent les négocier. La décision rendue dans l'affaire de la fusion DTE/ MichCon (déjà évoquée) donnait au nouvel arrivant le droit d'obliger l'entreprise en place à agrandir le système de distribution local ou d'agrandir les installations de sa propre initiative.

3.2.2 Contrats à long terme

L'autre stratégie que peut utiliser une entreprise en place pour abuser de sa position dominante consiste à conclure des contrats à long terme de manière à exclure les nouveaux entrants. L'idée est de les empêcher d'avoir accès, selon l'objet précis du contrat – réception de gaz, vente de gaz à des clients finals, accès à l'infrastructure – , au gaz, aux clients ou à l'infrastructure. Les nouveaux entrants sont susceptibles

[9] L'intervention réglementaire n'est toutefois pas impossible. Ainsi, les autorités italiennes de la concurrence ont estimé, dans leur décision du 15 février 2006 (Affaire n° A358) qu'ENI avait abusé de sa position dominante en décidant d'interrompre les travaux commencés par la branche « réseaux » pour l'expansion d'un gazoduc d'importation dans la perspective d'une augmentation des exigences de capacité gazière. C'est la société mère qui a pris la décision d'interrompre les travaux à la suite de plaintes déposées par la branche « approvisionnement » et après la conclusion de plusieurs contrats de type « ship-or-pay » avec des transporteurs maritimes indépendants. [CE 2007, pp. 58-9]

d'apporter avec eux des innovations de nature à permettre des gains d'efficience, exerçant ainsi une pression sur les entreprises en place et améliorant l'efficience globale.

La grande majorité du gaz acheté par des intermédiaires l'est dans le cadre de contrats à long terme. Nombre de ces contrats ont été conclus alors que ces intermédiaires étaient des monopoles nationaux [CE 2006a, p. 30] et sont souvent prolongés alors même qu'ils sont loin d'arriver à expiration. [CE 2007, p. 48][10]

Les contrats à long terme peuvent faciliter les investissements. Il est en effet souvent impossible de trouver des fonds pour financer de lourds investissements à fonds perdus, à moins que des contrats à long terme aient déjà été signés avec des acheteurs. Les investissements dans le GNL et dans les gazoducs, dont les contrats à long terme garantissent le financement par une source durable de recettes, en sont l'illustration. Selon la Commission européenne, les contrats d'approvisionnement à long terme étaient souvent liés à des investissements dans des infrastructures telles que gazoducs ou centrales à gaz. [CE 2007, p. 39]

Les différents acteurs du marché n'ont pas tous le même point de vue sur les contrats d'approvisionnement à long terme. Ainsi, la stratégie d'exportation de Gazprom pour son marché européen « repose fondamentalement sur la volonté de conserver le principe du "canal unique" d'exportation. Ces objectifs devraient être atteints par le biais de relations contractuelles à long terme avec les clients traditionnels, de nouvelles formes de transactions basées sur des ventes à long et moyen terme et des échanges de gaz. » [Gazprom, p. 16] De fait, ces derniers mois, de nombreux intermédiaires européens du marché gazier ont conclu ou prolongé des contrats à long terme avec Gazprom.

Le fait que ces contrats d'approvisionnement à long terme imposent des restrictions à la revente et prévoient une souplesse en termes de volumes réduit la liquidité du marché secondaire du gaz. Ce phénomène fait obstacle à l'entrée de nouveaux revendeurs de gaz sur le marché, ces derniers n'étant pas en mesure de garantir un approvisionnement fiable à leurs clients. Il est toutefois possible d'objecter que les producteurs de gaz en amont peuvent choisir les partenaires avec lesquels ils veulent traiter, notamment ceux avec lesquels ils sont prêts à conclure des contrats d'approvisionnement à long terme, sauf en cas de position dominante.

En ce qui concerne la principale raison avancée pour justifier les contrats à long terme, il est permis de se demander pourquoi l'innovation financière, qui a joué un tel rôle sur de nombreux marchés, n'a pas conduit à l'élaboration d'instruments susceptibles de se substituer aux contrats d'approvisionnement à long terme. À mesure que les marchés gaziers deviendront plus liquides – il ne faut pas oublier que seule une très petite proportion du GNL est vendue sur un véritable marché « spot » et qu'en Europe, une partie seulement du gaz est vendue en dehors de contrats à long terme — des instruments financiers seront peut-être créés.

Il existe également des contrats à long terme entre les revendeurs et les consommateurs de gaz. Dans certains cas, ils facilitent la construction d'installations telles que les centrales à gaz, parce qu'ils offrent une certaine garantie, par exemple des conditions d'approvisionnement applicables pendant plusieurs années, réduisant ainsi le risque associé au projet de construction. Mais dans d'autres cas, ils ne semblent pas liés à une infrastructure. De tels contrats empêchent l'entrée de nouveaux revendeurs sur le marché. En effet, les revendeurs de gaz bénéficient d'économies d'échelle ; or, les contrats à long terme éliminent des clients, généralement les gros clients, du marché pendant plusieurs années. Les économies d'échelle deviennent alors plus improbables et l'entrée sur le marché a plus de risques de ne pas être rentable. En

[10] Par exemple, en 2006, un contrat qui devait expirer en 2020 a été prolongé jusqu'en 2035. [CE 2007, p. 48 nbp 78]

excluant ainsi les nouveaux arrivants potentiels, les entreprises en place conservent leur position dominante au-delà de la date à laquelle la concurrence était envisagée.

A contrario, les contrats à long terme peuvent également faciliter l'entrée sur le marché. Ainsi, ceux qui permettent l'accès aux infrastructures essentielles peuvent, si le marché secondaire est liquide, rendre l'entrée sur le marché rentable.

Toutefois, les contrats à long terme n'offrent pas de garantie d'approvisionnement. D'une part, rien n'empêche les pouvoirs publics de modifier, pendant la durée du contrat, les règles déterminant si les stipulations du contrat, y compris sa durée, sont acceptables. D'autre part, il est loisible aux parties de négocier pour se désengager du contrat quand bon leur semble. Enfin, même lorsque la continuité de l'approvisionnement en gaz a été assurée, comme ce fut le cas de l'approvisionnement de l'Europe occidentale par la Russie pendant la guerre froide, cette continuité n'est pas nécessairement à mettre au crédit de l'existence de contrats à long terme. [Skinner, pp. 7-8] En réalité, la sécurité des approvisionnements repose plutôt sur la diversité, la capacité de réaction, la reconnaissance de l'interdépendance et la rapidité de l'information, les contrats à long terme ne venant alors la renforcer que s'ils permettent une diversification de l'approvisionnement ou favorisent des investissements qui améliorent la capacité de réaction.

3.2.4 Marchés secondaires

Faire obstacle à l'activité des marchés secondaires peut également être considéré comme un abus de position dominante. La Commission européenne a engagé des actions eu égard aux clauses de destination contenues dans des contrats de vente, estimant qu'elles faisaient obstacle au développement des marchés secondaires.

Les marchés secondaires jouent un rôle en termes de concurrence. D'une part, comme évoqué précédemment, leur liquidité peut favoriser l'entrée sur le marché de nouveaux revendeurs de gaz. En outre, ils peuvent également limiter l'importance de la discrimination par les prix qu'il est possible d'envisager entre les consommateurs.

En termes de sécurité des approvisionnements, c'est aux marchés secondaires que l'on doit une partie de la capacité de réaction nécessaire pour faire face à une crise d'approvisionnement. À court terme, ils peuvent atténuer les flambées de prix et les problèmes de non disponibilité. Mais à long terme, le marché secondaire peut également, dans le cadre de son fonctionnement normal, contribuer au financement de capacités disponibles dans le réseau de transport, à la fois dans les pays consommateurs et entre eux.

3.2.5 Fixation des prix

En Europe et dans le Pacifique, les marchés gaziers se caractérisent notamment par l'existence d'un lien entre le prix du gaz et celui du pétrole. Les contrats indexent les prix du gaz sur ceux du pétrole, avec un lissage sur quelques mois. Cette indexation est une pratique répandue : ainsi, l'AIE estime qu'elle concerne, à l'échelle mondiale, « probablement un tiers, voire la moitié du gaz vendu », « presque tous » les contrats gaziers à long terme en Europe continentale et « la quasi-totalité » des contrats à long terme de GNL. Toutefois, en Amérique du Nord et au Royaume-Uni, le prix de la majeure partie du gaz est indexé sur le prix « spot » ou sur le prix à terme du gaz. [AIE 2006, p. 63]

En principe, le prix du gaz est censé être conditionné par celui du pétrole, les produits pétroliers étant, à long terme, des substituts du gaz. Lorsqu'il existe une concurrence entre les fournisseurs de gaz, les prix du marché maximum et minimum sont tributaires du prix des combustibles de substitution – un pour l'été (pour la production de l'électricité nécessaire à la climatisation) et un pour l'hiver (pour le chauffage).

Du fait de l'indexation des prix du gaz sur les cours pétroliers, la consommation réagit moins vite aux variations de l'offre de gaz. Sur les marchés où le prix se fixe selon les variations de l'offre et de la demande, les changements de prix indiquent aux consommateurs et aux producteurs s'ils doivent augmenter ou diminuer leur consommation ou leur production. En revanche, sur le marché du gaz, les prix ne remplissent pas cette fonction. De ce fait, dans l'hypothèse de perturbations de l'approvisionnement, le prix ne constitue pas un moyen d'inciter les consommateurs à réduire leur consommation.

En d'autres termes, l'indexation du prix du gaz sur les cours pétroliers réduit la sécurité des approvisionnements. D'une part, en cas de perturbations de l'approvisionnement, ce ne sont pas les consommateurs les plus à même de réduire leur consommation qui subissent la pénurie, mais les autres. À cet égard, le raisonnement est le même que celui suivi dans la réflexion sur la réactivité de la demande aux prix. D'autre part, en dehors des périodes de crise, la demande de gaz variant selon les saisons, le prix du gaz ne fluctue pas en fonction de la demande. Cette situation diminue les incitations à investir dans des installations de stockage du gaz, ce qui réduit la capacité de réaction et, partant, la sécurité des approvisionnements.

L'un des arguments avancés en faveur de l'indexation est qu'elle évite de fortes fluctuations du prix du gaz. Toutefois, des instruments financiers pourraient également remplir ce rôle, d'autant plus que la prime à payer pour obtenir cette réduction de risque a des chances d'être plus faible sur des marchés financiers très concurrentiels que sur le marché gazier, relativement concentré.[11]

En somme, l'indexation du prix du gaz sur les cours pétroliers réduit la réactivité de la demande en cas de perturbations de l'approvisionnement et diminue l'incitation à investir dans des installations de stockage saisonnier. Les données actuellement disponibles ne sont toutefois pas suffisantes pour évaluer ses effets sur la concurrence.

3.3 Cartellisation

Comme évoqué dans la réflexion sur l'échange d'informations, l'information peut également aider des entreprises concurrentes à conclure un accord, voire une entente anticoncurrentielle. Ainsi, une juridiction, consciente de l'intérêt que revêt la coordination internationale des politiques énergétiques assurée par l'AIE en période de crise des approvisionnements, a prévu une dérogation de portée limitée au droit de la concurrence, tout en permettant au gouvernement d'interrompre la communication d'informations à l'AIE si cette communication risque d'avoir des effets anticoncurrentiels ou d'entraîner une violation du droit de la concurrence.

La cartellisation par les gouvernements ou des entités agissant sur ordre des gouvernements est évoquée ci-après, dans la partie sur les limites du droit de la concurrence.

3.4 Améliorer l'environnement concurrentiel

Il ressort de l'enquête de la Commission européenne sur le secteur de l'énergie que concurrence et sécurité des approvisionnements sont complémentaires. Par conséquent, l'instauration d'un environnement plus propice à la concurrence peut contribuer au renforcement de la sécurité des approvisionnements. Nombre d'aspects relatifs à l'environnement concurrentiel ont déjà été abordés lors de la discussion sur les fusions verticales et horizontales. En revanche, les réflexions sur les barrières à l'entrée ont été regroupées

[11] À noter que la Commission européenne souligne « Il semble que, en cas de pondération en fonction du volume, aucune des deux méthodes [indexation sur les prix pétroliers ou sur les prix du gaz] n'induise un avantage commercial évident », tout en faisant observer que l'étude porte sur une période relativement courte par rapport à la durée des contrats, et que la situation peut de ce fait avoir évolué. [EC 2007, p. 108]

dans le présent chapitre, cette question ayant été abordée dans le cadre de diverses discussions. À noter enfin que la réactivité de la demande contribue également à créer un environnement plus propice à la concurrence.

Il existe d'importantes barrières à l'entrée sur le marché gazier aval. Les installations essentielles sont souvent contrôlées par des entreprises concurrentes et les régulateurs indépendants sont parfois dans l'incapacité de garantir un accès équitable et non discriminatoire. La construction d'infrastructures est une opération longue et coûteuse, notamment parce que les populations installées au voisinage font obstacle au projet, malgré son intérêt pour l'ensemble des consommateurs de gaz.[12] Une grande partie du gaz est vendue dans le cadre de contrats à long terme à des intermédiaires en place. Cela a notamment pour conséquence, en fonction des conditions de ces contrats, un manque de liquidité des marchés dans certaines régions, comme l'Europe continentale. Il est de ce fait beaucoup plus difficile aux petits fournisseurs – que sont souvent les nouveaux arrivants – qu'à leurs concurrents de grande taille de faire face aux fluctuations de la demande. La conclusion de contrats à long terme avec de gros utilisateurs peut priver durablement les concurrents d'une forte proportion de la demande totale.

Les barrières à l'entrée sur les marchés en amont ont été évoquées précédemment, dans le cadre de la réflexion sur la nécessité, pour les producteurs de gaz, de bénéficier d'un accès équitable et non discriminatoire aux gazoducs.

Une meilleure réactivité de la demande aux prix stimule la concurrence. Une demande plus réactive rend toute augmentation des prix moins rentable, voire non rentable. Les fournisseurs sont ainsi incités à se faire une concurrence plus intense. Encourager le recours à des contrats interruptibles pour les gros utilisateurs et à une tarification basée sur le prix d'équilibre du marché contribuerait peut-être à accroître la réactivité de la demande. L'utilisation de compteurs de gaz affichant le prix en temps réel favoriserait également une réduction de la consommation durant les périodes où les prix sont élevés, par exemple en cas de crise des approvisionnements, ou encouragerait les conversions à d'autres combustibles lorsque de nouveaux investissements sont réalisés. Les difficultés politiques que posent les flambées du prix du gaz méritent peut-être un examen plus approfondi. Ces pics étant (par définition) ponctuels, il serait peut-être envisageable de ne protéger que la population la plus défavorisée. Si la demande des utilisateurs est suffisante pour réduire l'exposition au risque prix, des instruments financiers susceptibles de transférer ce risque pourraient apparaître, comme ils sont apparus sur d'autres marchés.

En général, du fait qu'elle diversifie les approvisionnements, l'intensification de la concurrence améliore la sécurité énergétique.

4. Limites du droit de la concurrence

L'implication des États dans les secteurs pétrolier et gazier est un facteur susceptible de limiter l'application du droit de la concurrence. Les États peuvent intervenir de deux manières qui, en principe, pourraient être considérées comme contraires au droit de la concurrence. D'une part, ils peuvent commettre des actes ou conclure des accords préjudiciables à la concurrence. D'autre part, ils peuvent ordonner à des entreprises de commettre des actes ou de conclure des accords préjudiciables à la concurrence. Il est parfois difficile de distinguer ces deux types d'interventions, le fonctionnement des compagnies pétrolières

[12] Le syndrome NIMBY (« pas dans ma cour ») est rationnel, dans la mesure où les populations voisines du site des installations envisagées sont celles qui assument l'essentiel du risque d'accident, aussi faible soit-il. Cependant, les utilisateurs de gaz qui vont bénéficier du renforcement de la sécurité énergétique sont beaucoup plus nombreux. En principe, il est possible de recourir à des transferts financiers pour internaliser les externalités mais le niveau d'indemnisation approprié est parfois difficile à déterminer, car les populations voisines du site ont intérêt à surestimer le coût qu'elles subissent.

et gazières étant étroitement lié aux pouvoirs publics du pays où elles sont établies. Il n'est reste pas moins que l'implication de l'État, quelle qu'en soit la forme, peut permettre la mise en jeu de moyens de défense pour protéger les actes en question du droit de la concurrence. Lorsque des facteurs autres qu'économiques l'emportent dans la détermination des conditions d'approvisionnement, la concurrence et les marchés peuvent conserver un rôle important en ce qu'ils peuvent minimiser les effets indésirables, tant à court qu'à long terme.

Aux États-Unis, la question de l'applicabilité de la législation antitrust, par exemple, aux États souverains étrangers est régie par la loi sur l'immunité souveraine étrangère (Foreign Sovereign Immunities Act, FSIA). Les États étrangers bénéficient a priori d'une immunité vis-à-vis du droit des États-Unis, sauf application d'une exception expresse au principe de l'immunité. L'une de ces exceptions concerne les cas où la puissance étrangère a des activités commerciales ayant un lien avec les États-Unis. La question de savoir si une activité peut être qualifiée de commerciale est déterminée par sa nature, plutôt que par son but. Ainsi, dans l'arrêt *Argentine contre Weltover, Inc,* la Cour suprême a estimé que « [L]a question porte sur le point de savoir si les actes spécifiques d'un État (et les motivations qui les sous-tendent) correspondent au *type* d'actes qu'accomplit une partie privée pour faire du commerce » [504 U.S. 607, 614 (1992) (italique dans l'original) ; pour les autres exceptions, voir ABA, II Antitrust Law Developments (5ème) (ci-après « ALD ») 1136-1144 (2002).]

Reste à savoir si l'immunité des États étrangers s'applique également aux entités intermédiaires d'États étrangers. Les tribunaux américains sont partagés sur ce point. Pour déterminer si la FSIA s'applique, ils examinent notamment : « (1) si l'État étranger a créé l'entité pour des raisons d'intérêt national ; (2) si l'État étranger exerce une surveillance active de l'entité ; (3) si l'État étranger emploie et rémunère des agents publics ; (4) si l'entité détient des droits exclusifs dans le pays et (5) si l'entité est considérée comme une entité gouvernementale aux termes de la législation du pays étranger. » [ALD 1143 n.171.]

L'autre moyen dont disposent les États étrangers pour se soustraire à la législation antitrust est la doctrine de « l'acte de gouvernement ». À la différence du principe de l'immunité des États étrangers, qui accorde une dérogation à la puissance étrangère elle-même, la doctrine de l'acte de gouvernement exempte certains actes accomplis par la puissance étrangère, plus précisément ceux qui ont été accomplis au sein de sa propre juridiction. [ALD 1144.]

Enfin, si un État étranger contraint une partie privée à accomplir des actes contraires à la législation antitrust, en principe, ces actes « deviennent en réalité des actes de l'État souverain » et ne peuvent pas donner lieu à une mise en cause de la responsabilité au titre de la législation antitrust. Toutefois, si ces actes sont accomplis sur le territoire des États-Unis, les agences chargées de faire appliquer la législation antitrust ne retiennent ni l'argument de la conduite imposée par un État étranger, ni la doctrine de l'acte de gouvernement. [ALD 1156.]

Contrairement aux États-Unis, l'Union européenne n'a pas de texte législatif régissant expressément l'immunité des États étrangers. Toutefois, en 1984, dans l'affaire *Importations d'aluminium d'Europe de l'Est*, la Commission européenne a implicitement reconnu la recevabilité de l'argument de l'immunité de souveraineté dans les litiges relatifs au droit de la concurrence, même si, en l'espèce, elle a finalement rejeté cet argument [Décision de la Commission du 19 décembre 1984, relative à une procédure d'application de l'article 85 du traité CEE (IV/26.870 - Importations d'aluminium d'Europe de l'Est), JO 1985 L 92/1]. L'affaire concernait des accords restrictifs conclus entre des producteurs d'aluminium d'Europe occidentale d'une part et des organisations de commerce extérieur négociant l'aluminium implantées dans les anciennes républiques socialistes de Pologne, Hongrie, Tchécoslovaquie, République démocratique allemande et en Union soviétique d'autre part. Ces accords limitaient les ventes d'aluminium de première fusion par ces organisations au groupe de producteurs occidentaux concernés ; en outre, ces

organisations s'engageaient à ne pas vendre leurs produits à d'autres acheteurs du monde occidental. Les organisations de commerce extérieur ont avancé que, le droit socialiste ne distinguant pas leur statut de celui de l'État, la doctrine internationale de l'immunité souveraine empêchait de les qualifier « d'entreprises » au sens de l'Article 81 du Traité CE. Tout en reconnaissant que cet argument pouvait remettre en cause l'applicabilité de l'Article 81, la Commission a estimé que l'application de l'immunité était « strictement limitée aux actes qui sont des actes de gouvernement, pas des actes de commerce. » [Décision, paragraphe 9.2.] La Commission a considéré que chacune des organisations de commerce extérieur vendait de l'aluminium et avait été spécifiquement créée à cette fin. « Les entités qui exercent une activité commerciale doivent être considérées comme des entreprises au sens de l'article [81], quel que soit le statut exact que leur confère le droit interne de leur pays d'origine, et même si ce droit ne leur donne pas un statut distinct. (…) Même si les organismes de commerce extérieur étaient, en droit socialiste, indiscernables de l'État, aucune immunité de souveraineté ne serait attachée à leur participation aux accords (…), étant donné qu'il s'agissait en l'occurrence d'une activité purement commerciale. » [Décision, paragraphe 9.2.] La Commission s'est également fondée, pour récuser l'argument selon lequel les accords étaient des actes des gouvernements des entreprises, sur le fait que lesdits gouvernements ne les avaient pas signés et n'avaient pas contraint les entreprises à les conclure. Dans cette affaire, la Commission a, pour toute mesure d'application, déclaré que les dispositions concernées des accords étaient contraires à l'Article 81(1) du Traité CE et a refusé d'accorder une exemption en vertu de l'Article 81(3).

La décision *Importations d'aluminium d'Europe de l'Est* est un exemple d'interprétation plutôt étroite du principe de l'immunité souveraine. La question de l'immunité s'est posée dans plusieurs autres affaires impliquant des entités de l'Union européenne et dans lesquelles la Cour de justice des Communautés européenne (CJCE) a reconnu qu'il y avait lieu de faire une distinction entre « l'hypothèse où l'État agit en exerçant l'autorité publique et celle où il exerce des activités économiques de caractère industriel ou commercial consistant à offrir des biens ou des services sur le marché. » [Affaire C-343/95 – Diego Calì & Figli Srl contre Servizi ecologici porto di Genova SpA (SEPG), Rec. de 1997, page I-547, point 16]. La Cour a estimé que pour correspondre à la première hypothèse et ne pas être visée par les règles du droit de la concurrence, l'activité en question devait « relever des fonctions essentielles de l'État » et « par sa nature, son objet et les règles auxquelles elle est soumise, se rattacher à des prérogatives qui sont typiquement des prérogatives de puissance publique. » [Affaire Diego Cali, point 23 ; Affaire C-364/92 Eurocontrol, Rec. de 1994, page I-43, point 30]. Jusqu'à présent, les tribunaux n'ont appliqué cet argument de « l'acte de gouvernement » qu'à des domaines autres que celui de l'énergie (services antipollution, contrôle de l'espace aérien).

Le droit communautaire prévoit la responsabilité de l'État dans les cas où des actes de gouvernement à proprement parler entravent la concurrence. Ainsi, l'Article 86 du Traité CE fait obligation aux États de ne pas prendre de mesures contraires aux règles de concurrence du Traité dans le cas d'entreprises publiques ou d'entreprises auxquelles ils accordent des droits spéciaux ou exclusifs et soumet les entreprises chargées de la gestion de services d'intérêt économique général ou présentant le caractère d'un monopole fiscal auxdites règles de concurrence. En outre, il ressort de la jurisprudence européenne qu'un État peut voir sa responsabilité mise en cause aux termes des articles du Traité relatifs à la concurrence s'il exige ou favorise l'accomplissement d'actes contraires aux règles de la concurrence, renforce leurs effets ou retire à sa propre législation son caractère étatique en déléguant à des opérateurs privés la responsabilité de prendre des décisions d'intervention en matière économique. [Affaire 267/86, Pascal Van Eycke contre Société anonyme ASPA, Rec. de 1998, page 4769, point16 ; Affaire C-2/91, Procédure pénale contre Wolf W. Meng, Rec. de 1993, page I-5797, point 14]. Toutefois, ces règles ne s'imposent qu'aux États membres, puisqu'elles découlent de dispositions du Traité CE. En conséquence, lorsque de tels actes sont accomplis par des États non membres, ils ne donnent pas lieu à une mise en cause de la responsabilité en vertu du droit communautaire de la concurrence.

Les actes anticoncurrentiels commis par des entreprises et ayant un « effet immédiat, substantiel et prévisible » donnent lieu à une mise en cause de la responsabilité au titre du droit de la concurrence, même s'ils sont commis à l'extérieur du territoire de l'Union européenne par une entreprise établie en dehors dudit territoire [Affaire T-102/96, Gencor Ltd contre Commission des Communautés européennes, Rec. de 1999, page II 753, point 90 ; Affaire C-89/85, A. Ahlström Osakeyhtiö et autres contre Commission des Communautés européennes, Rec. de 1988, page 5193, points 16, 17]. Toutefois, tout comme le droit des États-Unis, le système juridique communautaire reconnaît « l'argument de la contrainte imposée par l'État » lorsque l'acte anticoncurrentiel en cause ne peut être considéré comme résultant d'une décision prise en toute indépendance par l'entreprise. La Commission et les tribunaux ont défini un champ d'application plutôt étroit de cet argument, exigeant que l'acte soit rendu obligatoire par la réglementation de l'État et que l'entreprise ne dispose d'aucune marge de manœuvre par rapport à cette réglementation ; un simple soutien ou encouragement des pouvoirs publics ne suffit pas à déclencher l'application de l'exemption. [Décision de la Commission, du 1er avril 1992, relative à une procédure d'application des articles 85 et 86 du Traité CEE (IV/32.450 – Comités armatoriaux franco-ouest-africains, JO n° L 134/1 du 18.05.92, point 38 ; Arrêt de la Cour (cinquième chambre) du 10 décembre 1985, Stichting Sigarettenindustrie et autres contre Commission des Communautés européennes, Rec. de 1985, page 3831, point 38].

En conclusion, tant aux États-Unis qu'en Europe, de nombreux facteurs font obstacle à la pleine application du droit de la concurrence dans le secteur de l'énergie lorsque l'État est impliqué.

5. Conclusions

Points essentiels

La notion de sécurité énergétique a trait à la vulnérabilité aux perturbations pouvant toucher les ressources énergétiques. Sa signification varie selon les personnes et les époques. S'il ne fait aucun doute que le risque de perturbations des approvisionnements et les flambées de prix qu'elles induisent font partie de la définition, la réponse à la question de savoir si le niveau des prix en dehors des périodes de crise intervient également ne fait pas l'unanimité ; en outre, il y a aussi probablement une composante psychologique. Finalement, la sécurité énergétique est peut-être une notion impossible à définir avec précision.

Du fait des pratiques de gouvernance d'entreprise adoptées par de nombreuses compagnies pétrolières et gazières nationales et de la place qu'occupent les ventes de pétrole et de gaz dans le PIB des pays, il est possible que ces compagnies ne poursuivent pas uniquement des objectifs strictement commerciaux mais cherchent aussi à bénéficier de la sécurité des recettes qui va de pair avec la fiabilité des approvisionnements.

Quelle que soit la définition retenue, l'investissement et la diversité des approvisionnements constituent les clés de la sécurité énergétique. L'investissement peut améliorer la capacité de réaction, par exemple en augmentant les capacités disponibles, les capacités de pointe et les stocks d'urgence. Il est également essentiel de prendre conscience de l'interdépendance des marchés et des acteurs des marchés et de garantir un échange rapide de l'information.

En ce qui concerne l'application de la politique de la concurrence, en principe, les fusions horizontales ne renforcent pas la sécurité énergétique, sauf dans les cas où la fusion est l'unique moyen de conclure des contrats avec d'autres producteurs ou d'investir dans de nouvelles infrastructures. Les intermédiaires intervenant sur le marché gazier ont peu de chances de voir les fusions horizontales accroître leur pouvoir de négociation vis-à-vis des producteurs, la concurrence étant faible. Lorsqu'elles permettent le regroupement d'activités potentiellement concurrentielles avec des installations essentielles,

les fusions verticales peuvent faire obstacle à l'accès non discriminatoire auxdites installations, ce qui peut compromettre les capacités de réaction et, partant, la sécurité énergétique. Dans la mesure où des marchés concurrentiels sont favorables à la diversité et à la capacité de réaction, les fusions anticoncurrentielles sont préjudiciables à ces deux facteurs de sécurité énergétique.

Divers types d'abus de position dominante peuvent avoir un effet dissuasif sur les investissements visant à accroître les capacités disponibles ou les capacités de pointe et, partant, sur la capacité de réaction. De plus, le refus d'accès aux gazoducs peut dissuader les petits producteurs de gaz d'entrer sur ce marché, compromettant ainsi la diversité des approvisionnements. Toutefois, il peut être compliqué et difficile d'exiger des entreprises en place qu'elles construisent des infrastructures de capacité supérieure ; il n'en reste pas moins que l'instauration d'une concurrence pour cette augmentation des capacités n'est pas inenvisageable pour peu que le régulateur puisse déterminer l'ampleur et le coût de cette augmentation et mettre en place un dispositif de financement par les consommateurs. Les contrats à long terme sont susceptibles de favoriser les investissements d'infrastructure, ce qui va dans le sens d'un renforcement de la sécurité, mais peuvent également induire une exclusion des nouveaux entrants et n'ont pas d'influence positive manifeste et directe sur la sécurité des approvisionnements.

En général, l'amélioration de l'environnement concurrentiel renforce la sécurité énergétique grâce à une diversification des sources d'approvisionnement. Le principe selon lequel, en cas de pluralité de fournisseurs, il est plus difficile à une seule entreprise, quelle qu'elle soit, d'exercer son pouvoir de marché ou d'inciter un nombre suffisant d'autres entreprises à maîtriser leur production pour exercer un pouvoir de marché, s'applique de la même manière, que les marchés soient approvisionnés par des entreprises ou par des entités publiques.

Le droit de la concurrence se heurte toutefois à des limites. L'implication d'un État, soit parce qu'il accomplit directement des actes ou conclut des accords préjudiciables à la concurrence, soit parce qu'il oblige des entreprises à accomplir ces actes ou à conclure ces accords, peut conduire à ce que des moyens de défense qui mettent les actes en question à l'abri du droit de la concurrence soient invoqués.

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Remarques terminologiques

Il ne faut pas confondre le GTL (gas to liquids), ou procédé de conversion du gaz en hydrocarbures liquides, avec le GNL (gaz naturel liquéfié). Le GTL consiste à convertir le gaz en hydrocarbures liquides par un procédé chimique. Les liquides produits sont des lubrifiants, du carburant diesel et des produits d'alimentation, et sont donc destinés à des marchés très différents de ceux du GNL. Le GTL est généralement utilisé pour acheminer le gaz découvert non développé (« stranded ») par gazoducs, navires-citernes, etc.

Le GNL est un gaz qui a été réfrigéré jusqu'à sa phase liquide. Il est ensuite exposé à la température ambiante et ramené en phase gazeuse dans un terminal de regazéification.

CZECH REPUBLIC

1. Introduction

The power-producing sector plays an important role in national economy. It influences the competitive ability of the economy and has an impact on millions of consumers. The objective of governmental policy in this sector is to create conditions for reliable and safe supply of energy for reasonable prices within the framework of principles of sustainable development. This objective is fully compatible with the principles of protection of competition, which the Office for the Protection of Competition (hereafter "Office") enforces in all sectors of national economy. In its activities the Office has never seen the application of the policy of energy security to be contrary to the rules of competition. **The rules of competition** cannot be understood as restrictions, but **as a condition for the further development of economy.**

The Czech power engineering as well as the European one is becoming more and more dependent on natural gas. Growing consumption is putting more emphasis on the infrastructure. Most of the gas consumed in the EU is obtained from gas discoveries in Russia and will continue to be.

European countries can enforce higher security guarantees of supplies efficiently only when carried out jointly, the influence of individual countries is very limited.

However, **the Czech natural gas market, much like the European one, is not fully functional** neither in terms of the volume and sources of gas extraction, nor transportation capacity. The intention to open the gas market to allow the producers and businesspeople to compete for the customer has not been successful and it is questionable whether it is at all possible.

Although competition on the Czech gas market is minimal, the Office is enforcing the competition rules in this sector on a long-term basis both within its own decision-making activities, and within competition advocacy. The Office continuously monitors development in the gas sector as in the other energetic sectors, and closely cooperates with the regulator of the sector – the Energy Regulatory Office.

2. Legal framework

The sphere of activity of administrative bodies within state administration in energetic branches in the Czech Republic is based on the Energy Act and the Act on the Protection of Competition

The Energy Act defines the conditions for business, execution of state administration and undiscriminating regulation in energy branches (including the gas industry) as well as the rights and duties of natural persons and legal entities connected with it. According to the Energy Act the control body is the **Energy Regulatory Office** (hereafter only ERO). Its activities include support of competition and protection of the consumers' interests in those areas of the energy branch where competition is not possible, with the aim of satisfying all adequate demands for energy supply.

The EU Directives 2003/54/EC and 2003/55/EC have been implemented in Czech legislature, which specify the rules for internal trade with electricity and gas, and also Directive 2004/67/EC on measures ensuring natural gas supplies. Every year the Czech Republic submits the National Report of the Czech

Republic on electric energy and the gas industry and in this way fulfils its presentation and reporting duties as laid down by the above Directives.

In the area of protection of competition the **legislative scope of activities of the Office for the Protection of Competition** is laid down in the Act 143/2001 Coll., on the Protection of Competition. This Act specifies the group of entities whose behaviour within the competition it defines. **The Act concerns all entities, which can be subordinated under the legislative acronym "undertaking" by course of law, and all branches of economy,** as well as public and private enterprises. The Office is then a body with full and indivisible authority and responsibility; it is the only administrative body, which is authorised to consider any breach of the Act on Protection of Competition, **also in regulated branches such as energy sector.** The only restriction of its activities is based on special laws to the intent that the undertaking who observes the respective provisions of special legal regulations and whose behaviour would otherwise be contrary to the law cannot be held liable for such behaviour under the Act for the Protection of Competition.

Regulatory offices generally carry out *ex ante* measures, **which should replace the competition environment** in areas where effective competition does not, or almost does not exist. The **Office for the Protection of Competition applying concrete interventions in administrative procedures may *ex post* punish the behaviour of the undertaking, which would be beyond the terms of the special regulation law.** In some specified cases the Energy Regulatory Office may deal with cases *ex post,* for instance in cases of refused access to the network.

3. Characteristics of the gas sector in the Czech Republic

On the Czech market there is one operator of the transportation system (PPS) and eight distribution companies (PDS). The most important player on the markets of transportation, distribution, storage and trading with gas is company RWE Transgas.

RWE Transgas exclusively controls the subsidiary company RWE Transgas Net, which as of 1 January 2006 has been the operator of the transportation system (PPS).

On the market of natural gas storage in the Czech Republic, apart from RWE Transgas, which owns six of the eight underground gas tanks situated on the territory of the Czech Republic, also the Moravské naftové doly (Moravian Oil Mines) company operates. The Czech Republic has eight vertically integrated regional distribution companies (RDC) with more than 90,000 customers, which historically provide supplies in their respective region. The individual companies usually restrict their supplies to their particular regions and do not mutually compete; it is *de facto* eight monopoly markets. RWE Transgas controls six of these eight RDC's. The RWE group is a vertically integrated group providing complex services in the area of the gas industry.

The RWE group is the direct supplier of 83 % of end consumers. Less than one half of the gas sold in the Czech Republic goes to large firms, ca 40 % of the volume of gas goes to households and small firms. RWE Transgas imports ca 75 % from Russia and 25 % from Norway on the basis of long-term contracts. The Czech Republic is dependent on foreign sources for 99 % of its gas. In addition to RWE it also imports gas from companies Wingas ČR and Vemex. Up to now their market share has been negligible. Ca 60 licences for gas trading have been issued to the present day. Gas traders represent only minimal competition for RWE. It is particularly due to the fact that RWE provides complex services in contrast to other gas traders and this gives it a considerable advantage in terms of competition. Based on data of the Czech Gas Union the costs for gas reach ca 0.5-6 % of corporate receipts of Czech firms.

Since gas production in the Czech Republic is virtually negligible (less than 1 % of home consumption), almost all natural gas has to be imported. That is why since 2005 the import of natural gas has been provided on the basis of long-term contracts for natural gas supplies of the "take or pay" type. In the Czech Republic these contracts are held by RWE Transgas a.s.; at the end of 2006 they extended the contract on gas supplies with Gazprom until 2035. For the same period of time a transit agreement was concluded on cooperation when transporting Russian natural gas by means of a network of RWE Transgas gas lines.

4. Opening and liberalisation of the market

The Energy Act specifies conditions for opening the gas market and determines on the bases on conditions specified by the Energy Act that as of **1 January 2005** there is the category of **authorised customers** who have the **right** to select their gas **supplier** and they also have the right of access to the transportation system, distribution systems, underground gas tanks, gas lines and free accumulation:

- Since 1 January 2005 the market has opened for subjects consuming over 15 m^3;
- Since 1 January 2006 the market has opened for all subjects except households;
- Since 1 January 2007 all subjects including households will be "eligible customers".

On 1 January 2006 RWE Transgas a. s. was divided into RWE Transgas a. s. trading with gas and storage of gas, and its subsidiary RWE Transgas Net, Ltd., dealing with gas transportation. In this way the process of unbundling was launched in the Czech Republic. **Unbundling of the operator of the distribution system** (hereafter "ODS" with more than 90,000 customers") was rounded off at the end of 2006.

The Czech Republic took advantage of the opportunity to carry out unbundling only with companies, which have a great number of customers. In legislation this possibility has been anchored as the "rule of 100,000 customers", which is implemented in the Energy Act: "According to this Act the department of activities must be carried out not later than 31 December 2006, with the exception of vertically integrated enterprisers who provide services for less than 90,000 connected end customers". None of the eight regional distribution companies has less than 90,000 customers. From this point of view it is 105 operators of other distribution systems who have no duty to carry out unbundling on the basis of the given rule.

At the present time the transportation capacity of the transit system is 53,500 billion m^3 of natural gas per year. The total volume of natural gas in 2005 at the places of entry into the transportation system of the Czech Republic was 40,589 billion m^3. The volume of gas outgoing from the transportation system of the Czech Republic to foreign customers was 30,902 billion m^3. Due to the fact that since 1996 the consumption of natural gas in the Czech Republic has permanently been below 10 billion m^3, the import capacity has considerable reserves. As of 1 January 2007 the points of the border transportation system have been divided for purposes of reservation of the transportation capacity and nomination into the transit part and part intended for transportation of gas for consumption of customers in the Czech Republic in order to ensure sufficient reserves of the capacity.

As of 1 January 2007 the actual implementation of the legal separation of operators of regional distribution systems has been launched. The market will see eight new companies. On 31 March 2007 the regulation measures of the Energy Regulatory Office will be terminated in the form of determination of the maximal prices of gas supplies for eligible customers.

5. Security of supplies

The security of supplies is usually defined as the ability of the energy systems to supply the end consumers with energy at a certain level of continuity and quality and in a sustainable way in relation to all legislative and contractual obligations. Therefore the security of supplies involves an adequate sustainable energy supply for the future period. It includes both access to primary sources of energy and the ability of the system to transform it into an applicable format, the ability to transfer the produced energy and finally the ability to exploit it.

Energy security cannot be based only on economic criteria. Also in this case it is true that ensuring security has its cost. The accepted solutions however must also meet the conditions of economic acceptability and sustainability; in practice it need not necessarily mean stronger control or protectionism, but possible modification of rules for the functioning of the market.

At the present time ensuring the energy security and composition of the **energy mix** in the EU is primarily the matter of the individual member countries. The activity of the EU in giving the individual member countries guarantees of energy security is growing. Discussions on energy security were activated particularly in early 2006 due to the gas crisis in Ukraine. Among others the long-term vision of energy policy of the European Commission showed that a joint procedure of the member countries would considerably increase the effectiveness of the policy of energy security, especially with regard to future development. The sector of energy production and mineral resources has a great inertia and continuity and therefore it demands that new key decisions are made well in advance. From the moment the decision is made the results are not available until after a long time, frequently after 10 to 15 years.

6. Situation in the Czech Republic

The **Directive 2004/65/EC on measures ensuring natural gas supplies** was incorporated into the Czech legal order and was reflected in the duty set by law, which lays obligations on gas traders to ensure the security standard of gas deliveries. Details are given in the Regulations of the Energy Regulatory Office on emergencies in the gas industry. The security standard of the demanded gas supply is understood to be the securing of safe and reliable gas supplies when preventing emergencies or during emergencies for households and such end customers who cannot change the sources of energy, in specified situations.

In cases of sudden crisis when for instance due to the disconnection of a great number of customers or oppressive economic situation of the licence-holder there is **imminent danger of disconnection of the energy supply to the end customers, according to the Energy Act it is possible to apply the institute of so-called duty beyond the framework of the licence**. In such cases, i.e. in cases of emergency and in the public interest, the Energy Regulatory Office is competent to decide to place the duty beyond the framework of the licence, when the entity against whom the decision is directed is bound to provide supplies or distribute electricity or gas outside its delimited territory and the owners of the necessary distribution facilities are obliged to provide such facilities for reimbursement beyond the framework of the licence. The Energy Regulatory Office may impose such a duty for not more than 12 months. The Energy Regulatory Office has made use of this authority and in two cases rendered a decision on such a duty beyond the framework of the licence.

In spite of the liberalisation of the gas and electricity markets in both segments the Czech market is dominated by one dominant company. In electric power sector it is company ČEZ and in the gas industry company RWE Transgas. In the gas industry the government has no possibility of preventing undesirable sales, which would jeopardise the energy security. Neither has the Czech Republic strategic gas reserves (i.e. an equivalent to oil reserves in the form of required state material reserves). In the Czech Republic the storage tanks are completely dominated by private companies, in the first place by RWE Transgas.

The general situation in the Czech Republic (oil, gas, electricity) is that the market is no doubt liberalised but the inputs are markedly dominantly governed by one entity and in the case of oil and gas also by one source/producer with a potentially negative impact in terms of new players entering the market.

In principle the **dependence of the Czech Republic on natural gas import** is 100%. It is therefore necessary to consider the future development of Czech energy also in terms of security and not only in narrow professional terms. For instance the implementation of projects for the production of electricity from gas, which has been considered, would considerably intensify the dependence on supplies from Russia (at the present time the only possible source of available gas) and in a generally undesirable way increase the present dependence of the Czech Republic.

Another problem (in the case that the Czech Republic does not reduce supplies from Russia) is the continuing **transit dependence** concerning particularly Russian territory, but also the territory of Ukraine and neighbouring Slovakia, and the potential danger of limiting or cutting off the supplies. The main dangers are on the one hand potential political complications between Russia and Ukraine, but above all the bad condition of the Ukrainian transit gas lines. About 74% of the total volume of imported gas comes to the Czech Republic via the transit gas line Sojuz, which at the same time serves for other transport of natural gas to south Germany (and further into France) and also to Saxony and from there the remaining part of imported natural gas flows into the Czech Republic (ca 26% from Norway).

At the present time gas is virtually not used for the production of electric energy in the Czech Republic and this positively contributes to increasing the security of the energy sector. In this association we should mention that a rational way of reducing the pressure on sources of fossil fuel and increasing energetic security is nuclear energy. In the climate- geographical-geological conditions of the Czech Republic energy security can be built and strengthened namely by means of quantitative enhancement of the role of nuclear energy in the Czech energy mix. The present share of nuclear energy in the production of electric energy in the Czech Republic is nearly one third.

Possible steps within the **economic policy** of the country, which would **increase the energetic security** in the gas industry, are particularly the following:

- To consider the incorporation of natural gas into the system of strategic material reserves of the country or to create obligatory reserves within the gas companies. In the case of gas failure the reserves would be used on the same principle as oil.

- Reduction of oil and gas supplies from a single source. Helping the power companies to enter into contracts with other producers of these raw materials aiming at reduction of dependence on one source and negotiating better delivery conditions.

- Diversifying oil and particularly gas producers, for which there is no world market. One of the key steps should be to seek possibilities of receiving gas, which would be exported to Europe as liquefied gas (LNG) – booming trade with liquefied gas would efficiently push on creating a world gas trade and thus also more possibilities of diversification.

- Exploring alternative transport routes linking-up with the diversification of producers and generally seeking alternative transport routes also for the present gas deliveries, namely to support construction of new gas and oil pipelines.

- Creating and enforcing efficient tools to achieve full liberalisation and functioning of the markets (among others via antimonopoly supervision and regulation) and efficient regulation of activities in energy sector where competition is not possible.

ANNEX 1

Decision-making activities of the Office – selected cases

Abuse of the dominant position of RWE Transgas

The Office has investigated the gas market since the late summer of 2005. In this period it obtained a number of incentives from the so-called eligible customers (**at the time when the proceedings were instituted their number was 35 and they were big customers**) who as of 1 January 2005, according to the law, had the possibility to select their own supplier of natural gas.

RWE Transgas has entered into contracts on supplying natural gas with eight regional distribution companies. At the time of preparations for opening the market RWE Transgas on its own initiative submitted a new **portfolio of contracts**, which responded to changes in legislation in association with the launching of the category of eligible customers for whom the **price** for the commodity and price for storage **was not subjected** to price regulations.

RWE Transgas did not enable the unconsolidated regional distribution companies to enter into a contract concerning the purchase and sale of natural gas under conditions (namely specifying prices for the commodity and terms of trade), which would in total enable the operators of the distribution systems not belonging to the RWE holding effective competition with operators of regional distribution systems that do belong to the RWE holding group. The Office termed the behaviour of RWE Transgas as **abuse** of the dominant position on the market of natural gas supplies intended for the category of authorised customers **to the detriment of other undertakings.**

Another case of RWE Transgas, which according to the Office was inconsistent with the rules of competition, was the refusal to supply the category of authorised customers with natural gas to whatever balance zone of the individual operators of regional distribution systems and this was an obstacle for the development of competition. In this way **instead of gradually opening the market,** prepared by legislation on a long-term basis, RWE Transgas created conditions **making it very difficult to offer** complex gas supplies to authorised customers by regional distribution systems other than those, in whose balance zone the point of supply of the authorised customer is. The Office considers such behaviour as the **most serious** violation of competition rules as RWE Transgas **abused** its dominant position on the market of natural gas intended for the category of authorised customers **to the detriment of undertakings** – the regional distribution systems (according to conditions modifying supplies to the balance zone of each regional distribution system listed in the portfolio of contracts, on the loss of an authorised customer no other regional distribution system has comparable conditions for submitting a competition offer to an authorised customer whose point of supply lies in its balance zone). RWE Transgas also abused its position **to the detriment of consumers** – authorised customers limiting their choice of natural gas supplier ensuring complex gas supplies.

In the course of administrative procedure the Office **conveyed its reservations** to its participant and **pointed out the possibility to adopt commitments eliminating the anti-competitive situation on the market** and in this case also the chance of avoiding sanctions. However RWE did not respond sufficiently to this proposal and on the other hand filed a complaint to the Regional Court in Brno against the illegal procedure of the Office (the court refused the complaint) and also a competence action to the Supreme Administrative Court.

The Office **imposed** the highest ever fine on one company within one administrative procedure, i.e. a sanction of **370 million CZK on RWE Transgas** for abuse of the dominant position on the gas market. **The behaviour of the dominant company in this case was very serious because it constitutes a very important barrier for gas traders in terms of the development of their business in the liberalising sector.** According to the Office RWE Trangas acted with the intent to strengthen as much as possible the position of the regional distributors in the balance zones at variance with the intended and ongoing liberalisation in the gas industry. The authorised customers were also affected and due to the behaviour of RWE Transgas their choice of supplier was almost zero because the created conditions virtually ruled out the possibility of making fully competitive offers.

When specifying the level of the fine for RWE Transgas also the fact that RWE did not terminate negotiations, for which the Office had reproved it, was added to its debit; **they refused the necessary changes and insisted on conditions, which they themselves had unilaterally proposed.** On the other hand as extenuating circumstances it should be stated that so far the Office had not conducted administrative procedure with this company for any breach of competitive rules.

Merger of RWE Gas/Transgas and regional distribution companies

In May 2002 the Office approved the merger of RWE GAS AG (RWE GAS), member of the supranational energy group RWE with the company Transgas and with six regional gas distribution companies. Among others Transgas operates in international and internal transport of natural gas, storage of natural gas and trading with natural gas and in the Czech Republic operates the transfer infrastructure. With this merger the **process of privatisation of the gas industry was finished** in the Czech Republic. In terms of the extent and importance of the transaction it was the **greatest merger of companies that the Office had dealt with in its 10-year history** (the purchase price was 4.1 billion EURO, i.e. ca 125 billion CZK).

The concern of the Office that competition would be disturbed due to the merger of RWE GAS / Transgas / 6 distribution companies referred particularly to the future standing of the company Moravské naftové doly (Moravian Oil Fields, hereafter "MOF"), which at the present time is the only competitor of Transgas on the market of natural gas storage in the Czech Republic and at the same time the greatest producer of natural gas in the Czech Republic. When evaluating the merger the threat arose that this sole competitor of Transgas on the market of gas storage and gas production in the Czech Republic would be considerably limited due to the influence exerted on its activities, or domination by the merging undertakings. That is to say that both Transgas and one of the emerging distribution companies had a portion of ownership in MOF and this could lead to efforts to gain control over MOF or to coordinate the procedure when exercising the right of vote in MOF, which could present an obstacle for adopting key decisions on strategic intentions of MOF, which have an obviously competitive character towards RWE GAS.

Therefore the decision to permit the merger contained the following **conditions focused on the elimination** of this **danger of the anti-competitive impact of the merger.**

- without the consent of the Office RWE Gas may not, either directly or indirectly, increase the present share in registered capital of MOF and neither in any way gain direct or indirect control over MOF maintaining the present joint per cent share
- RWE Gas may not block the decisions of MOF on plans, which will have an obviously competitive character towards RWE Gas, with the exception of cases, which would result in injury of MOF or its shareholder on objective assessment.

These conditions were focused on **ensuring the autonomy of competitive decision-making of MOF as the sole internal competitor by merger of the subject** in the area of natural gas storage. It is worth

mentioning that after the approval and implementation of the merger RWE GAS decided to sell its complete share in MOF. **In the outcome the conditions imposed by the Office resulted in structural changes on the market strengthening the opportunity of future development of a competitive environment in this branch**.

In connection with this merger the Office was also concerned that the merger would lead to a situation when one owner on one regional market would exploit the opportunity, either directly or indirectly, through its subsidiary company to influence decision-making in distribution companies supplying natural gas and at the same time in distribution companies supplying electricity, because they can be partly substituted. Such a situation could also encourage coordination among these distributors with the objective of maintaining the *status quo* on the regional market and thus preventing the entry of other competitors after the liberalisation of the gas market has been launched.

To eliminate such a danger the decision contained a third condition prohibiting RWE GAS to acquire shares in the power and heat distribution companies through their subsidiaries without the consent of the Office, or to build new power and heat distribution companies in the Czech Republic until the termination of privatisation of the energy sector, but not longer than 5 years.

By setting down the conditions the Office aimed to create **preconditions for the development of competition particularly in the future in connection with the anticipated liberalisation of the market**.

During investigations of the merger the Office cooperated with the sector regulator. The matter was particularly to give opinion on the objections of third parties in the area of energy legislation (e.g. the regulations of the Energy Regulatory Office modifying the rule for price calculations). Some facts, which had been the subject of the objections, are within the scope of activities of the sector regulator (and are not solved primarily by competition law). The existence of the sector regulator who is considered to be one of the pillars on which the process of market liberalisation is built, having sufficient powers and tools and understanding of his/her competencies, showed to be important for evaluating the conditions on the gas market and assessing the merger.

In March 2005 the Office declined the proposal of RWE Energy Aktiengesselschaft to **change the decision on approval of the merger**. In the proposal RWE requested that in the third condition, concerning the ban on acquisition of control shares in distribution companies in the area of electric energy and heat, the period of validity of this restriction be shortened to 1 January 2005. The Office decided to refuse to comply with the request, because when the Czech Republic entered EU there was no change in conditions, which would require to change the decision, even in spite of the undisputed partial change in energy legislation both at the level of the EU and the Czech Republic, which would be accepted also as a consequence of the access of the Czech Republic to the European Union.

However, the following development showed that **liberalisation of the market did not create effective competition.** The dominant undertaking as the result of the merger obstructed the development of competition on the market and the Office imposed sanctions for abuse of the dominant position (see the above described case).

ANNEX 2

CO2 Emission Allowances Competition Issue

A topical problem in the energy sector besides security is also the system of CO2 emission allowances. Experiences with the system of trading with CO2 emission allowances and the impact on prices of electric energy for the consumers showed that **the price of emission allowances was reflected in the energy prices much more than had been anticipated and in consequence it increased wholesale prices.** In addition we can see an increasing trend in wholesale prices also in those countries where the production of greenhouse gas is very low. This fact comes under criticism of a group of consumers and proves the strong market power of producers of electric energy and the ineffective allocation principle. Another negative aspect of the present system is that in outcome it supports and prefers the large producers of electric energy to the small or new undertakings which is entirely at variance with the development of a competitive environment. In this connection we should not forget that undertakings in progressing globalisation have only limited possibilities to transfer their increased costs resulting on the basis of the application of the system of trading with emission allowances.

From the viewpoint of equal conditions and effective functioning of competition it is evident that such a system gives certain undertakings a competitive advantage, which not every undertaking can enjoy. The advantaged undertakings receive the emission allowances free of charge; this may be indicated as state aid *sui generis*. These undertakings benefit from an unauthorised competitive advantage against undertakings, which do not receive these permits. **In terms of competition such a system may disturb fair competition**.

For more details see the enclosed PPT presentation

ANNEX 3

CO2 Emission Allowances and Competition

Martin Pecina, MBA
Chairman

The Office for the Protection of Competition
Czech Republic

Declared System Objective

Reduction of carbon dioxide emissions with simultaneous maintaining of economic growth and observing the competition rules

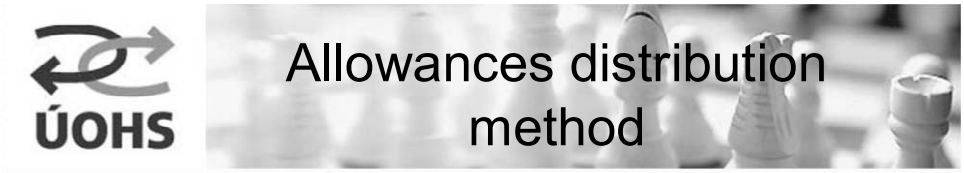
Declared System Objective

The method set for reaching the objective :

- A pollutor obtains as many allowances as he exactly needs
- Decreasing the amount of allowances for the following period
- This way should produce pressure on technological changes

Reality

Is profoundly different from declared objectives and methods



- The rule number 1 – historical view
  - The greater polluter, the more allowances
  - Companies which invested in technologies development obtain less allowances
- The rule number 2 – power method
  - Allowances are distributed with regard to expected development, i.e. – who cries more, obtains more
  - The amount of allowances obtained for particular states is directly proportional to abilities of their negotiators and their strategies

Úřad pro ochranu hospodářské soutěže 5

- Consequences of allocation among states
  - Allocation among states is unfair. It has nothing in common neither with real needs, nor with Kyoto commitments.
  - Unnecessary distortions of competition may occur in states with wrong strategy of negotiations.
- Consequences for Companies
  - Relocation of production to other countries
  - Zero companies motivation for innovation investments
  - Absolute drop of production and export
  - Establishment of anticompetitive conditions in the market
  - State aid

Úřad pro ochranu hospodářské soutěže 6

Examples

of the system malfunction

Relocation of production to other country

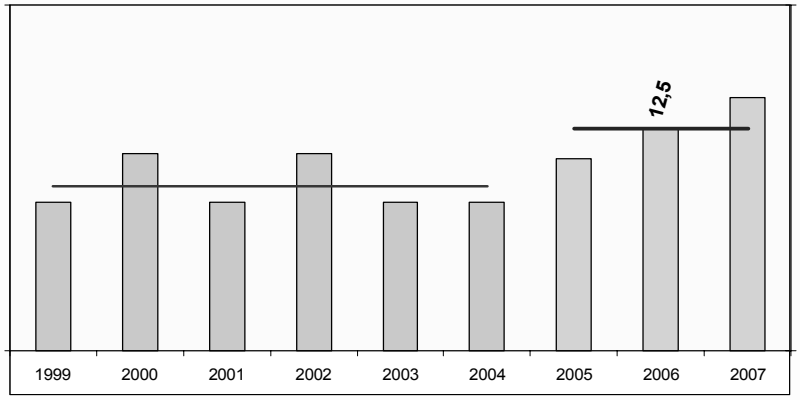
For companies having part of capacities outside of the EU the results of a simple economical consideration are:

- To retain the production in the EU or
- Displace the production outside and enjoy benefits from sold allowances

ÚOHS

Zero motivation for technological innovations

Typical Czech company

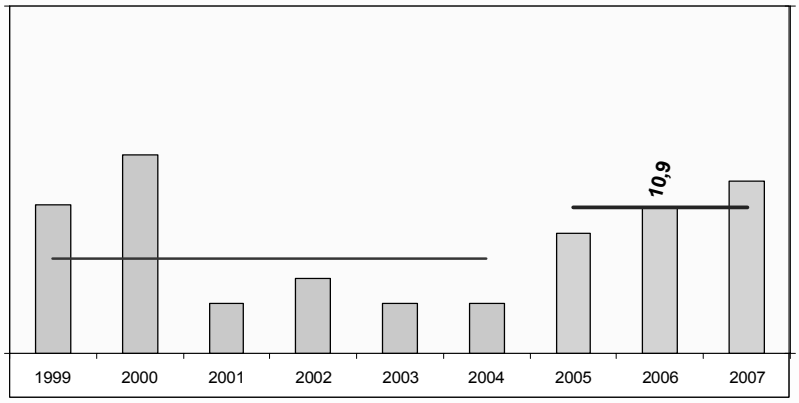


Úřad pro ochranu hospodářské soutěže 9

ÚOHS

Zero motivation for technological innovations

Innovational company (change of technology in year 2001)



Úřad pro ochranu hospodářské soutěže 10

ÚOHS

Zero motivation for technological innovations

- Every technological change lowering the total carbon dioxide production leads in its consequence to lowering the amount of awarded allowances.
- The system counts on the same principle continuance for next period
  - The profit from a savings measure during the single period is temporary. The profit will be eliminated during the next period.
  - Innovations costs will never be recovered

ÚOHS

Absolute drop of production and export

Energetics – brown-coal power plant

- Production of 1 MWh represents
  - 1,1 t of carbon dioxide
  - 1200 CZK (40 €) sale price
  - 150 CZK (5 €) costs on coal

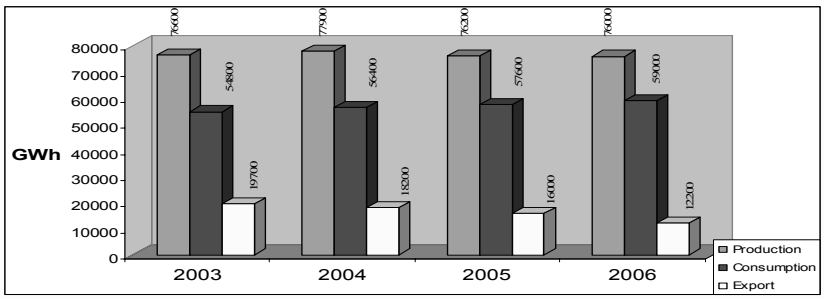
With an allowance´s price over 1050 CZK (35 €) (1200-150 CZK, e.g. 40 – 38 €) the production cannot be profitable even on the assumption that there will be no further savings (wages, upkeep) if the production is stopped.

Absolute drop of production and export

Consequences :

- Absolute drop of electricity production in the Czech Republic
- Absolute drop of export

Simultaneous increase in PROFITS of energy companies



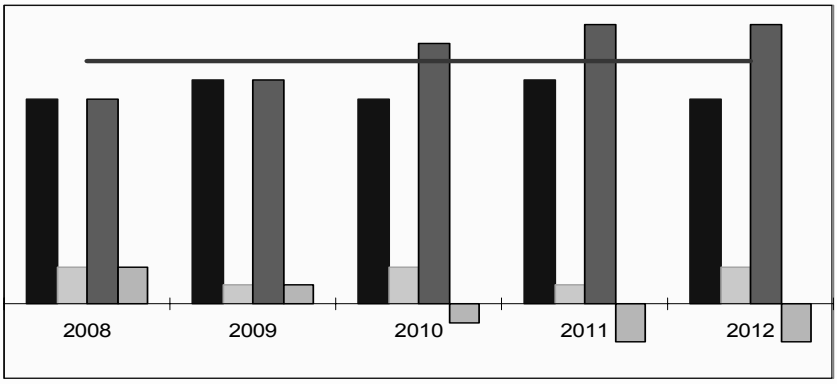
Absolute drop of production and export

Consequences :

- Czech power plants cease to produce the electricity and start to produce allowances
- Consequences for market are fatal
  - Supply ceases to exceed demand
  - **Annual price growth of 10 to 20 percent will go on**
  - Acute lack of electricity looms in a few years

Establishment of anticompetitive conditions in the market

The unsuccessful competitor will cash from the successful one



Úřad pro ochranu hospodářské soutěže 15

State Aid

Another problem appears, which is now under examination of the European Commission

- If undertaking, which gained allowances for free, decides to sell them out, the acquired assets represent *de facto* state aid and an unjustified competitive advantage.
- Allowances for free in certain system may lead to infringement of equal conditions in the market.

Úřad pro ochranu hospodářské soutěže 16

What needs to be done

for real reduction of carbon dioxide emissions?

Fair system of allocation

- Tying the amount of allowances to the volume of production, for example :
  - To 1 ton of steel, cement, etc. produced..
  - To one MWh electric energy produced
  - To 1 GJ of heat produced
- Such system would lead to permanent favoring of considerate technologies.
  without additional costs

Carbon dioxide production tax

- Taxing carbon dioxide production (*or greenhouse gases production in general)* with moderate rate
  - For sources which are part of the ETS system.
- Such system would lead to permanent favoring of considerate technologies.

  with additional costs

Thank you for your attention

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FRANCE

Introduction

Dans le contexte de la publication le 10 janvier 2007 par la Commission européenne de l'enquête menée sur les secteurs du gaz et de l'électricité, le thème retenu pour les débats de cette journée, « la sécurité énergétique et la politique de la concurrence » apparaît comme majeur. En particulier, le Gouvernement français soutient la mise au point d'une politique énergétique européenne compétitive qui doit reposer sur trois piliers : la lutte contre le réchauffement climatique, la sécurité des approvisionnements de l'Union européenne et recherche du moindre coût de l'énergie tant pour les particuliers que pour les entreprises**.**

S'agissant de la sécurité d'approvisionnement, il est impératif que la diversité du bouquet énergétique se conjugue avec la diversité des sources d'approvisionnement et des voies de transit et celle des infrastructures de transport, de regazéification et de stockage.

Les débats du comité, centrés sur la sécurité des approvisionnements énergétiques, concernent au moins deux types de problèmes : la définition et l'importance politique de la sécurité énergétique, la contribution et les limites du droit de la concurrence à cette sécurité.

Ces éléments conduisent donc la délégation française à présenter et soumettre aux débats les éléments de réflexion ci-après, présentant successivement l'impératif politique d'un droit à la sécurité énergétique pour les consommateurs (I), puis les conditions de développement de la sécurité des approvisionnement dans les secteurs du gaz (II) et de l'électricité (III) et enfin, le cadre voulu par le législateur pour assurer la régulation concurrentielle appliquée au secteur de l'énergie (IV).

1. Un impératif politique défini par le gouvernement français pour les consommateurs : le droit à la sécurité énergétique

Sans méconnaître les conditions d'un développement durable et les objectifs d'économie d'énergie, la sécurité énergétique constitue une exigence politique majeure définie par le Gouvernement français en vue de garantir à l'ensemble des consommateurs présents sur le territoire national d'être approvisionnés en énergie, à chaque instant pour tous les clients actuels ou potentiels. En outre, le Gouvernement français considère important de pouvoir concourir à la sécurité énergétique des pays membres de l'Union européenne notamment dans des cas de situations exceptionnelles ou de circonstances de gravité particulière (*cf.* la panne d'électricité du 4 novembre 2006 ; par ses opérations de délestage, RTE a permis d'éviter un black-out d'envergure continentale et a donc contribué à la sécurité d'approvisionnement de plusieurs pays européens).

1.1 A l'échelon national : l'approche française

Préserver la sécurité énergétique peut s'effectuer de deux manières : en influant sur l'offre ou sur la demande. La première méthode consiste à « subir » la consommation nationale et à la satisfaire entièrement. La deuxième méthode consiste à limiter la consommation en fonction de ce qui est effectivement disponible. Aucune de ces deux solutions n'est, en l'état, satisfaisante. Il faut donc les faire cohabiter et trouver le positionnement optimal entre ces deux schémas, en veillant à la sécurité des

approvisionnements en énergie primaire, dans un secteur soumis à de forts aléas politiques internationaux qui doivent être intégrés comme une donnée intangible sur laquelle les autorités nationales de concurrence ont peu de capacités pratiques d'intervention (cartel mondial des pays exportateurs de pétrole, position dominante de certains pays producteurs de gaz dans la fourniture des principaux pays de l'Union européenne).

Le secteur de l'énergie se prête donc particulièrement à l'exercice de choix politiques majeurs pour veiller à la sécurité des approvisionnements du marché.

En ce qui concerne les différentes sources d'énergie susceptibles de permettre d'atteindre l'objectif de la sécurité des approvisionnements, la notion de sécurité énergétique peut être envisagée de deux manières différentes : de manière globale, c'est-à-dire toutes énergies confondues, ou bien de manière sériée, en élaborant une définition pour chaque énergie. Les principales sources d'énergie finale sont constituées par le gaz naturel et l'électricité. La notion de sécurité d'approvisionnement peut être appréhendée successivement en fonction de ces deux sources d'énergie finales.

De nombreux exemples montrent que les sources d'énergies peuvent souvent être substituables. Le chauffage, par exemple, peut être réalisé au moyen de différentes sources d'énergie : fuel, gaz naturel, électricité, énergies renouvelables, etc. L'électricité elle-même découle d'un « mix » : nucléaire, gaz naturel, charbon, et l'hydraulique et autres énergies renouvelables concourent à assurer la production d'électricité nécessaire à la consommation française. Le gaz joue un rôle important qui, selon la Commission européenne, ira en s'accroissant dans les décennies à venir. Dans ces conditions, une réponse majeure aux préoccupations de sécurité d'approvisionnement réside dans la diversification du bouquet énergétique. Aucune source d'énergie n'est à elle seule à même de répondre à toutes les questions, en revanche une combinaison harmonieuse permet de concourir tant aux objectifs environnementaux qu'à la sécurité d'approvisionnement. Trois exemples peuvent être évoqués de ce point de vue :

- On peut, en premier lieu, citer les énergies renouvelables. Leur avantage est double : non seulement, elles permettent d'utiliser une source d'énergie inépuisable et gratuite (vent, courant fluvial, chaleur du sol ou de l'air, etc.) mais elles évitent l'émission de gaz à effet de serre (et donc l'utilisation de droits d'émission CO_2). Néanmoins, les énergies renouvelables, si elles ne génèrent aucun coût variable, présentent un caractère parfois intermittent et ne se situent pas encore nécessairement au même niveau de compétitivité que les autres formes d'énergie, hormis l'hydroélectricité. C'est ce qui explique le soutien public qui leur est consenti.

- En second lieu, le nucléaire est également un exemple intéressant dans le contexte de la définition d'une politique de sécurité des approvisionnements et de souveraineté énergétique. La matière première est disponible en grande quantité et intervient pour un coût relativement faible dans le prix de revient. De plus, l'émission de gaz à effet de serre est nulle. La Commission européenne a d'ailleurs mis en avant ces arguments dans sa communication du 10 janvier 2007 « une politique de l'énergie pour l'Europe ». Néanmoins, la construction d'une centrale nucléaire nécessite un investissement considérable et nécessite des dispositions adaptées pour promouvoir un niveau de sûreté élevé et une excellente maîtrise du cycle du combustible et des déchets.

- En troisième lieu, plus particulièrement en ce qui concerne le gaz naturel, il convient de souligner que la sécurité des approvisionnements peut passer par la diversification des sources d'approvisionnement par recours aux innovations technologiques récentes qui concernent les modes de transport du gaz : avec le développement de la technologie de transport du gaz naturel liquéfié, les investissements réalisables pour le transport de ce produit peuvent contribuer à diversifier les sources d'approvisionnement et, partant, à réduire très sensiblement la dépendance énergétique de l'Union européenne et singulièrement de la France. Dans le cas de la mise en

place d'une filière d'approvisionnement substitutive à la filière d'approvisionnement classique par gazoducs, la filière d'approvisionnement par GNL suppose le développement de fortes capacités d'acheminement et de stockage : plus ces capacités sont importantes, plus la sécurité d'approvisionnement est renforcée. Deux problèmes potentiels de concurrence peuvent ici être identifiés :

- d'une part, la création de barrières économiques à l'entrée et à la sortie (sunk costs) en raison des investissements nécessaires pour la construction d'usines de regazéification du GNL débarqué des méthaniers et pour un aménagement de facilités portuaires et de sites de stockage.

- d'autre part un problème d'incitation qui peut être suscité par la demande d'accès aux facilités de stockage par des petits opérateurs de distribution de gaz, dans la mesure où l'éventuelle obligation d'accès aux stocks qui peut être imposée aux opérateurs propriétaires des installations de stockage peut être de nature à décourager la construction de telles installations de regazéification et de stockage. Dès lors la création d'un droit d'accès à ces facilités de stockage pour des tiers non investisseurs, au nom du droit de la concurrence, peut apparaître contraire au renforcement de la sécurité d'approvisionnement. Un juste équilibre entre les incitations à l'investissement, les dérogations à l'accès aux nouvelles infrastructures et la concurrence post-investissement doit par conséquent être trouvé. Face à ce problème général d'incitation à l'investissement, il convient de mentionner que la CRE a des pouvoirs étendus pour l'électricité où elle peut décider à la place des opérateurs

Ainsi, la sécurité d'approvisionnement repose en France de manière convergente sur la maîtrise de l'énergie et la diversification du bouquet énergétique. Cette dernière s'accompagne par ailleurs d'une diversification des sources d'approvisionnement. Une telle politique présente en outre l'intérêt de pouvoir contribuer aux objectifs de lutte contre le changement climatique dès lors que la France entend également que son bouquet énergétique lui permette de viser une division par un facteur 4 de ses émissions de gaz à effet de serre à l'horizon 2050.

1.2 A l'échelon communautaire : la sécurité des approvisionnements doit être liée à la lutte contre le réchauffement climatique mais aussi favoriser une politique de développement des infrastructures

Dans la conception française, comme déjà indiqué en introduction, une politique énergétique européenne compétitive doit reposer sur trois piliers : la lutte contre le réchauffement climatique, la sécurité d'approvisionnement de l'Union et la recherche du moindre coût de l'énergie tant pour les particuliers que pour les entreprises.

En ce qui concerne la sécurité d'approvisionnement, la coopération européenne à l'échelle continentale dans ce domaine sera d'autant plus efficace que les États membres pourront s'appuyer sur des entreprises solides pour négocier dans de bonnes conditions avec les producteurs de gaz, pour engager les investissements nécessaires dans les infrastructures ou pour développer des capacités de production énergétique**.** Il faut toutefois souligner que ces aspects, peu détaillés dans la communication de la Commission européenne, mériteraient d'être développés plus avant dans le cadre de la déclinaison des grandes orientations retenues par le conseil européen[1].

[1] Ce concept est cité aux points 6 et 9 de la Communication de la Commission relative à l'enquête sectorielle, notamment pour lier les trois objectifs de compétitivité, sécurité des approvisionnement et développement durable, mais aucun détail n'est donné par la suite dans la communication qui se limite à

Sur la lutte contre le réchauffement climatique et l'objectif d'efficacité énergétique en termes de développement durable, l'objectif de réduire de 20% l'émission de gaz à effet de serre à l'horizon 2020, conformément au plan d'action présenté au dernier Conseil Énergie constitue une approche ambitieuse qui doit encore être examinée plus en détail. La France est favorable à ce dispositif à condition qu'il soit pris pour l'Union européenne dans son ensemble, avec des modalités de répartition par pays et par secteur à préciser en fonction des spécificités et des efforts déjà réalisés en matière d'émission de CO_2.

Les énergies renouvelables et les biocarburants doivent être développés. La France s'est elle-même fixée des objectifs ambitieux pour les biocarburants ou la production de chaleur d'origine renouvelable. Il conviendrait d'élargir la perspective et d'envisager plus largement des objectifs en matière de production d'énergie à faible contenu en carbone. Des objectifs chiffrés contraignants ne pourraient être acceptés que s'ils sont globaux et laissent aux États membres la liberté de répartir leurs efforts selon le « mix » énergétique le plus adapté à leur situation.

Il convient également de souligner l'importance de la reconnaissance du rôle de l'énergie nucléaire: cette énergie peut en effet jouer un rôle essentiel pour atteindre les objectifs du protocole de Kyoto ainsi que pour assurer une bonne sécurité d'approvisionnement électrique à coût modéré. La contribution du nucléaire est essentielle à un bouquet énergétique équilibré. La France soutiendra activement la Commission sur ce thème.

En matière de production et de transport, tous les États membres doivent pouvoir établir des prévisions pluriannuelles en gaz et en électricité, comme cela est fait en France, afin d'identifier les investissements nécessaires pour couvrir la demande à moyen et long terme. Une fois ces bilans réalisés, il sera alors possible d'orienter les investissements vers des technologies respectueuses de l'environnement et au meilleur prix. La France soutiendra la première réalisation d'une étude comparative sur les coûts/avantages des différentes filières énergétiques. La publication d'une revue stratégique annuelle et la création d'un observatoire au sein de la DGTren, proposée par la Commission européenne, constituent une première étape qu'il faudra compléter par une véritable identification des investissements nécessaires non seulement pour assurer la sécurité d'approvisionnement de l'Europe, mais également pour lutter contre le changement climatique. Cette identification est d'autant plus importante que les investissements à réaliser sont considérables.

En matière de réseaux, il est nécessaire, pour répondre à des incidents comme la panne électrique du 4 novembre 2006 qui a touché toute l'Europe, de créer au niveau européen un centre de coordination des gestionnaires de réseaux en sus de l'uniformisation des normes de sécurité. Par ailleurs, la France est tout à fait favorable à la définition d'interconnexions prioritaires dans le respect des exigences environnementales notamment en matière de protection des paysages. La France et l'Espagne sont d'ailleurs les premiers États membres à avoir demandé à la Commission de nommer un coordinateur européen sur le renforcement de la liaison France-Espagne. Les orientations de la Commission visant à renforcer la coordination des régulateurs nationaux rejoignent donc largement les propositions françaises.

Une action à l'échelon européen pour assurer la sécurité énergétique s'avère donc, dans le contexte actuel, de plus en plus indispensable. La Communication de la Commission européenne du 10 janvier 2007 va en ce sens.

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une observation de la structure des marchés énergétiques et à des propositions considérées sous l'angle concurrentiel.

2. La sécurité d'approvisionnement en matière de gaz naturel

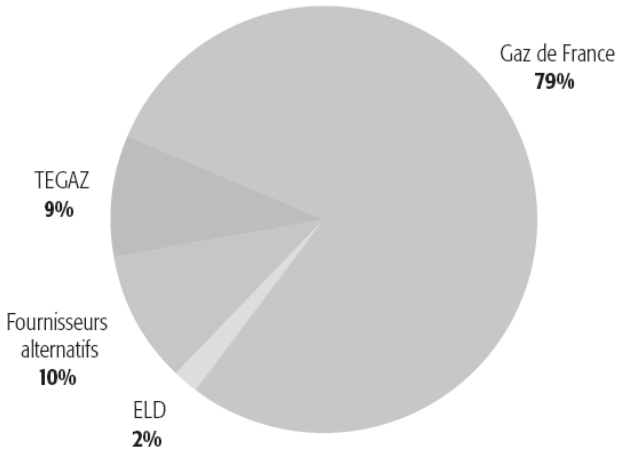
En tenant tout particulièrement compte de l'actualité qui a montré en 2006 et début 2007 diverses remises en cause de la sécurité et de la continuité des approvisionnements en matière énergétique, il convient de se pencher en premier lieu sur la sécurité d'approvisionnement en gaz naturel, les pays membres de l'Union européenne étant pour la plupart des importateurs.

2.1 Le modèle français de sécurité énergétique en matière gazière

Définir la sécurité d'approvisionnement en gaz naturel dépend nécessairement du contexte dans lequel on se place. Cette notion ne peut par exemple pas être envisagée de la même manière en Russie et en France. Tandis que le premier pays est producteur et exporte massivement son gaz naturel vers l'Europe de l'Ouest, le second importe 98% du gaz naturel nécessaire à sa consommation.

En France, deux grandes entreprises ont une activité de transport du gaz naturel : GRTgaz (GDF) qui gère la majeure partie du réseau de transport français et, dans une moindre mesure, TIGF (Total) à qui échoit le quart sud-ouest de la France. Dans le cadre de l'ouverture à la concurrence du marché du gaz naturel, les clients professionnels ont la possibilité depuis le 1er juillet 2004 de contracter avec le fournisseur de leur choix. Ainsi, la consommation non résidentielle de gaz naturel est assurée par des fournisseurs alternatifs à hauteur de 10%.

Encadré n°1



Répartition de la consommation des clients éligibles au 1er avril 2006

- Au 1er avril 2006, 9% des clients éligibles (soit 63.900 sites) ont effectivement exercé leur éligibilité. 18.400 sites sont alimentés par un nouvel entrant.
- Au 1er octobre 2006, la CRE dénombrait 14 fournisseurs alternatifs actifs (un fournisseur est considéré comme actif dès lors qu'il possède au moins un client en portefeuille).
- Parmi ces fournisseurs alternatifs, on peut citer : EDF, Altergaz, Poweo ou encore Distrigaz.

Après simplification, le modèle français est donc le suivant : un pays interconnecté avec les pays limitrophes (gazoducs et terminaux méthaniers) et dont le transport de gaz est assuré par deux entreprises juridiquement séparées de leurs maisons mères et la fourniture de gaz partagée entre les fournisseurs « historiques » et 14 nouveaux entrants.

La sécurité d'approvisionnement en gaz est garantie par des dispositions législatives imposant à chaque opérateur gazier (transporteur, distributeur, fournisseur…) des obligations de service public au titre de la continuité d'approvisionnement.

Les contrats à long terme liant les gros fournisseurs de gaz et les sociétés des principaux pays producteurs de gaz revêtent une importance particulière à ce titre. La stabilité qu'ils confèrent aux relations entre pays consommateurs et pays producteurs de gaz, même si elle n'est pas absolument à l'abri d'aléas politiques, est une des garanties de la réalisation des très lourds investissements nécessaires tout au long de la chaîne gazière.

En ce qui concerne l'Union européenne, la France soutient les efforts déployés en commun pour renforcer la sécurité énergétique à l'échelon européen : amélioration des interconnexions à l'intérieur de l'Union et construction de gazoducs permettant une diversification des approvisionnements, mise en œuvre de la directive 2004-67 sur la sécurité d'approvisionnement en gaz, intensification de nos relations avec les pays producteurs et de transit.

2.2 Les enjeux de la sécurité énergétique en matière gazière et de la concurrence sont-ils antinomiques ?

La France dépend presque exclusivement de ressources gazières extérieures. Sa sécurité énergétique passe d'abord par une diversification des sources d'approvisionnement en gaz, déclinaison sectorielle de la diversité du bouquet énergétique qui caractérise la situation française globale en la matière.

Un partage équilibré est en effet constaté entre nos principaux fournisseurs étrangers de gaz (Norvège, Russie, Algérie), sans oublier la montée en puissance d'autres fournisseurs (Qatar, Lybie, Nigéria, Égypte…). Le gaz naturel liquéfié est un élément important de cette diversification des sources (et des techniques) d'approvisionnement ; sa place est amenée à se développer puisque des améliorations importantes des installations méthanières existantes vont prochainement être mises en service dans le sud de la France et que de nouveaux projets d'implantation de terminaux sont à l'étude. Cet afflux de gaz devrait bénéficier également aux fournisseurs alternatifs. Cette nouvelle technologie d'approvisionnement, plus souple et moins sujette aux aléas politiques que l'approvisionnement par gazoducs, doit permettre à la fois une amélioration de notre sécurité énergétique et un renforcement de la concurrence sur le marché français.

L'importance des contrats d'approvisionnement à long terme sur notre sécurité d'approvisionnement et sur la réalisation des investissements nécessaires a été rappelée au paragraphe précédent. Bien entendu, la capacité de négociation des entreprises françaises avec les entreprises des pays producteurs est ici essentielle, comme c'est le cas pour tous les pays consommateurs de gaz qui dépendent de l'extérieur pour leur approvisionnement. Il est normal que les impératifs de sécurité d'approvisionnement soient en partie assurés par de tels contrats, négociés par des entreprises capables de traiter d'égal à égal avec les grandes entreprises productrices.

Bien évidemment, les contrats à long terme ne doivent pas être associés à des pratiques ou clauses anticoncurrentielles ; ils ne doivent pas avoir d'impact négatif sur la fluidité des réseaux. A ce titre il convient d'évoquer deux aspects clés de la conciliation des impératifs de la sécurité d'approvisionnement et des impératifs de la concurrence. Le développement physique du réseau doit d'abord permettre la circulation simultanée de grosses quantités de gaz, résultant notamment de la mise en œuvre de contrats à long terme, et de quantités plus restreintes, issues de l'application de contrats à plus court terme ou spot. En second lieu, des règles d'attribution de capacités claires et transparentes et un accès non discriminatoire aux réseaux doivent être garantis aux opérateurs du secteur, quelle que soit leur taille. Le rôle de régulateurs indépendants est ici essentiel.

Par conséquent, dans un dispositif de transport de gaz correctement dimensionné et interconnecté , la coexistence active de tous les opérateurs gaziers, anciens et nouveaux, est parfaitement possible et souhaitable. Les nouveaux entrants doivent être en mesure de développer sans entraves leur activité et de

stimuler la concurrence grâce au recours à des transactions de court terme ou de très court terme. Leur nombre croissant en France depuis 2004 démontre qu'ils pourvoient effectivement à un besoin du marché ; l'ouverture totale du marché le 1er juillet 2007 constituera une nouvelle étape du développement de la concurrence entre les différents acteurs énergétiques.

Il faut enfin signaler que, pour les pays de l'Union européenne, la possibilité d'une prise de participation des entreprises européennes dans les installations en amont de la chaîne gazière, dans les pays producteurs, est également un élément important de notre sécurité énergétique qui ne doit pas être perdu de vue.

La France considère qu'un bon équilibre a d'ores et déjà été trouvé dans le développement d'instruments qui concourent à la sécurité d'approvisionnement sans nuire au libre exercice de la concurrence. En particulier, le rôle des contrats de long terme doit être souligné. L'existence d'un cadre régulateur exigeant permet par ailleurs de se prémunir d'éventuelles barrières à l'entrée sur les marchés de l'énergie. Telles sont la politique et la pratique mises en œuvre par la France, qui portent aujourd'hui leurs fruits.

2.2.1 Les problèmes de concurrence spécifiques à l'industrie du gaz

Deux problèmes sont plus particulièrement susceptibles d'affecter l'industrie du gaz, contribuant à distinguer ce secteur de celui de l'électricité : l'accès aux installations de stockage et la problématique des contrats *« take or pay.*

L'accès aux réseaux de stockage

Les installations de stockage sont certes des infrastructures lourdes et difficilement reproductibles, à cause de leur coût, de la rareté des sites géologiques et des préoccupations environnementales ; il n'en résulte pas pour autant une impossibilité totale de les mettre en place. Il existe sur le territoire français quelques sites « déplétés », anciens gisements, qui pourraient être reconvertis en installations de stockage.

La loi du 9 août 2004 instaure un accès négocié des tiers aux stockages souterrains de gaz naturel et prévoit que les tarifs d'utilisation des stockages sont fixés par les opérateurs de stockages et sont appliqués de manière transparente et non discriminatoire à tous les utilisateurs des stockages, y compris les fournisseurs historiques. (La Commission de régulation de l'énergie (CRE) a le pouvoir de régler les différends relatifs à l'accès aux infrastructures gazières : réseaux de transport, réseaux de distribution, terminaux méthaniers et stockages souterrains de gaz naturel). Elle a, par ailleurs, consulté les acteurs du marché sur les tarifs et les conditions d'accès aux stockages définis dans les premières offres des opérateurs.

En France, le gaz naturel est majoritairement importé sur la base de contrats de long terme. Les stockages souterrains sont utilisés pour adapter les approvisionnements, qui se font de manière régulière tout au long de l'année, à la consommation des clients finals, qui est irrégulière et globalement concentrée sur la saison d'hiver. Les stockages servent donc principalement à emmagasiner le gaz en été et à le délivrer en hiver, et permettent de faire face aux demandes des jours de très grand froid. Ils sont un élément essentiel de la sécurité d'approvisionnement et de la flexibilité que tous les fournisseurs doivent assurer. Les stockages sont donc des infrastructures essentielles au bon fonctionnement du marché du gaz naturel.

La Direction des Grandes Infrastructures de Gaz de France, et TIGF (TOTAL Infrastructures Gaz France), filiale de TOTAL, sont, à ce jour, les deux opérateurs de stockage en France. Gaz de France est gestionnaire de 13 sites répartis sur l'ensemble du territoire à l'exception du Sud-Ouest. TIGF est gestionnaire de 2 sites dans le Sud-Ouest.

Gaz de France et TIGF ont publié leurs premières offres d'accès aux stockages, respectivement en avril 2004 et en octobre 2004.

La loi impose aux fournisseurs alimentant des clients domestiques et des clients assurant des missions d'intérêt général d'avoir un recours à des stockages suffisants pour assurer la continuité de fourniture à leurs clients. La loi impose également, en cas de changement de fournisseur par un client, le transfert au nouveau fournisseur des capacités de stockage correspondantes. L'ensemble des dispositions d'application relatives à l'utilisation des stockages souterrains de gaz naturel sont rassemblées dans un le décret n°2006-1034 du 21 août 2006. Ce décret relatif à l'utilisation des stockages souterrains de gaz naturel attribue des droits d'accès à des capacités de stockage aux fournisseurs qui alimentent des clients finals et impose à certains d'entre eux, des obligations quant à la gestion de leurs stocks. Ainsi, les fournisseurs de clients domestiques ou assurant des missions d'intérêt général sont tenus de posséder avant l'hiver des volumes de gaz stocké qui ne peuvent être inférieurs à 85 % des droits de stockage générés par ces clients.

La problématique des contrats « take or pay »

La conjonction des besoins des pays importateurs de gaz et de l'importance des infrastructures nécessaires à l'exploitation du gaz ont conduit à l'apparition de contrats à long terme comportant des clauses appelées *« take or pay »*. Il s'agit de clauses de partage de risques, entre les producteurs et les sociétés gazières. Ces contrats « *take or pay* » consistent dans des conventions par lesquelles l'acheteur de gaz prend un engagement à long terme d'acheter un certain volume de gaz vis-à-vis du fournisseur. Cet engagement trouve une contrepartie dans l'ajustement des prix livrés à la frontière sur la valeur du cours du pétrole, avec pour objectif de soutenir la compétitivité du gaz naturel en termes de prix facturés aux clients finals par l'opérateur national, après transport et distribution (clause de net back). Lorsque l'acheteur ne peut enlever la quantité qu'il s'est engagé à acheter, il doit payer des pénalités de non enlèvement. Les contrats prévoient généralement une certaine marge de manoeuvre annuelle, généralement plus ou moins dix pour cent par rapport à la quantité convenue. C'est ainsi par exemple que si l'acheteur enlève une quantité inférieure de cinq pour cent à la quantité prévue, il paiera la somme relative à la quantité prévue et le fournisseur pourra lui restituer le surplus acheté et non enlevé lors d'une autre période. Ce mécanisme a été conçu pour garantir un débouché suffisant aux producteurs, leur permettant d'engager les gros investissements d'infrastructure nécessaires à l'exploration et à l'exploitation des champs. De leur côté, les pays importateurs se voyaient assurés d'être approvisionnés en gaz. Des possibilités de renégociation des contrats avec des marges de flexibilité plus importantes sont possibles.

Il est important de veiller à ce que les engagements "*take or pay*" n'aboutissent pas à empêcher toute ouverture réelle du marché. Le régulateur devra attentivement s'assurer que les entreprises gazières n'abusent pas de cette justification pour refuser l'accès des tiers à leur infrastructure.

3. La sécurité d'approvisionnement en matière d'électricité et la sûreté de fonctionnement du système électrique

La sûreté « électrique » se décompose en deux dimensions complémentaires :

- la sécurité d'approvisionnement qui désigne l'aptitude du parc de production à couvrir à tout moment, l'ensemble de la demande d'électricité ;

- la sûreté de fonctionnement qui traduit la capacité du système électrique à évacuer l'électricité des producteurs pour la délivrer aux consommateurs.

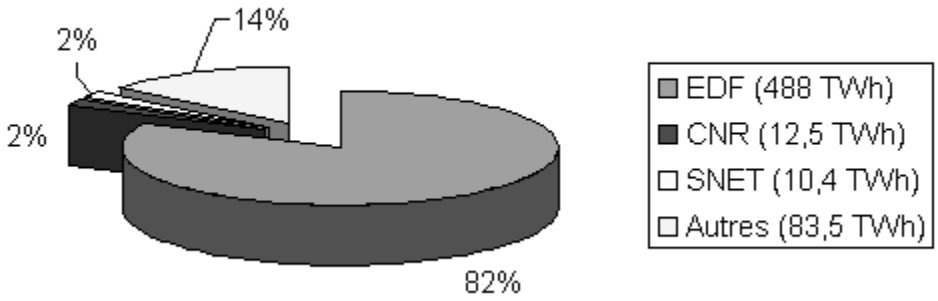
La question de la sécurité d'approvisionnement est traitée en France dans le cadre de la programmation pluriannuelle des investissements (PPI), qui s'appuie notamment sur le bilan prévisionnel

de l'équilibre offre demande d'électricité réalisé par le gestionnaire du réseau de transport d'électricité (RTE) tous les deux ans. Afin de traiter plus particulièrement des situations à risque du type canicule ou vague de froid, RTE est également chargé de réaliser en début d'hiver et d'été, un document prévisionnel sur le passage de la saison. Ce document est ensuite régulièrement actualisé en cas de situation à risque.

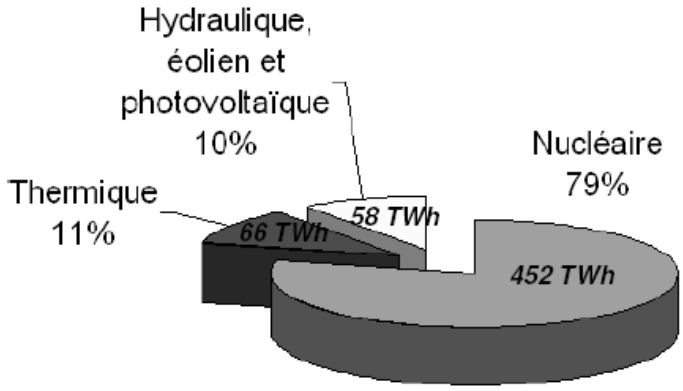
La sûreté de fonctionnement du système électrique est assurée par une politique qui associe prévention et gestion des crises. La prévention des crises repose en France sur de nombreuses dispositions du décret du 23 décembre 2006 approuvant le cahier des charges type du réseau public de transport. Ce décret prévoit par exemple l'élaboration par le gestionnaire du réseau public de transport, RTE, d'une politique de maintenance de ses infrastructures (afin de s'assurer de leur résistance mécanique face à des aléas climatiques), la définition de règles de sûreté conformes aux règles de l'UCTE (Union pour la Coordination du Transport d'Électricité) et la réalisation d'un bilan annuel de la sûreté du système électrique . Ces dispositions permettent à l'État de mieux contrôler le niveau de sûreté du système électrique français.

L'électricité est par ailleurs une forme d'énergie finale qui utilise des sources d'énergie primaire comme intrants et les transforme. Assise sur un potentiel de production autonome, comme dans le cas de l'énergie nucléaire, l'électricité peut contribuer à la sécurité énergétique globale, tout particulièrement en raison de son potentiel de substitution.

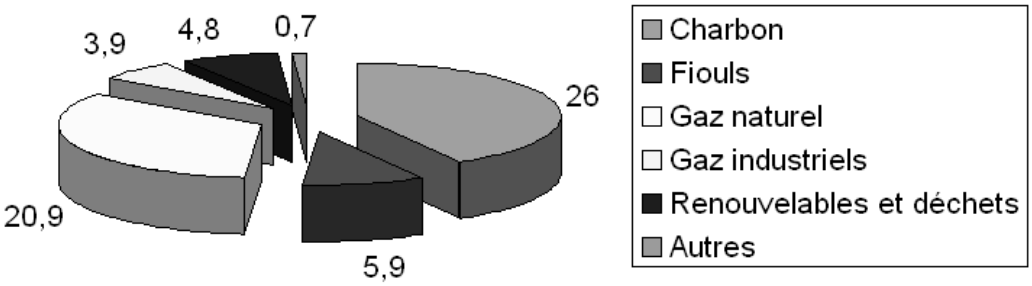
Encadré n°2



Principaux producteurs français d'électricité



Production nationale brute en 2005 : 575 TWh



Répartition de la production thermique classique en TWh

4. La régulation française dans le domaine de l'énergie et les conditions de développement

4.1 Les principes politiques définis pour le fonctionnement du marché de l'électricité et du gaz

Concernant le fonctionnement du marché intérieur européen de l'électricité et du gaz, le gouvernement français a eu l'occasion de rappeler les principes qu'il entend suivre. Ces principes ont été rappelés également à l'occasion de la publication de la Communication de la Commission du 10 janvier 2007.

Le premier objectif de l'ouverture du secteur de l'énergie est de garantir aux consommateurs les prix les plus compétitifs et la réponse à leurs besoins. Or, le contexte actuel de libéralisation n'a pas empêché les prix de marché de l'électricité de doubler entre fin 2004 et fin 2006. La formation des prix soulève d'ailleurs des interrogations : ils incorporent les droits d'émission du CO2, alors qu'une grande part de l'électricité produite n'a pas eu recours à l'achat de droits d'émission. De plus, sur les segments de marché les plus libéralisés à ce jour -par exemple pour les industriels "électro-intensifs"-, les entreprises ne trouvent pas toujours les réponses à leurs besoins de long terme.

Comme la Commission, le Gouvernement français considère donc qu'il existe des dysfonctionnements sur le marché. Mais il y a divergence sur l'identification des causes et donc des remèdes à apporter. Ces dysfonctionnements n'apparaissent pas imputables à l'existence d'opérateurs énergétiques intégrés ou à la présence d'opérateurs historiques dominants, ou encore au maintien de tarifs réglementés. En effet :

- dans la mesure où les tarifs réglementés reflètent les coûts de production, ils ne constituent pas un avantage ni une distorsion ;

- un certain nombre d'opérateurs sur le marché, qu'ils soient historiques ou nouveaux entrants, ont annoncé des investissements importants dans la production, montrant ainsi qu'il n'existe pas de barrière à l'entrée liée aux tarifs réglementés ;

- sur les réseaux et les interconnexions, les investissements sont contrôlés par les régulateurs : ceux-ci valident les projets et leur garantissent une rémunération au travers des "tarifs d'accès au réseau" qu'ils régulent ;

- l'existence de groupes énergétiques forts au niveau européen est une garantie, parmi d'autres, de sécurité d'approvisionnement de l'Europe, qui reste très dépendante des énergies fossiles : la dimension de ces groupes énergétiques renforce le pouvoir de négocier avec un nombre limité de pays producteurs gaziers et pétroliers tant sur les volumes que sur les prix.

Dans la réalité des situations observées, les prix compétitifs ne proviennent pas uniquement de la concurrence, mais surtout de capacités de production suffisantes et à moindre coût. La France a beaucoup investi dans ce domaine, mais le marché européen ne dispose plus aujourd'hui de capacités excédentaires. Ce déséquilibre entre l'offre et la demande a poussé les prix à la hausse. Les investissements à réaliser sont importants et ne porteront leurs fruits qu'à moyen terme. L'enjeu majeur de la politique européenne de l'énergie est donc de les favoriser.

4.2 Description du dispositif de régulation et rôle des différentes institutions en matière de droit de la concurrence

En France, la compétence politique et de définition du cadre réglementaire ou de son évolution appartient au Ministère de l'économie, des finances et de l'industrie, les fonctions de régulation sectorielle

structurelle appartiennent à la CRE et le Conseil de la concurrence est en charge des sanctions des comportement anticoncurrentiels et dispose également d'une fonction d'avis.

Encadré n°3

Quatre institutions sont donc susceptibles d'intervenir dans le domaine de la sécurité des approvisionnement énergétiques et de l'application du droit de la concurrence dans le domaine énergétique, dont deux directions générales du Ministère de l'économie, des finances et de l'Industrie disposant de services d'enquête sur l'ensemble du territoire national français.

- **La Direction Générale de Énergie et des Matières Premières (DGEMP)** : cette direction dépendant du Ministre de l'économie, des finances et de l'Industrie a pour mission d'élaborer et de mettre en œuvre la politique énergétique et des matières premières. Elle propose, dans son domaine de compétence, les positions françaises en vue des discussions internationales et communautaires et assure la tutelle des entreprises et établissements publics du secteur. La DGEMP élabore et met en œuvre la politique destinée à assurer la sécurité de l'approvisionnement en énergie et en matières premières et le suivi des secteurs clés de l'énergie. Cette direction veille au bon fonctionnement des marchés de l'énergie et propose les mesures favorisant la maîtrise de la demande et l'utilisation rationnelle de l'énergie. Elle est en charge de la rédaction des textes réglementaires et législatifs concernant ces secteurs.
- **La Direction Générale de la Concurrence de la Consommation et de la Répression des Fraudes (DGCCRF)** : cette direction dépendant du Ministre de l'économie, des finances et de l'industrie veille au respect du droit de la concurrence et à la protection du consommateur par le biais de son réseau d'enquêteurs présents sur l'ensemble du territoire. Elle est également compétente en matière tarifaire, les différents opérateurs devant lui transmettre leurs propositions de barèmes à chaque mouvement tarifaire. La DGCCRF est plus particulièrement chargé de l'application des annexes A des directives 2004-54 (électricité) et 2004-55 (gaz) : à ce titre, elle mène des enquêtes sur le terrain et relève les comportements illicites des opérateurs. Ces pouvoirs viennent d'être renforcés par la loi n° 2006-1537 du 7 décembre 2006. Des premières enquêtes générales ont débuté en 2006 et vont s'intensifier dès le premier semestre 2007.
- **La Commission de Régulation de Énergie (CRE)** : cette autorité administrative indépendante créée en 2000 veille à ce que les différents opérateurs puissent avoir accès aux réseaux publics de transport et de distribution de manière transparente et non discriminatoire. Son avis est systématiquement demandé à chaque mouvement tarifaire. L'article 7 de la loi du 3 janvier 2003 prévoit que « les décisions sur les tarifs sont prises conjointement par les ministres chargés de l'économie et de l'énergie, sur proposition de la Commission de régulation de l'énergie, notamment à la demande des opérateurs, pour les tarifs d'utilisation des réseaux de transport et de distribution de gaz et des installations de gaz naturel liquéfié » La CRE s'assure également que les tarifs d'utilisation des infrastructures sont appliqués de manière transparente et non discriminatoire à tous les utilisateurs de ces infrastructures. La CRE a également le pouvoir de régler les différends relatifs à l'accès aux infrastructures gazières : réseaux de transport, réseaux de distribution, terminaux méthaniers et stockages souterrains de gaz naturel. LA CRE dispose aussi depuis la loi n° 2006-1537 précitée du pouvoir de surveillance des transactions intervenues dans le cadre des marchés organisés et des opérations transfrontalières. Enfin, si la CRE a connaissance de pratiques anticoncurrentielles dans le secteur de l'énergie elle doit en saisir le Conseil de la concurrence. De même, la CRE doit être saisie si le Conseil de la concurrence doit connaître de pratiques anticoncurrentielles dans le secteur de l'énergie.
- **Le Conseil de la concurrence** :. créé par l'ordonnance du 1er décembre 1986, dont les dispositions ont été insérées en 2000 dans le livre IV du code de commerce, cette autorité administrative indépendante a pour mission de veiller au respect de la concurrence sur les marchés. A cet effet, le Conseil de la concurrence est habilité à faire cesser et à sanctionner toute pratique anticoncurrentielle et intervient, d'office ou à la demande des plaignants, dès que la concurrence est faussée sur un marché, quels que soient l'activité concernée ou le statut, privé ou public, des opérateurs. Le Conseil peut, dans ce cadre, prononcer des mesures d'urgence, des injonctions ou des sanctions pécuniaires. Il n'a pas vocation à

réprimer les pratiques commerciales jugées pernicieuses ou déloyales, qui relèvent de la compétence du juge judiciaire. Il n'intervient pas non plus dans les litiges entre les parties, qui relèvent de la compétence du juge des contrats. Il joue également un rôle consultatif et rend des avis sur toute question de concurrence aux personnes morales représentant des intérêts collectifs : gouvernement, Parlement, collectivités locales, organisations professionnelles ou de consommateurs. Il peut enfin être consulté, à la demande du ministre de l'économie, sur tout projet de concentration. Dans le secteur de l'énergie, le Conseil de la concurrence doit saisir la CRE de toute pratique anticoncurrentielle portée à sa connaissance et la CRE doit le saisir de toute pratique anticoncurrentielle qu'elle pourrait connaître.

4.3 Sécurité énergétique et droit de la concurrence : le cas des contrats conclus avec les industries électro-intensives

Dans sa pratique décisionnelle, le Conseil de la concurrence a récemment illustré la manière dont il entend concilier les impératifs de sécurité énergétique et de concurrence.

Ainsi, dans le secteur de l'électricité, le Conseil de la concurrence s'est prononcé dans son avis rendu le 5 décembre 2005 relatif à un dispositif envisagé pour permettre aux industries électro-intensives de bénéficier de conditions spécifiques de prix d'achat de l'électricité .

Cet avis, qui fait suite à une saisine du Ministre de l'économie, des finances et de l'industrie, s'inscrit dans le contexte de l'ouverture progressive à la concurrence du marché de l'électricité aux professionnels depuis juin 2000.

Dans ce contexte, la situation des industriels dits " électro-intensifs " est singulière puisque ces derniers sont fortement dépendants des prix de l'électricité en raison de la part extrêmement importante de l'électricité dans leur coût de production et leur compétitivité est, par conséquent, très sensible aux prix de leurs achats d'électricité. En outre, la demande d'électricité par ces industriels a des caractéristiques spécifiques : consommation « en ruban » pour de fortes puissances unitaires, avec possibilité d'effacement aux heures de pointes. La production en base, spécialement électronucléaire, apparaît donc bien adaptée à la satisfaction de ce type de demande.

Or, la grande majorité de ces industriels, ayant fait jouer son éligibilité de manière irréversible, s'est vue appliquer des prix de marché nettement supérieurs aux prix régulés.

Certains de ces industriels électro-intensifs se sont ainsi tournés vers les pouvoirs publics français en faisant état de risques de délocalisation de leur activité s'ils ne peuvent bénéficier d'un prix d'achat de l'électricité inférieur à celui du marché et garanti sur une longue période. Compte tenu de la durée du cycle de leurs investissements atteignant parfois plusieurs décennies, les industriels " électro-intensifs " estiment que leur besoin de visibilité passe par la conclusion de contrats à long terme.

En réponse à cette demande, les pouvoirs publics ont mis en place une table ronde au premier trimestre 2005 sous l'égide de la DGEMP, réunissant producteurs et grands consommateurs d'électricité.

La réflexion de cette table ronde a débouché sur un dispositif soumis à l'appréciation du Conseil de la concurrence dans le cadre d'une demande d'avis formulée le 19 juillet 2005 par le ministre de l'économie, des finances et de l'industrie.

Le dispositif consiste à regrouper les industriels au sein d'un consortium dont le rôle est d'acquérir de l'électricité pour une durée de 15 à 20 ans aux meilleures conditions.

Selon ce dispositif, le consortium peut acquérir de l'électricité, sous forme de rubans pour une durée de 15 à 20 ans, auprès de fournisseurs sélectionnés après mise en concurrence, en contrepartie d'une prime fixe initiale versée en début de contrat et d'un prix d'enlèvement proportionnel, payé au fur et à mesure de la livraison d'électricité.

De plus, ce mécanisme prévoit l'agrément et la sélection des membres du consortium par arrêté conjoint du ministre du Budget et du ministre de l'Économie, sous réserve de remplir des critères définis par la loi.

L'intérêt du montage réside dans la combinaison des aspects industriels et financiers : il s'agit d'un engagement de consommation sur le long terme, assurant des débouchés stables aux producteurs, financé par un fort effet de levier : la prime fixe, empruntée sur le marché financier, est investie en capacité de production en base ; le prix proportionnel couvre le coût marginal de production et le remboursement de l'emprunt.

Le dispositif particulier mis en place pour servir les besoins en approvisionnement électrique des industries électro-intensives relève de la « sécurité énergétique » au sens où il garantit à ces industries la sécurité de conditions économiques d'approvisionnement, en volume et prix, prévisibles à très long terme (15 à 20 ans).

Dans son avis du 5 décembre 2005, la position du Conseil de la concurrence à l'égard du dispositif précité s'inscrit dans une double logique de sécurité énergétique et de respect des règles de concurrence :

4.3.1 L'impératif de sécurité énergétique commande un marché de gros plus liquide pour les contrats conclus à long terme

Le Conseil de la concurrence a rappelé que « si les contrats de long terme ne sont pas interdits '*per se*'' par le droit de la concurrence, il convient néanmoins de les analyser dans leur contexte et, notamment, de veiller à ce qu'ils ne portent pas une atteinte excessive au bon fonctionnement du reste du marché ». Il convient, en d'autres termes, de déterminer si ces contrats, en gelant une partie du marché, sont susceptibles de provoquer une barrière à l'entrée ou l'éviction de concurrents déjà présents sur le marché pertinent, ou de provoquer un verrouillage durable du marché.

A cette fin, le Conseil de la concurrence a recommandé, « d'analyser les contrats en tenant compte du volume qu'ils concernent au regard de la taille du marché pertinent, de l'ensemble des autres clauses contractuelles telles que, par exemple, les modalités de sortie anticipée ou le degré de couverture des besoins des clients (présence éventuelle de clauses d'exclusivité) et enfin, de leur justification économique (par exemple : durée de l'engagement au regard des investissements consentis) ».

Dans son avis, le Conseil de la concurrence a relevé que les contrats d'approvisionnement du consortium, s'ils étaient effectivement limités à un volume de 20 TWh, couvriraient alors 13 % du marché pertinent. Il a considéré qu'il s'agissait d'un ordre de grandeur acceptable du point de vue concurrentiel, dans la mesure où un tel volume devrait laisser *a priori* des débouchés suffisants aux fournisseurs tiers. En outre, le Conseil de la concurrence a relevé que les contrats en cause n'étaient pas destinés à couvrir l'ensemble des besoins des clients industriels, ceux-ci étant susceptibles de se tourner vers des concurrents pour un complément de fourniture.

Au surplus, le Conseil de la concurrence a relevé l'utilité que les contrats à long terme concernés peuvent présenter pour les parties dans la mesure où ils garantissent :" *au fournisseur un débouché et à l'acheteur une source d'approvisionnement connus et sûrs et à des prix prévisibles et stables. Cette stabilité permet aux parties de réaliser des économies, notamment en réduisant les coûts de transaction, en*

organisant une meilleure programmation de la production et des livraisons ou en réalisant des investissements durables. "

A ce titre, le Conseil de la concurrence a estimé que le meilleur moyen d'assurer la compatibilité des contrats à long terme avec le droit de la concurrence est de favoriser l'amélioration d'un marché de gros liquide pour les produits à long terme. A cette fin, le Conseil de la concurrence en appelle aux pouvoirs publics et au régulateur sectoriel pour mettre en place les mesures structurelles contribuant à la liquidité dudit marché.

4.4 Conclusion

En résumé, pour les Autorités françaises, la sécurité d'approvisionnement doit être recherchée par la diversité :

- diversité des énergies, renouvelables et nucléaire compris ;
- diversité des sources géographiques d'approvisionnement ;
- et diversité des infrastructures de stockage, d'acheminement et de transport.

Toutefois, une réflexion sur la sécurité des approvisionnements énergétiques en relation avec le droit de la concurrence ne saurait par ailleurs exclure d'intégrer les paramètres politiques exigeants, régulièrement rappelés par les populations, en matière environnementale et de développement durable (lutte contre l'émission de gaz à effet de serre, économies d'énergie, développement durable notamment par le recours aux énergies renouvelables).

Ces facteurs permettent de prédire qu'une forte régulation prenant en compte ces facteurs sociopolitiques sera encore longtemps nécessaire dans le domaine de l'énergie et que les applications du droit de la concurrence resteront circonscrites et limitées à certains segments de la chaîne de valeur ajoutée énergétique. En tout état de cause, ni la désintégration verticale souvent prônée ni une introduction systématique de la concurrence à toutes les étapes de la chaîne de valeur ajoutée ne paraissent de nature à garantir automatiquement la sécurité énergétique et la satisfaction des contraintes environnementales.

GERMANY

1. Significance of security of energy supply in Germany

The Energy Industry Act has laid down five major objectives for the energy sector in Germany: In addition to security of energy supply, these are: competitive pricing, environmental compatibility, consumer friendliness and efficiency. The conflicting priorities inherent in these objectives make it impossible to completely fulfil all of them at the same time. Rather, what has to be aimed at is a solution which takes as much account as possible of each different interest. In this context, the Federal Constitutional Court has declared the security of energy supply a "community commodity of the highest order". According to the Court, it is an "absolute" community commodity. Consequently, energy supply is seen as one of the public services of general interest that are "indispensable for a life in keeping with human dignity". In this context, security of energy supply means on the one hand that there have to be sufficient supply capacities, and on the other that technical security has to be ensured.

The current debate focuses in particular on the high level of energy prices. In Germany, the energy monopolies were broken up in 1998 by far-reaching amendments to the Energy Industry Act. Since then the German energy market has been subject to constant change. The liberalisation of the energy market was mainly driven by the realisation that, with the exception of the natural gas and electricity networks, natural gas and electricity supply did not necessarily have to be seen as natural monopolies.

Against the background of the gas supply dispute in Eastern Europe, the security of energy supply has recently gained new significance. Germany has made this issue one of the priorities for its EU presidency in the first half of 2007 (quote from the Presidency Programme "Europe – succeeding together"):

1.1 "Guaranteeing a secure, environmentally sound and competitive energy supply

A secure, environmentally friendly and competitive energy supply is crucial if Europe is to experience positive economic development. Yet guaranteeing such a supply is becoming increasingly difficult due to the finite nature of fossil fuels, combined with growing international demand, persistently high oil and gas prices, mounting instability in certain regions of the world and the effects of climate change. In view of these challenges, adoption of the European action plan on energy policy will be a priority of the European Council in spring 2007.

Completion of the Internal Market for gas and electricity by 1 July 2007 is an important goal of European energy policy. The German Presidency will work to obtain the complete opening of the markets for electricity and natural gas on the basis of blanket application of European legal provisions in all EU Member States. Given the high electricity and gas prices, it is vital that competition in Europe increases. In early 2007 the European Commission's report on implementation of the Second Internal Market Package and its final report on the sector inquiry will reveal where problems still exist, where the Member States need to do their homework, and where additional guidelines might be necessary.

Outside its borders the EU must put the energy policy partnership with key producer, transit and consumer countries on a solid and reliable footing by conducting intensive dialogue as part of a cooperative approach and involving the Member States more closely. Extending the energy dialogue with

Russia and the United States in particular will play a key role. Energy issues will also receive greater priority within the European Neighbourhood Policy."

2. Regulation of the energy sector

The network sector is mainly regulated by the Energy Industry Act which allows for "competition within the network" by means of transmission competition. Based on objective and justified criteria, operators of energy supply networks have to grant everyone non-discriminatory access to their networks. As far as distribution and the operation of networks used for general supply is concerned, the legislator has decided to introduce a "competition for the networks" as well, by having the municipalities invite to tender for the network every 20 years.

In July 2005 the German Energy Industry Act was radically amended. One of the key elements of the amendment was the creation of a regulatory authority. State control of the electricity and gas network operators was transferred to the former Regulatory Authority for Telecommunications and Posts, subsequently named the "Federal Network Agency for Electricity, Gas, Telecommunications, Posts and Railways". In terms of content the most significant amendments were the separation of network monopolies in the electricity and gas sector from other business areas, and the regulation of network access and network fees.

2.1 Competencies of the energy regulatory authority

Overlaps of competencies between the Bundeskartellamt and the Federal Network Agency are avoided by separating the areas of application of competition law and regulatory law. In particular, the regulatory authority has been given a number of ex-ante powers. The rules governing network fees, in particular, are subject to the regulatory authority's ex-ante control. The rules governing connection to the network, network access and network fees are lex specialis in relation to the general competition rules.

In addition to its regulatory tasks the regulatory authority constantly monitors activities in the network sector. This includes, inter alia, compliance with the rules for the management and allocation of connection capacities, mechanisms to resolve capacity constraints, conditions for granting access to storage capacities as well as conditions and tariffs for the connection of new electricity producers.

2.2 Fees for network use

Fees are calculated on the basis of the costs of operation, which must correspond to the costs an efficient and structurally comparable network operator would incur. To ensure that network fees correspond to these standards, the regulatory authority may compare the network fees, revenues and costs of the individual operators of energy supply networks.

Furthermore, on the basis of a report by the Federal Network Agency, the Federal Ministry of Economics and Technology is currently drafting a regulation to introduce an incentive regulation system. Under an incentive regulation system, a company's prices or revenue are not rigidly linked to its actual costs; inefficient companies are granted lower yields while efficient companies can have higher yields. Incentive regulation serves to replace the competitive pressure which, in competitive sectors, continually provides incentives to increase efficiency.[1]

[1] As soon as the fees for network use are established by means of incentive regulation the interest rate on equity capital will be set by the regulatory authority for the first time. Until then the interest rate on equity capital will be 6.5% for old network facilities and 7.91 % for new network facilities in the electricity sector

2.3 The balancing energy system

The provision of balancing energy serves to balance short-term deficits or excesses in energy consumption resulting from a discrepancy between the amount of electricity fed into the network by electricity providers and the actual amount of electricity used by the end consumers. It therefore helps to ensure security of energy supply in Germany. The Energy Industry Act reform has improved the balancing energy system by obliging the transmission network operators to put balancing energy out for tender by means of a joint Internet platform, and to cooperate with one another in order to lower expenses incurred in the provision of balancing energy.

2.4 Divestiture

The provisions on divestiture laid down in the Energy Industry Act create transparency to counteract distortions of competition, in particular cross subsidies. The Act stipulates legal, operational and information divestiture as well as the separation of accounting operations. Legal divestiture obliges vertically integrated energy providers to organise their network-related services independently under company law. *Operational* divestiture concerns organisation and decision making processes. Accordingly, certain groups of employees working for a network operator may not be employed at the same time by a legally independent network operator or the connected vertically integrated energy provider. In the interest of non-discriminatory network access vertically integrated energy providers and network operators are obliged to ensure the confidentiality of economically sensitive data *(information* divestiture). The separation of *accounting operations i*s also of particular significance. Energy providers are obliged to keep separate balance sheets and accounts for network operation activities in the individual operational areas in such a way as if the respective activity had been carried out by an independent company.

3. Competition Policy Competencies and Decisions of the Bundeskartellamt in the Energy Sector

Apart from the network area, which is subject to regulation, the general provisions on competition apply to the upstream and downstream markets, i.e. generation, supply of and trading with energy. The Bundeskartellamt and the competition authorities of the *Länder* are responsible for their enforcement. Abuse control under competition law is applied in particular to the obstruction practices of dominant energy providers and the control of abusive pricing to excessive overall prices for electricity and gas. The Act against Restraints of Competition generally provides for the obligation of dominant companies to open up essential infrastructure facilities and networks to third parties against adequate remuneration. Finally, the Bundeskartellamt is the competent authority for merger control in the energy supply sector.

3.1 Merger control

3.1.1 E.ON / Ruhrgas Merger

One merger project which has raised much attention in Germany and Europe and in which energy supply also played a role, was the E.ON Ruhrgas case.

The opening-up of the German energy sector in 1998 was followed by an increase in the number of horizontal and vertical mergers between energy providers. In anticipation of expected competition in the electricity markets the European Commission and the Bundeskartellamt cleared a series of mergers (e.g.

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and 7.8% for old network facilities and 9.21% for new network facilities in the gas sector, all figures net of tax.

Veba/VIAG or RWE/VEW) subject to far-reaching conditions. The mergers led to higher concentration in the electricity distribution markets.

In its decisions of 17 January 2002[2] and 26 February 2002[3] the Bundeskartellamt prohibited E.ON AG from acquiring a majority share both in the energy provider Gelsenberg and Bergemann. Both companies, which through interlocks belonged to several shareholders, had stakes in Ruhrgas. By means of these two transactions E.ON would have virtually acquired a 100 per cent share in Ruhrgas. The Bundeskartellamt had substantiated its prohibition decisions with the argument that the concentration of E.ON and Ruhrgas at a time of emerging liberalisation in the gas markets would cement Ruhrgas' dominant position in the gas distribution market. This would considerably diminish the likelihood of any effective competition from other gas transmission companies. There was also the danger of E.ON's dominant position in the electricity distribution sector being further strengthened to the detriment of smaller competitors and consequently consumers.

The E.ON/Ruhrgas merger was, however, cleared by ministerial authorisation on 18 September 2002 subject to far-reaching conditions, under the aspect of security of supply. Under German law a so-called ministerial authorisation can be issued if the restraint of competition is outweighed by advantages to the economy as a whole resulting from the concentration or if the concentration is justified by an overriding public interest. The obligations imposed on E.ON/Ruhrgas were as follows: to divest several vertically integrated corporate investments, to carry out legal unbundling, to offer their customers with long-term supply contacts a special right of termination for up to 20 per cent of their gas requirement and to implement a gas release programme.

With security of supply in mind the then Minister of Economics (and Labour) argued that the E.ON/Ruhrgas merger would help to improve the security of supply of natural gas in Germany. He argued that after the United Kingdom, Germany was the second largest consumer of gas in the European Union. A considerable increase in demand for natural gas was to be expected for the future, accompanied by a constant increase in dependency on gas imports. In the long term natural gas from Russian and Central Asian sources would be the most economic alternative for central Europe and, in particular, Germany. According to the minister, the E.ON/Ruhrgas merger could directly help to secure the reliability and ability to deliver of the Russian natural gas sector. It was undisputable that there would be great need for investment in the Russian gas sector in the coming decades. It seemed certain that the extensive need for investment could not be satisfied without huge commitment from companies in the consumer countries. The merger would thus give German companies the necessary financial power to cover their part of the investment requirements.

This decision demonstrates the great significance attached to the security of supply in the gas industry.

3.1.2 Vertical Mergers

As the E.ON/Ruhrgas merger has considerably strengthened the companies' position in the market, in merger control proceedings concerning vertically integrated companies in the electricity and gas sector, the Bundeskartellamt examines particularly critically whether even minor participations will lead to a strengthening of a dominant position. The Bundeskartellamt has prohibited a number of participations planned by E.ON, RWE or other first level suppliers of gas to municipal utilities and local distributors or has cleared them only subject to strict obligations. For example, in 2004, it prohibited the proposed

2 Available at www.bundeskartellamt.de/wDeutsch/download/pdf/Fusion/Fusion02/B8_206_01.pdf.

3 Available at www.bundeskartellamt.de/wDeutsch/download/pdf/Fusion/Fusion02/B8_206_01.pdf.

acquisition of shares in Aschaffenburger Versorgungs GmbH ("AVG") by Mainova AG ("Mainova").[4] In the Bundeskartellamt's view the project was likely to strengthen the dominant positions of Mainova and AVG in the gas supply market through vertical integration.

3.2 Restraints of competition/abuse control

3.2.1 Proceedings against market foreclosure due to long-term gas supply contracts

The proceedings concerning long-term gas supply contracts are also significant in terms of security of supply. The following résumé provides some background information on the market structure in the gas sector in Germany:

> E.ON/Ruhrgas and six other national gas transmission companies[5], which either produce gas themselves or import it from abroad, form the first level of the three-level structured gas industry in Germany. In 2003 E.ON/Ruhrgas accounted for almost 65 per cent of the total domestic natural gas output of 992 billion kilowatt hours.
>
> A second level is formed by eight regional gas transmission companies, which neither own their own production sources or shares in them nor import gas.
>
> Active on the third level are approx. 690 regional and local gas distributors, which supply gas to industrial customers and also end consumers (larger customers are often supplied directly by providers on the first and second level).

In 2004, as development in the gas market was only sluggish even six years after liberalisation, the Bundeskartellamt started to examine the problem raised by long-term gas supply contracts between gas transmission companies and gas distributors. A survey has shown that almost three-quarters of the 513 contracts concerned cover 100 per cent of the gas distributor's requirement or at least quantities of between 80 per cent and 100 per cent of the distributor's requirement. Almost all of these contracts run for more than four years, in some cases up to twenty years. This combination of long contract periods on the one hand and a high degree of requirement satisfaction on the other leads to considerable foreclosure effects.

The Bundeskartellamt initiated proceedings against 18 Gas suppliers including E.ON/Ruhrgas. The Bundeskartellamt initially tried to achieve a consensus-based solution in order to counteract this restraint of competition. It took up the problem of long-term gas supply contracts *ex officio* without immediately initiating prohibition proceedings against the companies. Instead the authority conducted numerous discussions with the gas transmission companies, trading companies and distributors. The purpose of these discussions was to find a solution which serves the interests of effective competition and provides both the established and new gas suppliers with a clear schedule for their planning processes. However, the attempt to open up long-term gas supply contracts by consensus failed, in particular due to the fact that the market leader, E.ON/Ruhrgas, was not prepared to sign the formal obligation required.

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4 Available at www.bundeskartellamt.de/wDeutsch/download/pdf/Fusion/Fusion06/B8_103_05.pdf. Cf. Also prohibition of E.ON/Stadtwerke Lübeck: Available at: www.bundeskartellamt.de/wDeutsch/download/pdf/Fusion/Fusion02/B8_206_01.pdf.

5 RWE Energy AG, Dortmund (RWE), WINGAS GmbH, Kassel/Wintershall Erdgas Handelshaus GmbH & Co. KG, Berlin, ExxonMobil Gas Marketing Deutschland GmbH & Co. KG, Hannover, Verbundnetz Gas AG, Leipzig (VNG), Shell Erdgas Marketing GmbH & Co. KG, Hamburg and Erdgas-Verkaufs GmbH, Münster.

Therefore the Bundeskartellamt moved on to issue prohibition decisions against the gas suppliers. In January 2006, it released its first decision against the market leader E.ON/Ruhrgas. By this decision the Bundeskartellamt prohibits E.ON Ruhrgas' existing long-term contracts with distributors which cover more than 80 per cent of their actual gas requirements. These contracts are to be terminated at the latest by the end of the last gas year on 30 September 2006. As regards the conclusion of new contracts with regional and local gas companies, those contracts are to be prohibited which run for more than four years and which cover more than 50 per cent of actual gas requirements, or which run for more than two years and cover more than 80 per cent of requirements. Tacit extension clauses are also prohibited. The decision is immediately enforceable.

To justify its contractual provisions E.ON/Ruhrgas stated that it was forced to bring its commitments on the sales side largely in line with those on its purchasing side. As a reason for this the company referred to the long-term import contracts on a take-or-pay basis which in turn were necessary to ensure the security of supply to German gas customers and which contributed to a lower price level while ensuring a proper risk distribution. Specifically referring to the security of supply it stated that long-term import contracts were politically desired and also typical of countries which depend on imports. In the UK, for example, which was currently undergoing a transition process from an exporting country to an importing country, importers were concluding long-term contracts for the first time.

In response to this the Bundeskartellamt stated that it acknowledged security of supply as a commodity worth protecting in Germany and that it was included as an important criterion in the current European Directive concerning the internal natural gas market.[6] However, the decision did not affect the security of supply as it did not deal with the existing import contracts, but solely concentrated on the downstream trade level. The Bundeskartellamt thus did not recognise the security of supply as justification in these proceedings.

The Bundeskartellamt also rejected the argument that short-term contracts lead to a permanently higher price level in Germany. It may be the case that gas transmission companies grant more favourable prices for longer contract periods, and, given comparatively low price levels, some purchasers may also wish to cover their requirements on a long-term basis. However, it must be noted that the current price level is the result of foreclosed markets and that, according to economic theory and economic experience, the price level on the whole is thus unusually high. The high price level on the purchasing side is also illustrated by the example of regional and local gas companies which, after terminating their long-term contracts with established gas transmission companies, have found other, more favourable supply opportunities which above all offer short-term contract periods. Short-term contracts would for the first time allow for third party offers on a large scale, leading to an overall reduction in price levels.

Finally the Bundeskartellamt's view is that the long-term commitment of purchasers to the extent established in the present case cannot be justified under the aspect of risk distribution. This is doubtful first of all from a quantitative point of view as the contractual provisions objected to could only be justified from the companies' perspective to the extent to which import volumes have to be purchased on a long-term and take-or-pay basis at all. Particularly under qualitative aspects, the Bundeskartellamt's view is that it is not necessary to almost completely mirror the risks existing on the purchasing side, neither in order to maintain the gas transmission companies' distribution business nor to ensure security of supply in the markets for distributing gas. First of all it is in the nature of business that traders have to sell the goods they purchased at their own risk. Furthermore, the suppliers concerned are left with the possibility to make attractive offers to existing customers at short intervals.

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6 Cf. Recital 27 of Directive 2003/55/EC of the European Parliament and of the Council of 26.06.2003 concerning common rules for the internal market in natural gas and repealing Directive 98/30/EC, OJ 2003 L 176/57.

Secondly it should be taken into account that long-term gas purchase contracts are not necessarily to be seen as mere sales risks incurred by the gas transmission companies, but can also entail advantages. Through these contracts they can secure long-term access to procurement sources abroad and achieve planning security as regards their purchase prices.

E.ON Ruhrgas filed a complaint against this decision at the Düsseldorf Higher Regional Court and requested the suspensive effect of the appeal to be restored. With its decision of 20 June 2006 the Higher Regional Court rejected this decision. A decision on the merits is still pending. The Düsseldorf Higher Regional Court confirmed above all the Bundeskartellamt's view on the effect of gas supply contracts with shorter terms on the security of supply:

> "The party concerned [E.ON/Ruhrgas] unsuccessfully invokes the indispensability of long-term sales commitments when it points out that security of supply for consumers requires a long-term commitment on the demand side, i.e. the regional and local gas companies, to mirror the long-term commitment on the purchasing side. The party concerned is free to continue concluding long-term supply contracts. However, it is unlikely that the security of supply for consumers will be jeopardised by the conclusion of supply contracts with shorter terms between the party concerned and regional and local gas companies. Other competitors can take over the supply to consumers or become active as alternative suppliers. The required volumes of gas can either be purchased from the party concerned of from gas producing or exporting companies. In an effective competitive system it is sufficiently probable to assume that competitors are active in the relevant market which are able to meet the consumers' requirements."

In the meantime several other gas supply companies against which proceedings had been initiated have submitted binding commitments to the Bundeskartellamt (Article 32b of the ARC) stating that their gas supply contracts meet the conditions under which the Bundeskartellamt considers contracts to be admissible under competition law (above all contract periods of not more than two years for the supply of 80 – 100 percent of gas requirements and not more than four years for the supply of 50 - 80 percent of the customers' requirements).

3.3 Further proceedings in the energy sector

The Bundeskartellamt conducted further proceedings in the areas of gas/oil price linkage, emissions trading and the pricing in of the value of emission allowances into electricity prices, including proceedings against several companies on account of excessive gas prices (exploitative abuse).

4. Conclusion

These decisions illustrate that there can be but may not necessarily be room for a conflict in Germany between the security of supply and competition law. In individual cases companies may invoke the security of supply as justification for restrictive practices. It will remain the objective of all actors involved, i.e. politicians, the Federal Network Agency, the Bundeskartellamt and also energy providers, to safeguard a balanced co-existence of security of supply and competition law.

ITALY

1. Introduction

Competition and energy security are both achieved by increasing the degree of substitutability between fuels and between sources of supply. It is true that at least in the short run the degree of substitutability between different fossil fuels is in general quite low. However, technical progress has led to the introduction of some flexibility in the use of different energy sources and in some industries, electricity generation in particular, switching between fuels is now common. The major dimension of substitutability is between sources of supply. The problem here is that, at least for gas and electricity, the boundaries of geographic markets depend, among other things, on existing infrastructures. In the gas sector, for example, the availability of pipelines connecting different geographic sources of gas makes them potentially interchangeable. Thus, building new networks and interconnecting pipelines originating from different sources enlarge the market and potentially result both in greater security and greater competition.

As discussed in more details below, the gas sector provides useful indications on how enlarging upstream geographic markets may alleviate energy security problems. On the other hand, focusing on the gas sector helps to clarify another important point: greater competition does not necessarily bring with it higher security of supply. This happens if competition is not introduced at the level where the security of supply question originates. For example, greater competition may take place downstream in the supply of gas to final consumers, while security of supply concerns originate upstream in the supply of gas by producers. In this case, overcoming security problems requires fostering competition between producers.

In the gas sector, given infrastructures constraint, markets are regional in scope, with boundaries defined by existing pipelines. In particular, since long distance, European pipelines were basically conceived to service long term contracts between specific suppliers and clients, (frequently represented by State owned energy companies), often such pipelines, interconnected to a limited extent, are "dedicated corridors" from a production region to a country point of import. This naturally leads to segmentation of the upstream gas market. Furthermore, lack of adequate interconnections between national gas networks reinforces segmentation. This results in very limited gas trade flows between EU member state (Cfr IEA, *Montly Natural Gas Survey*, November 2006).

The emergence of LNG as an increasingly important substitute of pipeline gas, is progressively expanding gas markets boundaries from regional to global structures. For the time being however, because of the limited availability of regassification plants, gas boundaries continue to be regional. There is a risk, however that gas market will continue to be regional for quite some time. Indeed, contrary to oil, gas market, including LNG gas, are highly illiquid and demand is everywhere satisfied, including demand for LNG gas, by long term contractual relations. There is no fully developed spot market for gas.

In what follows, we focus on the Italian gas market. In particular, section 2 concerns the structure of the market, its regulatory framework and a first assessment of the degree of liberalisation, section 3 outlines the most significant antitrust interventions by the Italian competition authority, section 4 deals with recent law proposals aimed to further liberalise the sector, section 5 draws some conclusions.

2. Main facts

2.1 Market structure

Since 2000, consumption of gas in Italy has increased by about 20%, reaching circa 84 billions mc in 2005. As the table below shows, this trend mainly depends on increased consumption of gas in electricity generation.

	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Consumption (billion of mc)	69,6	70,1	70,0	76,4	79,3	83,4	82*
of which: Electricity generation	21,3	22,5	22,5	26,4	32,1	33,5	n.a.

Cfr. AEEG, *annual reports*, various years, Ministry of Economic Development (MSE)
*Estimated data

In 2006, demand was lower than in the previous year, due to very favourable weather conditions. However, according to demand forecast, Italian consumption of gas should growth by about 3% a year until 2009.

On the supply side, imports cover most part of the demand for gas (86,3% in 2005), while domestic production has a minor and decreasing role (less than 14% in the same year with a reduction of about 1 billion mc compared to 2004). Imports originate mainly from extra EU sources. In particular, Algeria and Russia account for 37 and 32 % of imported gas respectively, 23% originates from north European countries and the remaining small part from Libya and other countries. LNG account for only 3,4% of imported gas, while the rest reaches Italy through international pipelines: from Algeria through the Trans Tunisian Pipeline (TTP/TMP, entry point Mazara del Vallo on the west coast of Sicily), from Russia through the Trans Austria Gasleitung (TAG, entry points Tarvisio and Gorizia in the North East, respectively at the Austrian and Slovenian borders) from north European countries through pipelines Tenp-Transitgas (entry point Passo Gries in the North at the Swiss border), from Libia through the Greenstream pipeline (entry point Gela in Sicily).All existing international pipelines (the capacity of which is shown in the table below) are under direct or indirect control of ENI, the former Italian (de-facto) gas monopolist. At the moment Italy has only one regassification plant, owned and managed by GNL Italia, a company under ENI's indirect control.

Nominal import capacity in various thermal years (billion mc/y)

	2005-06	2006-07	2007-08	2008-09	2009-10
Pipelines					
TTP-TMP	29,4	29,4	31,4	31,4	31,4
TAG	33,0	33,0	37,6	37,6	37,6
TEMP/Transitgas	21,0	21,0	21,0	21,0	21,7
Greenstream	8,3	8,3	9,1	9,1	9,1
Total	*91,7*	*91,7*	*99,1*	*99,1*	*99,8*

Cfr Aeeg, *annual report 2006*

Note that there is an expected increase in supply until 2010 due to pipelines expansion. This should more than compensate the expected decrease in domestic production (of about 4 billion mc) over the same period and should help facing the expected increase in demand.

Moreover, there are projects to build new international pipelines and regassification plants (see table below). Authorisation to construction has been granted only for some terminals, while the others are at

various stages of the authorisation process. However, even if only part of such projects were realised, from 2010 potential supply could significantly exceed domestic demand.

New pipeline and LNG terminal projects

Pipelines	Capacity (bil.mc/y)
IGI (Greece-Italy interconnection)	8/10
TAP (Albanian-Italy interconnection)	10
GALSI (Algerian-Italy interconnection)	10
Interconnectirol Project (Bressanone-Innsbruck interconnection)	1/2
Regassifications plants	
Porto Levante offshore	8
Brindisi	8
Toscana offshore	3
Rosignano	8
Gioia tauro	12
Taranto	8
Zaule	8
Trieste offshore	8
Porto Empedocle	8
Rada di Augusta	8

One characteristic of the gas market is its high seasonality. Gas storages facilities are used to store gas and smooth out production in the course of the year. It is a service that increase flexibility of supply and that all market players value highly. Gas storage facilities are filled at off-peak times and drawn down at peak times. More than 90% of Italian gas storage facilities (the capacity of which is about 13 billion mc) are owned by STOGIT, a company under ENI's control. In spring 2005, at the end of the cold season, gas storage facilities were not able to provide the required gas for modulation purposes. Therefore the use of strategic gas storages had to be authorised by the Ministry. This highlighted the existence of significant capacity constraints in gas storage facilities in Italy.

Imports rely for above 80% on long term (they last on average for over 15 years) take or pay contracts. Less than 5% of imports originates from short term contracts, with a year maximum length. As already mentioned gas market liquidity is structurally quite low. A short-term market was created by the fact that a legislative obligation on ENI to reduce its market share below 50% did not require ENI to transfer its contracts with producers, but simply to release some of its purchased gas to competitors. These gas releases may have a positive effect on competition downstream, but do not affect competition upstream, since conditions under which gas is purchased remain the same.

In October 2003, Snam Rete Gas, a subsidiary of ENI that owns the national transport pipeline, started operating an electronic platform (Virtual Trading Point – VTP) aimed to allow operators to engage in bilateral transactions of gas, physically injected into any point of the national grid. So far, the number and importance of transactions at the VTP has been limited and inadequate to provide reliable price signals. In 2005 trading at the VTP accounted for only 2,4 billion mc.

In 2005, at the wholesale level, there were 60 operators. The most important one, ENI, State owned vertically integrated firm, had more than 50% share of the market, the second and third operators, Enel Trade and Edison (both active in electricity generation), together accounted for about 25% of the market, a 15% share was globally accounted by 8 smaller wholesalers, while the remaining 49 operators had a total market share of about 10%. These 60 wholesalers supply gas either directly to industrial clients or to

intermediaries and firms that operate at the retail level, serving household and small business units. ENI sells 70% of its gas to industrial clients and 30% to final users. Snam Rete Gas, a subsidiary of ENI, owns the national transport pipeline.

At the retail level, while municipalities very often own local distribution networks, separate companies are in charge of their management and of gas supply. In March 2006, there were 380 gas retailers. Of these not all were independent companies. In 2005 ENI had a 43% market share of the national retail market, followed by Enel (about 15%) and Edison (almost 8%). At the retail level the number of consumers switching supplier is extremely low. The switching rate ranges from 3% for medium size consumers (from 5000 to 200.000mc/y) to 1% for small consumers (below 5000mc/y).

2.2 Regulatory framework

Measures to liberalise import, export, transport, dispatching, distribution and trade of natural gas were contained in the Letta Decree (Legislative Decree No. 164/2000 – implementing Directive 98/30/EC). Among the most relevant provisions:

- the legal unbundling of transport, storage and distribution activities from retailing,
- regulated access to network and storage facilities, with tariffs criteria to be set by the energy regulator (AEEG)
- the introduction of a 50% market share ceiling on gas sold to final consumers by a single operator and a 75% ceiling on gas imported by a single firm,
- the opening of the gas market to all consumers with the effect from January 2003(since then all customers have been free to choose their supplier) .

Further measures were contained in the Laws N. 290/2003 and N. 239/2004 – the latter implementing Directive 2003/54/EC. In particular, it was established that with effect from 1 July 2007 (subsequently postponed to 31 December 2008) no one company operating in the natural gas sector could have stakes of over 20% in transport networks companies. Moreover, with regard to the construction of new LNG regasification terminals and interconnectors between Italian and other EU member states' network, 20% of the new capacity should be made available to third party access.

The energy regulator (AEEG) has disciplined various aspects of gas operators activity. It has set rules concerning allocation of transport service on the national network and established information obligations on transport companies to the benefit of users of the service. Transport activity is regulated by network codes drawn up by transport companies and approved by AEEG. Moreover, the regulator has established transport tariff criteria, as well as standards and requirements concerning safety, continuity and commercial quality of the gas distribution service. Access to the national storage system and to the regassification terminal has also been regulated by AEEG.

Finally, in the retail market, the regulator sets a national benchmark tariff for small customers, consuming less than 200.000 mc per year. Firms must offer, alongside their own conditions, the benchmark tariff set by AEEG until June 30, 2007. 90% of gas supplied to household customers is bought at benchmark tariffs.

2.3 Liberalisation Assessment

The liberalisation process is far from been completed. The Italian gas market is still characterised by a high degree of concentration in all segments of the supply chain and by the former monopolist's control over: all import facilities, - international pipelines and LNG regassification terminal, domestic transport network, most part of storage facilities.

In the short term, new operators' access to the wholesale market is limited by low availability of import capacity, largely devoted to serve long term contracts between the incumbent and its suppliers. Moreover, as shown by the TTPC antitrust case illustrated below, concerning ENI's failure to upgrade the Tunisian network, competitors access to the market may be hampered by the incumbent's strategic behaviour to artificially constrain import capacity. More generally, possibilities for new entrants to import gas independently from the incumbent are quite limited, given the joint control by ENI and foreign gas producers of existing international pipelines.

At the retail level, in spite of legislative provisions on complete market opening, consumers switching rates remain low.

3. Antitrust enforcement and advocacy by the AGCM

3.1 Advocacy on structural separation

Structural separation of the transmission pipelines (both international and domestic) would promote greater flexibility of supply. By separating the domestic pipeline alternative domestic suppliers are not discriminated and the incentive to expand the capacity of cross border interconnections is strengthened. Furthermore, separating the property of the international pipelines enhances the incentive to connect alternative suppliers (either in the same or in adjacent countries) on to the pipeline, reducing the possibility that capacity is strategically limited. Finally, the expansion of LNG gas facilities introduces an additional flexibility in the system that needs to be exploited also to enhance cross-border trade.

The possibility that private unsubsidised markets are able to fund flexibility is however limited. Infrastructure investments are long-run, each pipeline connecting one gas field to consumer markets. Capacity is therefore planned according to the potential supply of that particular gas field and is almost exhausted by long-term contracts. The same happens for regassification facilities. Separation is therefore not always the solution for achieving redundancy. Additional government intervention is needed so as to impose the required flexibility and openness of the networks.

For example storage facilities need to be separated and supplied by the network itself or by third-party service suppliers.

3.2 Antitrust enforcement

The Italian competition authority enforcement decisions played a very important complementary role for opening gas markets to competition, in particular, to assure non discriminatory access to transport and regasification infrastructures to all competitors. Moreover, under some circumstances, antitrust enforcement led to the expansion of transport capacity.

3.2.1 The TTPC Case

The case, concluded at the beginning of 2006, concerned infringement of article 82 by ENI Spa (ENI) and its subsidiary Trans Tunisian Pipeline Company (TTPC), holder until 2019 of shipping rights on the Algeria-Tunisia-Italy gas pipeline. In synthesis, the ascertained facts are the followings: in 2002 ENI

planned an increase in transportation capacity on the Tunisian pipeline (6,5 billion mc yearly from 2007 to 2019) and subsequently started an allotment procedure whereby TTPC entered into contracts with 4 shippers, subject to some suspensive conditions. In 2003, ENI, fearing a gas oversupply to the Italian market, decided not to carry on the capacity increase project and TTPC cancelled the contracts arguing that suspensive conditions were not fulfilled.

The Italian Authority recognised this practice as abusive, evaluating that ENI and TTPC behaviour in denying the planned pipeline capacity increase to shippers was not due to shippers' failure to fulfil contractual conditions, but to ENI's strategy aimed to reduce gas supply to competitors so as to protect and strengthen its dominant position.

At the conclusion of the case, ENI offered, as undertakings, a 6,5 billion mc increase in TTPC capacity to be realised by October 2008. However, considering the restrictive effects on the Italian gas market of ENI's behaviour, ENI was nonetheless heavily fined. The authority decision has passed the scrutiny of the court of first and second instance, except for a reduction in the fine.

The case shows that in some circumstances antitrust enforcement may achieve greater security of supply, but certainly these results cannot be generalised.

3.2.2 The Panigaglia LNG Terminal Case

The proceeding – still ongoing - concerns the infringement of article 82 by ENI Spa (ENI) and its subsidiaries Snam Rete Gas Spa (SRG) and GNL Italia Spa (GNL Italia). The alleged abuse concerns a set of apparently exclusionary practices followed by ENI and its subsidiaries SRG e GNL Italia in the years 2002-2004, aimed to prevent ENI's competitors from having access to the only regasification plant existing in Italy (Panigaglia is close to Genova). In particular, ENI required its subsidiary not to use the full capacity of the plant. Furthermore SRG/GNL did not follow transparent and fair procedures to allocate regassification capacity, in spite of existing regulation featuring such an obligation. The case will be concluded in early March.

4. New legislation to promote competition and take liberalisation further

The completion of the liberalisation of the gas sector is, among other things, pursued by a Draft Bill issued in July 2006 (Disegno di legge N. 691). The Bill has just begun its parliamentary process and could undergo several modifications. However, its general objectives are the followings: full implementation of Directive 2003/54/EC, expansion of infrastructures and gas storage facilities, shared use by EU member states of gas storage facilities, promotion of consolidation among local gas distributors, revision of ceilings on imports by the incumbent.

Pending discussion on the Bill, in December 2006, the Italian Parliament postponed the date by which gas operators must reduce their stakes in transport network companies. In particular Law n. 296/2006 established that shares dismissal will be disciplined by a Government Decree to be issued in the future. Once the Decree will have set the rules for ownership unbundling, there will be 24 further months to realise it.

At the beginning of this year, with the purpose to increase liquidity of the wholesale gas market, a Law n. 7 of January 26, 2007, containing liberalisation measures regarding different economic sectors, established that a share of domestic gas production as well as of imports of gas shall be made available by producers and importers at the Virtual Trading Point. Within three months AEEG and MSE will set quantity and conditions of supply.

5. Conclusions

There is a wide consensus that the structural separation of the domestic pipeline would reduce the incentives of the incumbent operator to block or delay entry in the market by competitors. This measure has to be analysed in terms of damages it may determine and in terms of benefits it may produce. What is clear is that there are no economies of scope between transportation, production and sale of gas and therefore there are almost no consumer welfare losses originating from a structural separation measure. The problem is whether a separation decision substantially increases consumer welfare. This is the case if what is separated is the infrastructure that connects supply to demand. For example separating the transmission line in electricity increases competition in generation, promoting entry by competing generators and eliminating the incentive for exclusionary conduct by the incumbent operator. In gas, Italy not being a producing country, the simple separation of the domestic pipeline would not by itself increase the possibilities of competitors, given that ENI would continue to control access to the Italian market via its control of international pipelines. Separation therefore ceases to be a domestic issue only.

While the optimum would be to achieve a full separation of all international pipelines, it is clear that this is an impossible dream. There are alternatives in this respect and that is to achieve a Europe wide separation of European pipelines. This would align the incentives of all pipelines to create an integrated market within the EU, strengthening interconnection points and allowing a EU wide management of potential supply. Decisions to interconnect domestic pipelines would be based on profit expectations associated with the use of the pipelines and not on the integrated profits of domestic incumbents. Structural separation has to be a European Union decision. Otherwise it may be irrelevant.

Given the high seasonality of the demand for gas, what is certainly beneficial is to separate from the incumbent the storage facilities so as to allow a more transparent access to them by competitors.

JAPAN

1. Energy Security

For Japan, the term "Energy Security" means energy essential for the lives of the people and industrial activities is stably secured in terms of both quantities and prices. In particular, Japan is largely dependent on imports for its energy use, thus securing energy resources of reasonable prices from reliable sources abroad forms the backbone of Japanese "Energy Security".

With respect to natural gas, Japan imports almost 95% of its entire natural-gas consumption, including that for power generation, in the form of liquefied natural gas (LNG). In such a context, the perception of a stable procurement in Japan is different than that of other OECD member countries (Europe and the United States) where gas supply via pipelines prevails.

First of all, a huge amount of initial investment is required to start an LNG project; therefore, basically developers secure stability in delivery by concluding long-term sales and purchase contracts with users (with contract terms of 20 to 25 years). LNG supply based on long-term contracts also provides stability in both quantities and prices with Japan as a user, and in order to enhance this stability further, supply sources are increasingly diversified through conclusions of long-term contracts with multiple reliable suppliers (※So far long-term contracts have been entered into with counterparts of 8 countries).

Furthermore, 27 LNG receiving terminals are currently in operation in Japan, and Japan has an LNG stockpile of an amount equivalent to the national consumption for approximately three weeks to one month in peacetime.

In addition, about the use of LNG for power generation, which accounts for about 70% of the entire consumption in Japan, approximately 40% of gas-fired power generation systems (the weighted average on the capacity base) are the mixed combustion type where LNG can be replaced with crude or fuel oil as its fuel.

With the aforementioned structure, the stable supply system of LNG in Japan is considered to be functioning adequately, and a serious problem of supply security did not develop when production at ARUN LNG plant in Indonesia stopped for almost 7 months.

2. Impact of deregulation on energy security

The gas retail market in Japan has been undergoing a phased deregulation with the scope of deregulation gradually expanding since March 1995. While only the customers with gas usage of over 2 million cubic meters (representing approximately 44% of the entire market on the basis of the supply amount) were deregulated in 1995, the scope of deregulation has since been expanding. In November 1999, the customers of over 1 million cubic meters (approximately 49% of the entire market) were deregulated, in April 2004 deregulation of those of over 500 thousand cubic meters (approx. 52% of the entire market) followed, and in April 2007, the scope of deregulation will be expanded to include the users of over 100 thousand cubic meters (approx. 59% of the whole market). As a result of partial deregulation, power utilities and general trading companies have entered the gas market, and the market share of such new entrants stood at 8.1% as of the end of fiscal year 2005. Additionally, after the commencement of

retail deregulation, average unit prices in the retail gas market have been showing a downward trend, while prices of LNG imports are rising.

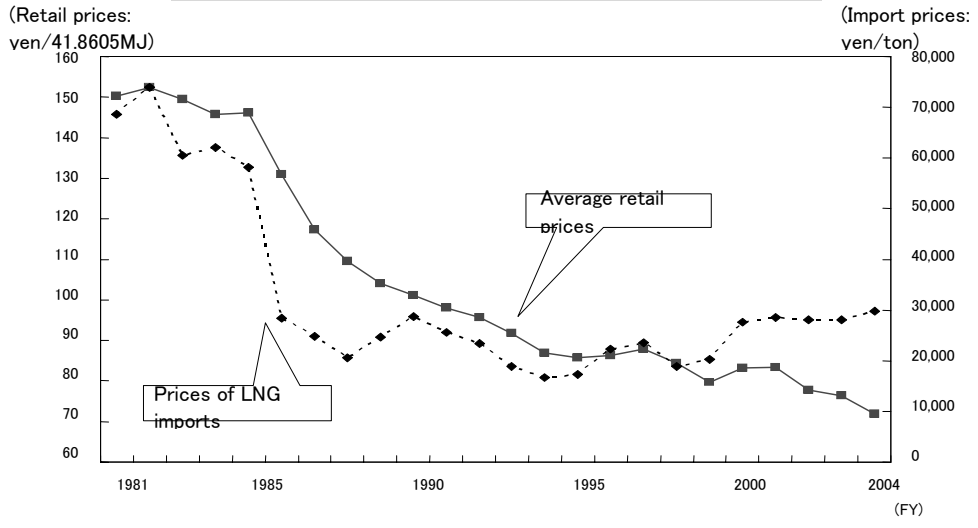
On the LNG procurement front, Japanese power utilities and gas companies traditionally conduct negotiations with sellers by forming a consortium of several companies; however, as a consequence of partial deregulation of electricity and gas markets, the members of a consortium become competitors, thus aligning the needs of each firm becomes difficult, and in some cases, a shift to individual negotiations is observed.

The shift in the form of negotiations to individual from consortium may make it more difficult to exert a bargaining power of buyers of large quantities. In the meantime, it will facilitate a smooth decision-making process because harmonising views among the consortium members is no longer necessary. Individual negotiations also allow for signing long-term contracts with small to medium-sized gas fields. Therefore, the impact on supply security appears to have two sides and its future development needs to be closely monitored.

Further deregulation of electricity and gas markets shall be reviewed in the future; however, it requires an examination of the domestic market structures by paying attention to the issue of how to strike a balance between encouraging a competitive environment and securing a stable supply.

Average retail prices are down, while LNG import prices are up.

Change in prices of LNG imports and average retail prices



3. Applying the Antimonopoly Act to the Gas Business Field

Regarding the regulatory reforms that have been implemented in the gas business field, the principle of competition has been introduced, new entries have been encouraged, and reforms have been advanced in the direction of expanding the scope of deregulation. The Japan Fair Trade Commission ("JFTC") recognises the reforms as satisfactory in light of competition policy.

From the standpoint of promoting fair and effective competition in the gas business field after the regulatory reforms, the JFTC, jointly with the Ministry of International Trade and Industry (now Ministry of Economy, Trade and Industry, or "METI"), made the "Guidelines for Proper Gas Trade" ("Guidelines") in 2000 in order to clarify the conduct of firms that would infringe the Antimonopoly Act and the Gas Utility Industry Law. In addition, considering the enforcement of the Amended Gas Utility Industry Law and consultations brought to the administrative authorities, the JFTC revised the Guidelines in August 2004, in conjunction with the METI.

The JFTC will revise the Guidelines again in the future if necessary, and will strictly take actions against violations of the Antimonopoly Act in this field as well as other fields if it finds them.

KOREA

1. Gas Industry of Korea

Liquefied Natural Gas (LNG) and Liquefied Petrol Gas (LPG) are used for fuel and heating in Korea. Since this roundtable will only deal with natural gas, this document will only focus on LNG.[1]

1.1 Gas Supply

Korea is 100 percent dependent on imports to fulfil domestic LNG demand. LNG supply process follows the steps of introduction → unloading, storage → transportation, wholesale → delivery, retail sale.

The introduction, unloading, and storage of LNG have been conducted solely by Korea Gas Corporation (KOGAS) until recently. However, since 2005, companies who wish to introduce LNG for self-consumption have been allowed direct introduction bypassing KOGAS, thereby introducing a certain degree of competition in the LNG introduction sector. Basically, introduction is conducted based on long-term contracts of more than 20 years, but mid-term and short-term contracts are used for a certain amount of imports to control supply and demand.

In the transportation and wholesale process, KOGAS exclusively supplies to power plants and retailers through its nationwide pipeline network. KOGAS was given the exclusive right because it was inevitable to establish a national supply system with a single operator for universal service provision in the early stages of the introduction.

Delivery and retail sales are under a regional monopoly system, where 33 regional city gas companies receive gas from KOGAS and exclusively provide it to the final consumers through their own regional pipeline networks. City gas companies' exclusive sales right was awarded as a means to induce large-scale initial investment in regional pipeline network for smooth gas supply.

1.2 Gas Demand

Natural Gas is generally used for power generation and city gas. Natural gas for power generation accounts for 41 percent of the total demand while that for city gas accounts for 59 percent. Natural gas consumption has a large seasonal variation. City gas demand is much higher in winter than in summer with the top-down ratio[2] (TDR) exceeding 3.6. Meanwhile, natural gas for power generation has higher demand in summer than in winter, balancing the city gas demand.

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1 There are two types of natural gas including Pipeline Natural Gas (PNG), which is directly transported to the place of consumption from the gas field, and Liquefied Natural Gas (LNG), which is the natural gas liquefied for sea transportation. In the case of Korea, only LNG has been used due to geographic characteristic as a peninsula and a divided country.

2 Top Down Ratio (TDR) : highest monthly gas sale / lowest monthly gas sale

1.3 Gas Rate

Wholesale rate shall be set by Korea Gas Corporation to be approved by the Minister of Commerce, Industry and Energy, and regional city gas retail rates shall be set by city gas companies to be approved by the governor of the city and the province in the jurisdiction. (Article 20, Urban Gas Business Act)

2. Harmonisation Between Secure Gas Supply and Competition

2.1 Basic Objective of Gas Policy

The objective of Korea's gas policy is to secure stable gas supply and demand and to strengthen competitiveness of the gas industry. Stable gas supply is related to energy security, while stronger gas industry's competitiveness is linked to introduction of competition in the industry and enhancement of the market functions. The Framework Act on Energy stipulates these two objectives together as the basic principles of the energy policy[3].

2.2 Possibility of Harmonising the Two Objectives

There can be a controversy over whether gas supply security and market function enlargement are compatible. Since Korea is fully dependent on imports for natural gas supply, it needs to limit competition at the introduction stage for secure supply of gas and also limit competition at the wholesale and retail sale stages to securely provide the imported gas to consumers. Meanwhile, it can take the full advantage of the market function for raising the efficiency of the gas industry.

Korea has been pursuing gas industry restructuring to boost efficiency. The key to the restructuring has been to introduce competition in the gas industry. At the same time, Korea has been seeking a harmony between the two objectives by implementing measures to control supply and demand so that the introduction of competition will not undermine secure gas supply.

In addition, to stably secure gas from the international gas market, KOGAS was given the exclusive right to import gas, which is done through long-term contracts. However, Korea sought to increase the efficiency of the gas industry by introducing competition at the introduction sector. In addition, mid-term and short-term contracts are used as well in order to respond to seasonally changing demand. Korea has also diversified import channels to ensure secure supply.

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[3] Article 3, Framework Act on Energy (Basic principles of energy policy)

The government must follow the following principles in enacting and implementing energy policies and energy-related plans.

1. **Realisation of energy security**
2. Increase production and usage of environmentally-friendly energy including new and renewable energy
3. Continuous strengthening of management of energy demand for conversion into low-energy-consuming socioeconomic structure
4. Comprehensive consideration of all areas related to energy including industry, environment, security, transport and construction
5. **Implementation of measures such as expanded introduction of competition in the energy industry and deregulation**
6. Continued efforts to boost equity in energy use

3. Direction for Gas Industry Restructuring

Korea has been pursuing restructuring in the gas sector for greater efficiency in the industry. The Basic Plan for Restructuring of the Gas Industry was established in 1999 with detailed plans devised in 2001. This plan distinguished between introduction and wholesale sector and facility sector. The introduction and wholesale sector was to be operated by three companies spun off from KOGAS, two of which were to be sold while one was to be retained as an affiliate. With regards to the facility sector, some of the government-owned stakes were to be sold with the introduction of the open access system.

However, the implementation of the basic plan was postponed due to the need to form a social consensus. A research on privatisation of KOGAS and the ways to spin off introduction and wholesale companies was conducted in addition to a joint study by the labour, management and the government on overseas examples. As a result, the Basic Plan for Restructuring of the Gas Industry was partially changed and supplemented in 2003. According to the revised plan, the introduction and wholesale sector will have competition system introduced, and there will be much discussion to decide whether to spin off KOGAS or permit new operators into the market while maintaining KOGAS as it is. Meanwhile, the facilities sector will remain to be operated by a state-owned company for public good with the launch of the open access system. Since 2004, there have been discussions in the Tripartite Commission on the revision plan for gas industry restructuring.

Although discussions are still going on about the gas industry restructuring, the basic principle of introducing competition in the industry remains the same. Current discussions focus on the method and timing of the introduction. Meanwhile, competition has already been introduced in the introduction sector and the open access system, which is a prerequisite for the introduction of competition, has been launched. Now, we will take a look at energy security and competition issues related to the two systems, direct introduction of LNG and open access to facilities.

4. LNG Direct Introduction System

4.1 Background and Current Status

The Korean government revised the law in 2001 to allow direct introduction for self-consumption in order to increase efficiency of the natural gas industry and to expand supply facilities by attracting private investment. Previously, KOGAS exclusively introduced natural gas and sold it to retailers. However, from 2001, companies with storage facilities of a certain size can directly introduce LNG for self-consumption, as long as they report to the Minister for Commerce, Industry and Energy afterwards.

Following the law revision, steel mills and power plants began negotiations for direct introduction of LNG. The first contract was signed in 2003 and direct introduction of LNG began in 2005.

4.2 Implications for Competition Policy

Direct Introduction of LNG was an important milestone that changed gas introduction market from a monopoly-based system to a competition-based system. It was significant in pressuring monopolistic KOGAS to embrace competition, and also in providing an opportunity for direct importers of LNG in the private sector to cut cost by introducing necessary volume on the most advantageous terms possible.

4.3 Concerns

The system can boost the efficiency of the gas industry through competition, but at the same time, it can cause concerns over gas supply security or matters related to competition policies.

Firstly, the importer's buying power in LNG introduction contracts might be weakened due to the multiple operators' handling of the volume that used to be introduced by a single operator. However, this concern has not emerged yet. Industry insiders explain that the competition did not put them at a disadvantage at negotiations because direct importers purchase large volumes. In addition, they say that they could cut the introduction cost because the consuming companies themselves negotiated the price and period of the introduction.

Secondly, the competition in the process of LNG introduction might hamper the national LNG supply and demand plan or give rise to excessive take-or-pay (TOP) contracts[4]. Such a scenario can negatively affect securing reliable supply of gas, so the Korean government included a preventive measure in the Urban Gas Business Act, which gives the Minister for Commerce, Industry and Energy the authority to order arbitration to direct importers when it is deemed necessary for the sake of gas supply and demand.

Third, problems might arise due to the facilities needed for LNG introduction and supply. If LNG importers have to make new investments on storage facilities or pipeline network, they will have little incentive to directly introduce LNG due to massive investment required, and there can be overlapping investments in the country as a whole. Thus, the most important precondition is to guarantee access to already-existing essential facilities. This will be further discussed below.

5. Open Access System

5.1 System Introduction and Current Status

To make sure that a number of companies can actually compete in the gas supply market, a third party such as gas sellers should be able to freely access the facilities needed for gas supply including storage facilities and pipeline networks.

In 1999, the Korean government prescribed the open access system in the law and permitted it in order to guarantee a third party's access to facilities necessary for gas supply. Accordingly, those who wish to use gas facilities can do so after discussing with the facility owner about the availability, period of use, conditions and price. When they fail to reach an agreement, they can request the Minister for Commerce, Industry and Energy for arbitration on open access to gas supply facilities, and the Minister can recommend the two parties to accept the arbitration.

The open access system began to be used when the LNG direct introduction was permitted and steel mills and power plants signed contracts with KOGAS to use its pipeline network to deliver the imported gas to consumers. POSCO signed the first contract to use KOGAS' pipelines in July 2005.

5.2 Open Access System Revision Bill

Upon realising the need to revise the open access system to make it more efficient in the face of increasing LNG direct introduction and the introduction of competition in the sales sector, the Korean government prepared a revision bill on the Urban Gas Business Act and submitted it to the National Assembly. The bill is currently under deliberation at the National Assembly.

The revision bill is mainly about changing the present negotiated access system to the open access system for pipeline facilities only. Under the current system, the facility user and the owner negotiate and

[4] Take-or-pay contract: Agreement between a buyer and seller in which the buyer will still pay some amount even if the product or service is not provided.

decide the terms of the facility use. However, it takes too much time and cost to reach an agreement, without which it is impossible to use the facility. To address this problem, the revision bill makes it compulsory for gas wholesalers with gas pipeline facilities to open the pipelines to those who directly introduce gas for self-consumption according to the pipeline facility usage rules. When devising the rules, the facility owner must follow the guidelines of the Ministry of Commerce, Industry and Energy to get an approval from the Minister for Commerce, Industry and Energy on the terms of the facility use including the cost.

6. Application of the Monopoly Regulation and Fair Trade Act (MRFTA)

6.1 Applicability

Korea's Monopoly Regulation and Fair Trade Act (MRFTA), in principle, is applied to all industries without an exception. Therefore, the gas industry is also subject to the competition law with regards to abuse of market dominance, cartels and anti-competitive M&As. However, this Act shall not apply to the acts of an enterprise or an enterprisers organisation conducted in accordance with any Act or any decree to such an Act, thus practices such as gas price setting subject to the Urban Gas Business Act are not subject to the MRFTA.

6.2 Possible Violations of Competition Law

In Korea's gas industry, the introduction and the wholesale sector has been monopolised by KOGAS, while the retail sector has been controlled by regional operators with exclusive sales rights. Under this system, there has not been any vertical merger that integrates the introduction, wholesale and retail sectors together.

In the wholesale sector, KOGAS has the exclusive sales right while the gas price is approved by the Minister for Commerce, Industry and Energy, leaving little room for abuse of market dominance or cartels. However, with the recent permission for direct introduction of LNG, the possibility of abusive practices such as denial of access to facilities increased as the demand for access to KOGAS' facilities rose.

There has been little possibility of abuse of market dominance or cartels in the retail sector as well, because it has been run by regional exclusive operators. If competition was introduced into the retail sector, problems such as denial of access to regional pipelines could arise.

6.3 Case of Vertical Merger in the Oil Sector

Although not directly related to the gas sector, it is worthwhile to look at a case that shows what concerns for competition policy can arise from vertical merger in the energy sector and how we can respond to them.

In 2000, Daehan Oil Pipeline Corporation (DOPCO), which provides transport services for petroleum products through pipelines, was privatised, and some of the government-owned stakes in DOPCO was sold to five oil refining companies. This is an example of a vertical merger between a company monopolising petroleum product pipeline transportation and oil refining companies that produce and sell petroleum products. Among the five oil refiners, SK Corp. acquired the stocks of DOPCO becoming its largest shareholder. So it was acknowledged that there was a possibility of market foreclosure. To be more specific, when SK Corp., which is competing with other oil refining companies in the production and sales of petroleum products, has a rule over the management of DOPCO, which monopolises pipeline transportation market, there can be anti-competitive practices such as denial of request for oil transportation, imposition of limitation on the transportation volume that can be requested, discrimination

in the order of transportation, discrimination in the terms of contract including the transportation cost. To address this problem, the KFTC issued the following corrective order.

SK Corp. must exercise its voting right at the DOPCO's shareholders' meeting to implement the following corrective orders, and DOPCO must take necessary measures for the implementation:

- SK Corp. must prohibit anti-competitive practices such as denial of request for oil transportation by pipeline operators, imposition of limitation on the transportation volume that can be requested, discrimination in the order of transportation, discrimination in the terms of contract including transportation cost and leakage of business information in DOPCO's Articles of Incorporation, and abide by it.

- With regards to the prohibition of anti-competitive practices stated in (i), SK Corp. must establish and run a consultative meeting where those who represent DOPCO, oil refining companies and the pubic good can discuss and decide matters related to the use of pipelines, and it should stipulate the grounds for the establishment of the meeting and the management of it in the Articles of Incorporation of DOPCO.

NETHERLANDS

1. Introduction

The central question of this paper is which combinations of energy markets and government interventions provide acceptable price and allocation, both in equilibrium and when the unexpected occurs. Currently, the EU's energy market is not fully integrated, therefore competition is limited and the security of supply is also prone to discussion. The European Unions energy policy's objective is to develop a competitive and efficient energy sector that ensures the security of supply. The development of such an energy market is fundamental for achieving growth and consumer welfare in the European Union. Therefore, we would like to discuss the central question from a European perspective. At first, the questions on market integration within the EU will be discussed. Then, the diversification of supply outside the EU will be treated.

The EU's import dependency is expected to increase significantly over the coming decades as internal resources are gradually being depleted and demand will continue to grow. The oil and gas that we need will be imported from a limited number of supplying countries, for instance Russia and Norway, and countries in Central Asia, the Middle East and North Africa. Russia currently provides 25% of EU gas supplies, though, given decreasing indigenous reserves and the large gas reserves in Russia, import dependency from Russia is expected to increase significantly. Gazprom expects that exports to Western Europe will have increased by 30% points in ten years' time. In addition to this, the increased politicisation of energy markets worldwide poses a serious challenge to the security of supply. To secure the supply of energy, the European Union is intent on further developing its bilateral relations with suppliers, based on reciprocity. The EU also promotes further market integration. Moreover, the EU focuses on improving energy efficiency. In this contribution, the internal integration of the gas markets within the EU will be discussed, as well as external diversification of supply.

2. Internal market

Generally speaking, competitive markets provide the necessary signals for investments which will lead to supply security in the most efficient way. Competition theory provides the theoretical basis for this in the Law of One Price (LOP). It states that in a network of geographically dispersed markets for a homogeneous good, if transportation and transaction costs are zero, if all market agents have full information, if there are no constraints on the transportable volume of the good, and if each market is connected to every other market, then arbitrage will ensure that a single price holds in all market locations. In the case of non-zero transportation and transaction costs, arbitrage will ensure that prices will differ only to the extent of these costs.[1] If this theory was applicable to the European market, gas supplies would flow to where prices are highest. This would result in an equilibrium price, determined by supply and demand. In such a market, the necessary signals for investments would be present, and this will contribute to the security of supply. Also, the creation of a competitive internal market will allow the European Union's energy companies to operate in a larger market, which will contribute to the security of supply. However, the gas markets within the European Union are currently characterised as regional markets with limited

[1] Price Convergence in North American natural gas spot markets, M. King, C. Milan, Energy Journal 1996, vol 17, issue 2, p 26

interaction and limited competition. Regulation regimes between markets are not aligned and companies in the regional markets have significant market power as their market share is relatively large.

3. Market Integration

To achieve market integration, first of all, more investments in cross border transport capacity is necessary. Without ample interconnection capacity, the internal market for gas and electricity will not develop. Investments in the gas and electricity market are characterised by high capital intensity, asset specificity and therefore a long-term commitment. To receive a reasonable return on these investments, a high utilisation rate is necessary and therefore these commitments are only made if there is reasonable certainty that the capacity will be fully utilised. The large companies that are active in the gas and electricity markets both own the network and are sellers of the gas and electricity. The network is characterised by a natural monopoly, which enables the companies to exert significant pricing power. For this reason networks are subject to price regulation. From a company's perspective, market integration and therefore increased interconnections between markets is only preferable to a certain extent. If a large company has residual gas or electricity, it wants to sell gas to other parties and an integrated market can offer this possibility. However, it is not always in the interest of individual companies to enlarge interconnection capacity because of the loss of market power plus the risk of overcapacity of existing connections. Therefore the investments by businesses in interconnectivity may be sub-optimal, and an active role of governments is required.

From a market perspective, ownership unbundling can break this deadlock. Ownership unbundling may be the most effective way to bring about enough investments in networks and cross border connections, because it limits the distortions of incentives by interests of affiliates. And these investments are crucial. Obviously, grid/ network companies have to make proper considerations, since they will not invest in overcapacity. To that effect, regulation by governments should ensure that the required infrastructure is developed. In addition, more European coordination and regulation will be needed. As interconnectivity between markets will improve, competition and liquidity in the markets may increase. Companies that are selling gas will be able to supply new markets and arbitrage between these markets will ensure that gas and electricity flows to the place where prices are highest. Thus, deprived regions will get their energy in times of crisis and this contributes to an increased security of supply.

4. Improved flexibility

Competitive markets are characterised by flexibility and flexibility contributes to the security of supply. In this part we will point out several developments that contribute to the flexibility within the gas market. First, we will discuss the role of LNG, then gas storage will be discussed. Finally, diversification of supply will be addressed.

The development of the LNG terminals contributes to more flexibility within the gas market as it diversifies the energy supply, since LNG partly comes from different supply sources. In addition, LNG is characterised by more flexibility, since it is transported by sea and can monetise gas reserves that could not be monetised too easily by using pipelines due to geographical limitations. A second factor that contributes to flexibility within the gas market is gas storage. Gas storage may be important as it can be used for the development of strategic gas reserves. It could also be used whenever demand is higher than supply due to the seasonality and volatility of the demand for gas. However, gas storage opportunities are not easily available in all countries. In countries like the Netherlands with a large number of depleted gas fields, there are more possibilities in other countries. Therefore, the EU commission has wisely proposed to perform a cost/benefit analysis for gas storage first. The Netherlands could develop significant gas storage facilities as the production of a large amount of small gas fields will soon come to an end in the Netherlands. These fields could be used for underground storage and combined with LNG supply, this can contribute to the

development of a Dutch gas roundabout that contributes to a more efficient, integrated and flexible gas market.

5. Long term contracts

As pointed out before, a European market that is characterised by flexible integrated and competitive markets is beneficial for the security of supply as well. However, the development of an integrated market with short-term supply characteristics will not automatically generate ample gas imports as gas exporting countries prefer long-term contracts. Long-term contracts ensure the gas exporting countries of a steady stream of income, instead of a seasonal or more fluctuate demand for gas in liberalised markets. Also, for investments in production and transport capacity expansion to occur, it is important to have long term commitments and it is very important that Russia and other exporters will invest in their producing capacity. There are enough gas reserves, but it is questionable to what extent there will be enough investments in order for supply to meet demand at efficient and competitive prices.

Therefore, the integrated market with flexible arrangements and supply options may need to be complemented by using long-term contracts with gas suppliers. Without these long-term commitments, the expansion of transport capacity and the highly capital-intensive LNG infrastructure will not be developed adequately. It is inevitable that the supply chains in the gas markets will extend beyond the borders of the EU, and we have to take into account the different point of views, the different interests, the different regulation regimes and the role of the national oil and gas companies, when securing our supply. It is the decision of the gas suppliers to supply gas on a long term or short term notice, but supply will predominantly be based on long-term contracts as this is beneficial for both the EU as a whole and for the supplying countries.

6. TPA exemption

Finally, we would like to discuss current developments regarding Third Party Access (TPA) exemptions**.** There is regulated TPA, negotiated TPA and no TPA. When regulated TPA is used, then the access is regulated by the regulators. In negotiated TPA, market participants that own the infrastructure themselves determine the rates and methodology. With no TPA, the infrastructure is fully controlled by the owners. Within the EU, new infrastructure that is fundamental for integrating markets may receive TPA exemption. Examples are the BBL, or the LNG terminals proposed in a number of countries. For these projects, regulated TPA exemption is necessary for the investments to occur. So, basically, regulated TPA exemption contributes to a concentrated market as flexibility and competition through TPA exemption is limited, while without them we have too little infrastructure for competitive and integrated markets as investments in infrastructure will not occur.

In the short term, the effect on the flexibility within the gas markets of regulated TPA exemption compared to regulated TPA is that flexibility will be lower than with regulated TPA if we assume that the same infrastructure would be built in both cases. This is because third parties do not automatically have access to the infrastructure. However, the overall effect on flexibility will be positive as the supply sources will be more diverse, and the liquidity will increase. Also, investments in infrastructure are fundamental for the integration of the market, and integration of the markets will result in improved flexibility and a more efficient market on the longer term. Generally speaking, if the investments in interconnectivity and infrastructure between markets are increased, this will contribute to both the development of competitive markets and to more security of supply, which is welfare maximising. Therefore, investments should be welcomed and supported as much as possible.

NORWAY

1. Introduction

The Norwegian electricity generation is mainly based on hydro power, which means that the security of supply in Norway is vulnerable to weather fluctuations. In this contribution, the Norwegian Competition Authority (NCA) will focus on security of supply in the Norwegian electricity market and illustrate how market mechanisms can be used to ensure security of supply. The NCA will describe the most important instruments available to avoid shortage of supply and how these instruments work, and comment briefly on rationing as a last resort.

In practice, the domestic use of natural gas is negligible, and about 99 per cent of Norwegian natural gas is exported. However, energy markets share many of the same characteristics regardless of energy source. The NCA therefore uses the electricity market as an example of how security of supply can be achieved through extensive use of market mechanisms. Given that the Norwegian electricity market was liberalised as early as in 1991, our experience in market design to ensure security of supply in the electricity market might be of interest.

We suggest the following definition of the concept of security of supply:

> *Security of supply is the ability to cover demand for energy at all times at competitive and efficient prices.*

This definition underlines the importance of competition and market mechanisms with regard to security of supply in the Norwegian electricity market.

2. Background

Norwegian electricity generation is by 99 per cent hydro power. After electricity market liberalisation in the early 1990's, competition and abundant generation capacity resulted in lower electricity prices, and generation investments dropped radically. As consumption continued to grow, the Norwegian supply situation has gradually become tighter. A comfortable generation capacity margin has disappeared, and the energy balance in an average hydrological year has turned from surplus to deficit.

Since hydro constitutes such a large part of the annual production, the flow pattern in the integrated Nordic system will be strongly influenced by the change of inflow from year to year, most extremely within the Norwegian system and on Norway's interconnections with other countries. The consequence is that the amount of available energy often varies considerably between different periods or years. During the years 1995 – 2005, the production from the Norwegian hydropower system has been estimated at 120 TWh for years with average inflow. The inland production of electric energy was 121 TWh in 2006, compared to 137 TWh in 2005 and 111 TWh in 2004, while domestic gross consumption was 121 TWh in 2006, compared to 125 TWh in 2005 and 123 TWh in 2004. This implies that Norway is a net importer of electricity in years with little available energy, while the country exports electricity in wet years.

The electricity prices paid by Norwegian consumers vary considerably between different seasons and years. The electricity prices peak in periods with high consumption and/or little inflow, and are relatively

low in periods with low consumption and/or high inflow. Most Norwegian consumers have contracts with their electricity supplier where the energy price is dependent on the spot market price for electricity. The electricity prices influence the demand for electricity to some extent even though the demand structure is rather rigid. Consumption in Norway is, however, to some degree flexible with switching opportunities because space heating with electricity in domestic houses to some extent can be substituted with more use of wood or oil. The large share of power intensive industry (about one third of the national electricity consumption) in the system provides additional demand side flexibility. The result is that the market is able to secure a medium- and long-run balance between supply and demand, and even in very dry years it has not been necessary to use rationing to balance the market.

2.1 The Nordic power exchange

Nord Pool is the world's first multinational commodity exchange for electricity. Nord Pool is the marketplace for trading electricity in the Nordic countries, and Elspot is the main market for trading electricity contracts for physical delivery. This is a contractual market where contracts are traded on a daily basis for delivery the next day, with a full obligation to pay.

Prices are calculated based on the balance between the bids and offers from all the market participants. This is the point of departure for planning the balance between the electricity system's production and consumption. During the operating phase, however, there will always be a large or small deviation in relation to the planned balance due to forecast deviations or transmission limitations in the grid, as well as operational interruptions that can upset the balance.

3. Responsibilities regarding security of supply

This chapter gives a short overview of different authorities' most important responsibilities regarding the security of supply in the Norwegian electricity system.

3.1 The Ministry responsible for regulation of the electricity market

The Ministry of Petroleum and Energy (OED) is responsible for the regulation of the Norwegian electricity market. It is the Ministry that in "extraordinary circumstances" can decide that rationing is necessary.

3.2 The national energy regulator

The Norwegian Water Resources and Energy Directorate (NVE) is the energy regulator in Norway. Any license to build new generation or transmission capacity in Norway has to be approved by the NVE.

The NVE is also responsible for regulation of the transmission system operator (TSO), and approves all proposals for measures the TSO wants to implement to secure the balance between supply and demand in severely strained situations.

If "extraordinary circumstances" necessitates rationing, the NVE is responsible for maintaining electricity supplies nationwide. The NVE is responsible for planning and implementation, and also to re-establish normal conditions when possible.

3.3 The Norwegian transmission system operator

The Norwegian transmission system operator (TSO), Statnett SF, is a state owned company. It is responsible for securing the instantaneous balance between supply and demand at any time, and to carry out investments in the national transmission grid when this is socio-economic profitable.

The TSO shall to the greatest possible extent make use of measures which are based on market principles to secure instantaneous balance between supply and demand. It is to have adequate operational reserves at its disposal at all times. In the event of enforced disconnection of supply, the TSO is considered the responsible concessionaire, which means that in a situation with lack of generation capacity, the TSO may have to resort to forced demand disconnection in order to save the bulk of the system. Further, the TSO is to continuously investigate and develop necessary measures for handling periods with a severely strained energy situation.

In supply situations with scarcity of energy, the TSO is to define strained regions as separate bid areas in the Elspot market in order to signal difficult supply conditions and to give correct incentives to market participants.

3.4 Transmission and distribution grid owners

Reliability of supply is the responsibility of the transmission and distribution grid owners. Transmission and distribution charges in Norway are determined by the allowed annual income defined by the energy regulator for each particular transmission and distribution grid owner. The network owners are to be penalised by reductions in allowed income for supply interruptions which last for more than three minutes and are caused by failures in their own networks. Penalties are meant to reflect the economic value to consumers of energy not supplied, and varies between 12 Euro/kWh for the private service sector to about 1 Euro/kWh for households.

4. Instruments available in situations with imbalance between supply and demand

The total electricity consumption in Norway is increasing annually. There will be a certain increase in the production capacity in the coming years, but Norway's consumption will still be vulnerable to variations in the annual production of hydroelectric power, even though import and export of electricity play an important role in levelling out the variations. In addition to this country-wide challenge, regional deficits may occur due to local demand and grid limitations.

Electricity prices in the Nordic market determine the energy flows between regions and countries. The price formation is the main instrument ensuring that increased demand is met by investment in new production capacity. Measures used by the TSO should influence the price formation as little as possible. They should be based on market principles as far as possible, and generation investment incentives should not be weakened to any extent. The measures should reduce the risk of rationing, and the neutrality and independence of the TSO is to be maintained. Any measures used in periods with disturbances between supply and demand are to be used in the right order, which means that the most cost effective measures are to be used first. Which measures are to be used, depend upon whether there is lack of power or lack of energy in the system.

4.1 Power related imbalance in the system

The electricity system is characterised by the continuous need for instantaneous balance between supply and demand, when also considering export and import of electricity. Occasionally, situations occur where the system operator meets an operational challenge when it comes to managing power flows to maintain system stability.

Lack of power is often due to a fault in one or more hydro power plants or faults in the transmission system. However, lack of power can also occur in peak-load situations, e.g. on extremely cold days. If nothing is done to solve this situation, the whole system might black out. In such cases, one or more producers will have to regulate down their production, and in some cases there is also a need for electricity users to regulate down their demand. Problems related to power are momentary, and normally lasts for less

than an hour. Because power related problems arise on very short notice the system needs special measures to take care of such situations.

4.1.1 The Elspot market

The Elspot market shall provide a planned balance between supply, demand, import or export in every elspot area. The players are committed to make sure there is a planned balance between their obligations and rights, included their own production and consumption. The TSO is dependent on this planned balance to handle the operational hour. When there is a balance as planned in Elspot, the need for power reserves are restricted to handling discrepancies in the prognosis and operational disturbances.

4.1.2 The balancing market

Access to operational reserves influences an electricity system's ability to handle an extreme situation. Operational reserves (regulating power) include both reserve generation capacity and demand reduction agreements. The TSO acquires such reserves to ensure the system security, i.e. the ability of the electricity system to withstand disturbances without causing any disruptions of the supply of electricity to the consumers. The balancing market is the TSO's main tool to secure power reserves during the operational hour. Since September 2002 all Nordic regulating power bids to the balancing market are collected in one common Nordic bid ladder. As far as possible the Nordel area is balanced as a whole.

The balancing market is a collection of regulating objects to compensate for any imbalance between production and demand during the operating phase, and a market for the subsequent settlement of the individual market participants' imbalance in relation to their overall obligations. The market participants submit bids for physical power regulation on an hourly basis for the following day. The size and price of the individual regulating objects are specified, and they are sorted by price. The objects are used in the order of their price in order to minimise the cost of any necessary power regulation during the operating phase. All offers that are accepted are remunerated based on the price of the last offer accepted, which means that the compensation is based on the marginal price.

Normal use of bids in the balancing market occurs without any costs for the TSO. All costs connected to imbalances are settled in the balancing market and equally shared between all players who contributed to the imbalance. Only if there is a need for the TSO to skip cheaper bids in favour of more expensive ones, for instance because of regional imbalances (special regulation), the TSO has to pay.

The reserves option market

It is necessary to secure power reserves to the balancing market so that operational interruptions and forecast deviations can be handled properly. A new power reserve market was established in Norway in the year 2000. This market invites participation from both generators and consumers. The idea is that the suppliers must guarantee specific volumes of power reserves in the balancing market. Offers are area based and include size and option price. Bids may be presented for different time periods, and the shortest possible duration is one week.

The production resources in the Nordic electricity system may not be sufficient to cover the forecasted maximum load for the entire region. This means that consumption must be reduced in situations where the generation and import of electricity is insufficient, primarily through measures that are agreed upon in advance. The TSO therefore seeks to include a certain share of consumption objects in the overall power reserve contract portfolio.

The offers with the lowest option price are accepted until the desired volume of power is obtained. All offers that are accepted are remunerated based on the price of the last offer accepted. The TSO finances the purchase of reserves through the grid tariff.

Bilateral agreements

The TSO has also entered into long-term bilateral agreements with some hydro power producers. The TSO has made an economic contribution to increase installed capacity when producers were rehabilitating their power plants, and the producers pay back by making the increased capacity available for the TSO in the balancing market in the contract period.

4.1.3 System services

The system operator buys system services in the form of a frequency governed primary reserve. This reserve is supposed to regulate all minor momentary changes in the electricity system. A safety net in the electricity system in form of frequency governed load disconnection has been installed. This safety net is activated if the momentary balance is upset and the frequency in the system is sinking. The disconnection load is set so low that disconnections only happen in situations with severe operational disturbances and in situations where the system operator is about to lose control.

4.1.4 Short term forced disconnection of consumption

If none of the above mentioned measures are sufficient to ensure balance between supply, demand, import or export in the market, the last resort is to disconnect consumers for a short period of time. The TSO has to pay for the use of this measure.

4.2 Energy related imbalance in the system

A well functioning electricity market will normally handle a situation with shortage of supply. When there is a shortage of water, electricity prices increase and demand decreases. The demand is, however, rather inelastic, which means that in some situations the price mechanisms might not be sufficient to secure balance between demand and supply.

In a hydro-based system like the Norwegian, lack of energy might be caused by less inflow than normal. The amount of inflow of water to the Norwegian electricity system is characterised by considerable uncertainty, and can vary with more than plus/minus 25 per cent compared to a year with average inflow. If the system experiences a lack of energy, this situation will normally last much longer than a situation with lack of power. The critical periods will typically be the weeks before snow is melting in the spring. Available water in the reservoirs will be a result of inflow during the previous summer and autumn, temperatures in the winter season and hydro generators' use of the water reservoirs. Market signals from both the Elspot market and the financial forward/future markets play a fundamental role in efficient operation of the reservoirs.

Different measures are available in situations with lack of energy, and some of the most important are discussed below. The most expensive measures are only to be used in situations with an imminent risk of rationing. Energy options and reserve power plants can only be used in very strained situations and after approval by the NVE.

4.2.1 Separate Elspot areas and other normal measures

In situations with lack of energy in a region, the system operator sets up a separate elspot area. In hours where there are bottlenecks in the transmission system between the system in the area and

neighbouring systems, the area will have a separate price. Typically, this price will be higher than the prices in the neighbouring areas, reflecting the lack of energy the region is experiencing.

Increased prices in an area will lead to increased imports from neighbouring surplus areas if there is available transmission capacity. Producers with spare capacity in the deficit area will have incentives to increase production. Further, increased prices in an elspot area will normally lead to reduced demand for electricity in the region.

If establishing a separate elspot area is not enough to balance the market, the TSO has the right to ask producers to cancel or postpone revisions, which will make more production capacity available to the market. Further, the TSO has entered into agreements with some consumers who have boilers and are able to use alternative energy sources, and these contracts allow the TSO to reduce the consumption in the deficit area if needed.

In some very rare cases, none of the above-mentioned measures are sufficient to secure balance between supply and demand. To be able to handle such cases without the need for rationing, the TSO has developed two new instruments, namely energy options on demand reduction and reserve power production.

4.2.2 Energy options on demand reduction

The market for energy options on demand reduction used to balancing the market was started as an experiment for the winter 2006/2007. The TSO has entered into agreements with industrial customers on demand reductions for a number of weeks in case of a critical energy supply situation. The TSO is then in the position to decide, after approval by the NVE, if and when demand reductions should be activated. The TSO pays for this right when buying an option, and it has to pay an additional sum if an option is exercised.

Which energy options the TSO chooses to buy depends on an evaluation of the usefulness of the options. Important factors are geographic location, down-regulating volume, flexibility in the bids, the option's premium and the premium for exercising the option. The criteria for the exercise of energy options is that there is a high probability of physical rationing.

4.2.3 Reserve power

Investment by the TSO in reserve production capacity (300 MW mobile gas turbines) as a measure in periods with a very strained energy situation was allowed by the NVE in September 2006. The TSO also needs approval from the NVE if the plants are to be put into operation. To activate the gas power plants, the TSO also needs an emission license from the Norwegian Pollution Control Authority.

This measure was decided as a consequence of existing forecasts for the energy balance and the risk for rationing. The gas turbines are to be owned by the TSO, and they are only to be used if there is a period with a very strained energy situation where the probability of rationing or disruption is very high. In this manner reserve power is to be regarded as an insurance scheme and as an extraordinary measure. High prices are not sufficient to start production in the reserve power plants.

5. Rationing as a last resort

Rationing is a forced cession of energy from producers and forced reductions in delivered energy through disconnection of consumption or allocation of quotas, which does not already follow by existing agreements. Rationing might be necessary if there is a serious lack of energy. This can happen if the prices do not adapt to the market conditions, or if market players do not react to the price signals to a sufficient

degree. This might happen in the short run, but in the long run it is very unlikely that the market will not be able to handle such situations and secure balance between demand and supply.

Rationing implies costs related to the administration of rationing and costs caused by inefficient use of resources because some of the buyers with the highest valuation and some of the suppliers with the lowest alternative costs are not allowed to trade.

In a hydro-based electricity system, the level of reservoir capacity decides the price difference between periods with large inflow and/or low consumption and periods with less inflow and/or high consumption. With sufficient reservoir capacity, equilibrium implies the same market price in both periods. The connection between electricity prices at different points of time implies that expectations about future events have consequences for the electricity prices today.

An attempt to influence the market can give unintentional consequences. Assume for instance that the authorities early in a season wish to persuade the market to reduce its electricity consumption in order to reduce the probability of a situation with lack of energy later that season. Further, imagine that the authorities normally use rationing as a measure to keep a moderate electricity price level. If the producers perceive this initiative as a signal that there is a high probability of rationing, the result can actually be a worsening of the situation. Rationing will restrict an otherwise strong price increase and make it less profitable to store water for later periods. A warning from the authorities might therefore give the paradoxical result that it increases the probability of rationing.

In hearings concerning the Energy Act, the NCA has been restrictive in its view on the potential use of rationing in the Norwegian electricity system. The NCA has underlined the importance of not setting the market aside unless it is absolutely necessary, because that will disturb the market and add unnecessary costs to society. The NCA has therefore advised the energy authorities to consider use of rationing only in situations where the market otherwise will stop functioning.

According to the Energy Act, rationing can be introduced in “extraordinary circumstances”. In the proposition to the Act it is stated that “high electricity prices as such are not to be regarded as “extraordinary circumstances”, and will not be a reason to declare rationing“ (Ot.prp.nr.56 -2000-2001 side 46). This means that rationing is only to be used when it is not possible to form a balance between production, transmission and demand, and it is not a measure to keep the electricity prices at a moderate level.

Rationing measures might be introduced gradually and with a varying degree of consequences for the market. As far as possible, existing market mechanisms will be continued also in situations with rationing, but in its extreme, the whole market will be set aside.

6. A Norwegian experience with a difficult energy situation

The autumn 2002 was extremely dry, and also unusually cold. Very limited inflow to the reservoirs during the autumn created a worrying supply situation. In December it seemed possible that Norwegian hydro reservoirs would be insufficient to cover the demand until snow melting in the spring, even combined with heavy imports.

Imports to the Nordic area and Norway were high. Elspot prices became higher than ever in the Nordic market, in January 2003 up to 114 Euro/MWh as a daily average. The high electricity prices created a lot of media attention. The energy authorities launched a campaign in order to reduce consumption. Some industrial consumers decided to reduce their manufacturing and sell their electricity in the market instead. A mild and rainy January with low consumption, and early snow melting in Southern Norway also eased the situation. Any use of extraordinary measures to handle the situation was avoided.

The conclusion was in brief that the market had succeeded in handling a difficult supply situation satisfactorily. The lack of generation capacity was made clear through high prices, consumers and producers reacted to the price signals, and as a result supply was sufficient to cover demand. There was no need for the authorities to interfere in the market.

PORTUGAL

1. Introduction

This note sets out the joint contribution of the Portuguese Competition Authority (Autoridade da Concorrência, AdC) and the Portuguese Energy Regulator (Entidade Reguladora dos Serviços Energéticos, ERSE) to the roundtable discussion on Energy Security and Competition Policy, to be held on the occasion of the February 2007 OECD Competition Committee Meeting. The main topics will, no doubt, be amply covered in the Secretariat background paper, so the discussion here is limited to listing what are, in our perspective, the main outstanding issues and giving in more detail what we consider to be relevant information on Portugal's experience in these matters. Given the roundtable's focus on gas, this note ends with a brief overview of the Portuguese gas market, which may serve as an interesting example of a recent introduction of natural gas to a national energy market.

2. Supply security from a European perspective

In its recent Communication paper to the European Council and the European Parliament, the Commission defines three main challenges: Sustainability, Security of Supply and Competitiveness.

The building of a real Internal Energy Market is considered the key to meet these challenges. The major actions that have already been clearly identified as urgent measures for the establishment of the Internal Energy Market, contributing to the security of supply at a European level, can be described as:

- Creating appropriate incentives for investing in generation, to ensure that future consumption needs are adequately met.

- Putting in place adequate incentives for infrastructure investment, especially in interconnection capacity, since infrastructure is a key element not only for long term security of supply but also from a short term operational point of view.

- Establishing the appropriate regulatory framework for promoting competition, such as the unbundling of the transmission operators and adequate transparency (information disposal) from the TSO.

- Defining the appropriate rules for market operation, such as reliability, service quality and security standards.

- Ensuring effective regulation, through the harmonisation of the powers and independence of the energy regulators, based on the highest common denominator.

- Promoting diversification of primary sources and avoiding dependence on few suppliers.

- Establishing ambitious targets for renewables and for energy efficiency.

- Managing an appropriate oil stock mechanism.

- Advancing with technological developments such as carbon capture and nuclear power safety.
- Adequately monitoring and reporting the demand/supply balance.
- Establishing a common Strategy in Europe, so as to speak with one voice.

In its recently-completed energy sector competition inquiry, the European Commission also underlines the burden put on consumers and businesses as result of inefficient and expensive gas and electricity markets. It further identifies, as the main structural and behavioural issues, high levels of market concentration; vertical integration of supply, generation, and infrastructure; and possible collusion between incumbent operators to share markets. These issues are to be tackled through competition policy instruments, e.g. anti-trust, merger control and state aid, as well as through regulatory reforms to foster energy liberalisation.

We support the findings and actions of this survey. Portugal has pioneered a vertical unbundling in electricity, and has recently completed an asset spin-off which has entrusted the TSO with the ownership of high-pressure natural gas transmission and storage facilities, as well as with LNG import infrastructure. Our experience, as detailed below, suggests that vertical unbundling is a key first step to reduce market power in national markets.

3. Outstanding issues for discussion

The traditional model of vertically-integrated state energy monopolies took care of supply security by in-house long range planning and infrastructure investment combined with long term power purchase agreements and other supply contracts. Market liberalisation (where it has been implemented) unbundled these monopolies into separate entities, creating the challenge of how to assure supply security while permitting competitive markets to operate. Supply security usually entails having some excess capacity, especially in the case of electricity, where storage is not possible. The creation of production, transport and distribution infrastructure implies long planning and implementation lags and market players on naturally reluctant to invest in idle assets unless an adequate return on such investments can be assured. The challenge here is to ensure a regulatory framework that combines incentives for investment in adequate excess capacity with incentives for competition in production and supply while, at the same time, ensuring efficient and sufficient investment in the regulated transport and distribution networks.

The development of the single energy market requires increased interconnectivity to permit better balancing between supply and demand in the various markets. In practical terms, however, a single Europe-wide grid with sufficient round-the-clock capacity would require investments of a dimension well beyond what is financially justifiable. In any case, increased interconnectivity should never be considered as a substitute for competitive local markets. Progress towards the single energy market requires that each national market be competitive before joining with neighbouring markets in the creation of efficient regional markets. Interconnections between regional markets will then ensure an efficient single European energy market. This point lays great importance on close collaboration between national regulators and national competition authorities as well as between these entities and their counterparts at regional and at European levels. Also of prime importance is the effective harmonisation of rules, especially considering that regulators are dealing with increasingly global energy firms.

On this issue, further work is necessary to ensure cross-border regulation and to define more clearly the division of responsibilities between national and EU-wide regulation. The EU competition framework, especially post-Regulation 1/2003, could provide a useful model, with national authorities having primary responsibility, but keeping the Commission informed of all matters with a transborder impact, even if only potential. If the Commission decides that an infringement or a merger procedure has an EU dimension, it

assumes responsibility for the case. Close collaboration between NCAs and between these and the Commission is assured via ECN (the European Competition Network). Also useful is the example of regulation in the electronic communications (telecoms) sector, in which NRAs work closely with the Commission and with the NCAs in defining relevant markets, establishing whether firms have a dominant position and laying down pro-competition obligations.

Another problem relates to the concentrated nature of the principal primary suppliers of energy inputs, namely oil and natural gas. This situation can place European consumers in a vulnerable position vis-à-vis the producers and pipeline transporters of oil and natural gas. The fact that the producers and transporters often are state entities adds a political risk to the already serious commercial risk. This problem calls for two types of response: i) increased efforts to promote energy efficiency, diversify energy sources and increase European self-reliance and ii) a united approach by European consumers, to exercise some form of countervailing power to the concentrated primary energy sources; such a united approach requires effective cooperation between Member States in the negotiation of long-term contracts and passage rights.

Considering the above challenges, it is important to define clearly the functions of the five principle players at the national level:

- Government defines energy policy, including objectives and instruments relating to diversity of supply for primary energy, while shaping market structure through licensing of new capacity.

- Energy Sector Regulators create the appropriated mechanisms to ensure adequate and timely investment in infrastructure, set prices for the use of monopolistic infrastructure, and promote efficiency in energy use.

- Competition Authorities oversee market functioning, and intervene through anti-trust instruments and merger control decisions as the case may be, as well as through recommendations to Government towards improved consumer selection and the removal of structural barriers to competition.

- Transport and distribution network operators ensure the technical security of the system, so as to prevent supply interruption due to technical reasons.

- Energy producers and suppliers, operating in competitive markets, are the final link in the chain to satisfy market demand at the lowest efficient price.

These responsibilities at national level can be facilitated by close cooperation and information-sharing in international fora, namely OECD and the IEA. Such cooperation is particularly relevant in working towards global objectives such as controlling carbon emissions and promoting nuclear safety. But regulation of inter-connection and other cross-border issues may well call for enhancing the role of the Commission.

4. Energy security and competition – positive and negative experience in Portugal

Portugal's experience with the liberalisation of electricity and the introduction of natural gas provides both positive and negative examples of how to proceed with market opening in energy.

Among the positive aspects, in our opinion, are the following:

- the creation of an independent Sector Regulator in 1997 and of an independent Competition Authority in 2003;

- structural unbundling of electricity transmission, and high-pressure gas networks, as well as LNG storage and underground gas facilities with separate ownership and a 5% limit on participation by each producer or distributor;

- active promotion of renewable energy sources (currently representing 42% of total electricity production under normal climatic conditions; for 2010 the target is 45%);

- active promotion of energy efficiency at the consumer level (€10 million per annum in ERSE promotion projects);

- liberalisation of electricity production (incumbent now accounts for about 50%);

- full retail liberalisation of electricity supply and gradual liberalisation of natural gas;

- unbundling of activities and regulated tariffs constructed by the addition of tariff components for each segment of the supply chain;

- requirement of efficiency gains in regulated network monopolies, translated in reduction of energy losses and improved quality of supply;

- commitment to investment in interconnectivity (currently 1200 MW is the interconnection capacity between Portugal and Spain, representing 12% of Portugal peak demand; for 2010 a 3000 MW capacity value is expected between Portugal and Spain, representing 27% of projected Portugal peak demand; Also for 2010 a 4000 MW capacity value is expected between Spain and France representing 8% of Spain peak demand) and gradual creation of the Iberian regional market (MIBEL), including the setting up of trading platforms.

The Portuguese experience has not always been positive, however. Among the less positive aspects, we would highlight the following:

- the legal framework and, in consequence, the regulatory framework has been less stable than desirable;

- delays in the renegotiation of power purchase agreements continue to impede the introduction of competition in electricity supply;

- competition in production and supply, though legally ensured, is still very limited in the electricity sector and practically non-existent in the gas sector;

- regulated tariffs, at less than full cost in many cases, constitute an entry barrier to new market operators in both the national and the regional (MIBEL) markets;

- tariffs with interruptability exist but supply is never interrupted. In practice, the mechanism provides an extra discount to some consumers, cross-subsidised by others.

5. A brief overview of the Portuguese natural gas market[1]

5.1 The Natural Gas Project

The supply of natural gas to Portugal through pipeline only started in 1997/1998. The upstream pipeline comes from Algeria, crossing Morocco, the strait of Gibraltar and Spain. The pipeline was built under a joint venture between the Portuguese and Spanish gas incumbents. Under this joint venture an agreement was established on the use of pipeline capacity at the entry and exit points throughout the Portuguese territory. Under this agreement, the Spanish gas Transportation System Operator (TSO) has booked capacity in the Portuguese section of the pipeline in order to allow for the transit flows of natural gas to the northern Spanish region of Galicia.

At the time of project implementation, there was only one gas distribution network in Portugal – an urban system in Lisbon serving a population of about 550,000 inhabitants. In order to ensure investment break-even, a key component of the Natural Gas Project was the commissioning of a new power plant, using Combined Cycle Gas Turbine (CCGT). The operation of that CCGT was set under three different agreements: a gas supply contract with the incumbent; a Power Purchase Agreement (PPA) with the electricity TSO, the single buyer of power for the public electric system; and the Consumption Management Agreement between the gas incumbent and the electricity TSO. Under this last agreement, the TSO is committed to purchase a minimum amount of electricity from that CCGT, hence setting a minimum annual amount of gas to be consumed by the power plant

In 2003, and in response to increased demand, a new LNG terminal, located at Sines, on the Atlantic seashore of Portugal, became operational.

From 2000 to 2005, demand grew at an average annual rate of 14%. This rapid growth is mainly due to consumption by power plants. Indeed, in 2003 another CCGT was commissioned by the electricity incumbent. The rapid conversion from other energy primary sources undertaken by industrial activities has also contributed to the sharp rise in natural gas consumption. Finally, domestic demand of gas has also been rising in line with the expansion of local gas distribution networks. As a result, in 2005 consumption by power plants represented 49% of the final gas consumption in Portugal[2], whereas domestic consumption accounted for less than 6%.

In 2005 the final consumption of natural gas in Portugal accounted for 4.3 bcm, up from 3.5 bcm in 2004. The industrial market and the distribution operators' market are responsible for respectively 35% and 16% of total consumption of natural gas, having grown by respectively 12% and 5.5% versus 2004. Potential for future growth remains high, with a consumption of 6-7 bcm per year projected for 2010[3]. Power plants will remain dominant in the estimated future consumption of natural gas.

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1 This section reproduces, with updates, the text of Portugal's submission to the OECD Roundtable on Ensuring Access to Key Capacity for New Entrants, published as DAF/COMP/WP2/WD(2006)15 of 26-Jan-2006

2 Relatório Anual para a Comissão da União Europeia, 2005, Entidade Reguladora dos Serviços Energéticos

3 Portugal 2004 Review, International Energy Agency

5.2 The supply contracts

The original supply contract for natural gas, signed in the early-1990s, was entered into between the incumbent (*Transgas)* and the Algerian firm *Sonatrach* for a period of 23 years. From 2001 onwards, the average contracted gas is 2.5 bcm[4] per year, subject to Take-Or-Pay (TOP) commitments.

With the prospect of the new LNG terminal becoming operational, the incumbent entered into LNG supply agreements. One was a short-term supply agreement with Shell España. The remaining are supply agreements (3 contracts) with Nigeria for periods of 20 years, with TOP commitments. The average quantity of contracted gas from Nigeria will rise to 3.4 bcm p.a., during the life of the contract. The third LNG supply contract signed with Nigeria entered into force in 2005/6 for a period of 20 years, involving a contracted amount of 2.0 bcm p.a. Also, a new long-term agreement has been signed with ENI, to last between 2006 and 2016, involving the sale of 0.25 bcm of LNG.

As a result, the total gas contracted by the incumbent on a long term basis is 5.92 bcm p.a. These quantities cover most of the demand forecast for years ahead, including the foreseen new CCGT plants to be commissioned before the end of the decade.

5.3 The infra-structure

Portugal has a total import capacity of gas of some 8,935 bcm p.a., of which 3,769 from the upstream pipeline from Algeria and the remaining from the Sines LNG terminal. The LNG terminal has also a workable storage capacity of 240.000 m3. A new storage facility, corresponding to some 20 days of average consumption, is expected to become operational soon.

At present, the import pipeline capacity is almost fully allocated to the incumbent. The same happens with the full LNG regasification capacity. With the opening of the Portuguese gas market, the incumbent is expected to release the capacity not used to meet the quantities under the long term contracts it has entered into. Indeed, long term gas contracts (pipeline and LNG) would amount to some 66% of the total import capacity, on average.

Two units of underground NG Storage have been built with a total capacity storage of 950 000 m3. Globally speaking 175 Mm3(n) of natural gas were injected into the underground storage facilities in 2005, of which 95 Mm3(n) can be used as from January 2006. These represent a 17-day strategic reserve, in terms of last year's average consumption, excluding power generation plant consumption. Completion of the leaching process of another cave and start-up of the respective fill-up process is scheduled for 2006, as well as the completion of the leaching process of a further cave at the end of 2007.

This project also foresees that at least two more caves will begin operations in 2007, bringing total storage capacity to 1.72 million cubic metres of gas.

5.4 The opening up of the Portuguese gas market

The implementation of the EU Internal Gas Market Directives, in what concerns market opening, was derogated until 2007. However, in view of the successful introduction of natural gas supply in Portugal and of the foreseen creation of Iberian Electricity Market, the Government decided to anticipate the possibility for power producers to become eligible to choose their gas suppliers.

[4] Billion cubic meters

Moreover, in late-2005, a Resolution from the Council of Ministers[5] decreed the structural separation of the gas incumbent. Following this Resolution, all natural gas infra-structure was to be transferred to the electricity TSO, with proper legal unbundling between gas and electricity infrastructure. In addition, only minority stockholdings of gas and electricity undertakings would be allowed in the company that will operate both networks.

Soon thereafter, on 15 February 2006, Decree-Law no. 30/2006 was approved, establishing general principles concerning the organisation and functioning of the National Natural Gas System (SNGN) and of related natural gas markets as well as the development of the following activities: reception, storage and re-gasification of natural gas; underground storage of natural gas; distribution; and supply. This Decree-Law transposed to Portuguese domestic law EU Directive no. 2003/55/CE, which established common rules for the single natural gas market. SNGN's organisation relies on the operation of the natural gas public system, consisting of: a National Grid of Natural Gas Transmission; Storage Facilities and Terminals; and a National Grid of Natural Gas Distribution.

This infra-structure is operated by means of public-service concessions – or by means of public-service licenses, in the case of local autonomous distribution grids. Natural gas transmission is ensured by a single public-service concession for the operation of the Natural Gas Transmission System. This activity is legally unbundled from other activities - in the framework of the SNGN – and so are its assets.

Distribution is ensured by means of: (i) Concessions, based on exclusive dedicated operation and under a public-service regime; (ii) Distribution licenses in local autonomous grids, based on exclusive dedicated operation and under a public-service regime; and (iii) Distribution licenses for the private use of natural gas (off-grid).

Distribution is legally unbundled both from the transmission activity and other activities not related with distribution. Unbundling however is not mandatory when the number of customers supplied by distribution operators is lower than 100 thousand.

Natural gas supply is liberalised, although subject to licensing. Suppliers will have the right to access the following infra-structures, against payment of a regulated tariff: Storage facilities and LNG terminals; Transmission grids; and Distribution grids. Natural gas supply will none the less be governed by the provisional legal regime established for the gradual opening of the market, taking stock of the emerging market statute and the derogation associated with it. Thus consumers may freely select their supplier gradually, according to an eligibility schedule. Furthermore, supplier switching may not be encumbered in any way whatsoever in contract terms. In order to simplify and operationalise supplier switching, a supplier-switching logistic operator is created.

Last resort suppliers have also been established by law, for consumer protection. Their purpose is to supply natural gas, in conditions of quality and continuity-of-supply, to those consumers who do not choose to switch suppliers. Last resort suppliers are meant to intervene when the liberalised market is not operating with full effectiveness and efficiency. This function has therefore been awarded, on provisional terms, to the existing concession-holders, for the duration of their concession.

ERSE is responsible for regulating all activities included in the natural gas public system, the activity of last resort suppliers and the activity of supplier-switching logistic operators, while respecting the competences of other administrative bodies. Accordingly ERSE must periodically draft a report on the sector's performance, to be submitted to the Government – who in turn will present it to the National Parliament and the European Commission.

[5] Resolução do Conselho de Ministros n.º 169/2005, de 24 de Outubro

Government is in charge of monitoring the security of supply. This power has been delegated to the Directorate-General for Geology and Energy, in co-operation with the national system of natural gas transmission.

The Council of Ministers, in its meeting of the 22 June 2006, addressing the execution of the National Strategy on Energy, approved a legal bill applicable to the natural gas sector, which governs all its activities (from transmission to supply) and its market, also establishing its liberalisation schedule timeframe (from January 2007, for standard electricity generators, to January 2010, for all customers).

Council of Ministers' Resolution no. 85/2006, also approved on 22 June 2006, authorises REN – Rede Eléctrica Nacional, S. A. to modify its articles of association so as to alter its name to REN - Redes Energéticas Nacionais, SGPS, S. A. and to become a concession-holder of the national electricity transmission system, incorporating new companies. The business purpose of such companies will be to operate public service concessions, respectively of high-pressure natural gas transmission, underground storage of natural gas and LNG reception, storage and re-gasification.

SPAIN

1. Introduction

Since the 90's, the Spanish energy sector has experienced a deep transformation. At the beginning of this process, many energy operators were state-owned vertically integrated companies, in most cases sheltered from competition, and the planning of infrastructures was decided by regulators. Nowadays, all energy companies are in private hands, transport (high tension/pressure) and system operators are fully independent from the rest of energy companies, competition is encouraged, and planning of infrastructures by regulators is indicative, except from some infrastructures such us transmission networks or gas storage.

Energy dependence raises medium and long term concerns: net imports amount to 50% of total energy consumption and their weight is expected to increase in the next few years. Such concerns are even more compelling in a country like Spain where the 2005 energy dependence rate reached 82,4%, far beyond the 1990 ratio of 67%.

Private energy operators have become decisive actors when it comes to guaranteeing energy security. As a result, the role of regulators is of the utmost importance. They have both to promote competition between private operators in order to harvest its benefits and to make sure that energy companies receive the right signals for a correct level of investments and of diversification of energy sources. Regulators must give shape to a system in which any operator bears the risks inherent to its decisions without undermining overall energy security.

This creates a need to continuously rethink energy markets regulation. In order to cope with changing problems, behaviours and structures, regulation must evolve accordingly. Once the general principles of regulatory reform are widely accepted, the focus should be set on particular issues, such as interconnections development and management. Supranational markets do not boil down to supranational operators. Interconnections allow for market integration, greater competitive pressure and diversification of supply.

In this respect, European authorities consider[1] that "an effectively functioning and competitive Internal Energy Market can provide major advantages in terms of security of supply and high standards of public service. The effective separation of networks from the competitive parts of the electricity and gas business results in real incentives for companies to invest in new infrastructure, inter-connection capacity and new generation capacity, thereby avoiding black-outs and unnecessary price surges. A true single market promotes diversity".

[1] See: Communication from the Commission to the European Council and the European Parliament - An energy policy for Europe {SEC(2007) 12}

2. Energy security

There is some consensus[2] in distinguishing two fundamental and interrelated dimensions of energy security that regulators bear in mind:

- Its operative short term dimension, i.e. the physical capacity of the energy system to guarantee the balance between supply and demand at every moment (for instance electricity regulators set different indexes to measure the security and quality of electricity supply in the short term and different balancing mechanisms exist to make sure that supply continuously matches demand in the electricity system)

- Its investment medium-long term dimension, i.e. the availability of sufficient transport and production capacity or long term contracts concerning energy inputs.

  In this respect, for instance, the dimension of the basic gas transmission network aims at meeting gas demand through the provision of natural gas under normal conditions, during peak demand periods, possible gas infrastructures breakdowns or unexpected demand growth.

  In particular, Government planning requires that overall gas system entry and transmission capacity must be sufficient to make sure that:

  Annual peak conventional demand is covered together with CCGTs demand.

  Supply covers 100% of conventional demand under a breakdown of any of the entry infrastructures (namely the so called N-1 criterion) in a winter working day (except from interruptible demand) as well as supply to 90% of CCGTs.

  There is 10% excess capacity to meet unexpected demand growth.

3. Regulation, competition and security of supply in Spanish energy markets

3.1 Electricity

In the mid 80's, electricity supply was considered a public service, regulator's intervention was strong and competition almost non-existent.

Security of supply and financial stability of power companies was dealt with through an electric system operated under the binding coordination of Red Eléctrica Española (REE), a state owned Company, and a "Stable Legal Framework" designed to provide operators with what the regulator considered to be sufficient return on capital, using as reference the standardised costs of the system. This framework worked trough regulated prices (uniform in all Spain) and binding investment planning for strategic energy infrastructures.

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[2] See "Libro Blanco sobre la reforma del marco regulatoria de la generación eléctrica en España". Pérez Arriaga. 2005. Page 51

See "La teoría de regulación: Un panorama". Lasheras (2006). Page 176 of "Energía: del monopolio al mercado. CNE, diez años en perspectiva".

See the Spanish energy regulator, *Comisión Nacional de Energía* (CNE) decision on case E.ON / ENDESA (2006):

http://www.cne.es/cne/doc/publicaciones/CNE_Resolucion_28072006.pdf. Page 264.

During those years, state owned companies merged into ENDESA which afterwards was privatised. Meanwhile, a consolidation took place leading to the creation of the other main operator, IBERDROLA. Both companies together controlled 80% of power production and distribution capacity.

The 54/1997 electricity sector Act (that followed the European electricity Directive of 1996) sparked off major regulatory changes in order to promote Competition and guarantee energy security. At the same time, the remaining state owned companies were almost fully privatised.

The reform aimed at creating competitive markets in power producing and supply activities. Transport (high tension transmission) and distribution (low tension transmission) were kept as price and investment regulated activities on the ground of their natural monopoly nature.

A competitive wholesale daily marginal power market was created[3], run by a private company (OMEL), which allowed producers to sell their electricity to suppliers and qualified consumers. 95% of the electricity produced by ordinary generators came to be sold in the pool. Besides, a special regime was created for renewable energy producers, which has promoted such electricity generation technologies.

As for power supply to final consumers, a dual market was created since the new system distinguished between liberalised market suppliers, which initially could only sell to qualified consumers, and distributors, which sell electricity at a regulated price.

Since January 2003, consumers are free to negotiate their supply contracts with any electricity energy supplier in Spain. From then on the retail market achieved complete liberalisation (100% eligibility threshold). However, regulation allows consumers to be supplied by the distributor at a regulated tariff, which is reviewed annually by the Government.

Electricity producers became free to decide when and where to invest: Planning by regulators on generation capacity became from then on indicative, and new entries were deregulated. In order to offset the stranded costs stemming from investments made by power producers under the former system of binding planning, a mechanism was put into practice (Costes de transición a la Competencia -CTCs-) to make up for potential losses of such investments depending on power market price.

Transport was almost fully put into in REE´s hands, the system operator. In contrast, distribution networks remained within vertically integrated private operators.

Security of supply in the short term was enhanced through the creation of ad-hoc operating markets (secondary and tertiary regulation markets) run by the system operator, REE, that also counts on primary regulation and technical restrictions management to prevent system instability in the short term. REE currently owns 99% of the transmission grid in the Spanish Peninsula, and is the TSO, independent from

[3] The Spanish electric energy production market was set in motion in January 1998. Any generation plants under the ordinary regime exceeding 50 MW had to participate in the free market. Only the plants under the special regime and those under the ordinary regime which had joined the bilateral contracting system were exempted from this obligation. Afterwards, in 2002, it was established that the production units under the special regime whose power exceeded the 50 MW threshold also had the obligation of participating in the free market. Recently, RD 3/2006 changed the treatment given to intragroup electricity sales trough the pool.

other electricity operators[4]. The electricity transport network and the TSO are structurally unbundled from other operators, the same as in the natural gas Spanish system.

However energy security in the medium-long term is a much more difficult issue. While regulators have tried to set appropriate incentives to invest in production capacity, the reserve capacity of the system fell between 1998 and 2001, partly due to a faster than expected growth of demand, in spite of existing payments for generation capacity availability. The electricity sector does not count on a significant quantity of medium-long term bilateral contracts which could help to increase security of supply. However, regulatory measures have been introduced in order to facilitate those contracts.

Finally, regulated prices in the supply to final consumers distort market signals and are reversing the liberalisation process (in the first semester 2006 regulated markets represented 73% of the total supply, up from 66% in 2003). However, the Spanish regulation is about being amended in order to gradually eliminate regulated prices.

In spite of the above mentioned reforms, market structure remains highly concentrated around a few vertically integrated players. As a result of mergers carried out in the nineties, the electric energy production market in Spain started to function with four large electricity groups: Endesa, Iberdrola, Unión Fenosa and Hidrocantábrico (now under control of EDP). Viesgo (ENEL) remains as a secondary player and Gas Natural has joined electricity production cashing in on the growing convergence between gas and electricity.

Market shares in terms of capacity (MW) and in terms of electricity production (TWh) differ given the substantial differences existing in individual generation mixes. In 2004, Endesa and Ibedrola had similar market shares in terms of total Spanish generation capacity (32-33%) whereas Endesa accounts for 40% of the Spanish wholesale market and Iberdrola for 26%[5]. Such difference stems to some extent from the fact that Iberdrola´s generation mix relies in hydraulic plants much more than Endesa´s, and 2004 was a dry year. Both companies hold together a combined market share around 2/3 either in production or in capacity terms, and still higher when it comes to distribution of electricity or electricity supply to final consumers.

Electricity demand growth between 1998 and 2005 reached 42%, thus resulting in an average annual growth rate of 5%. In 2005 demand amounted to 245.434 GWh.

Such demand is covered trough a large set of generation plants based on diversified technologies: nuclear, fuel oil, conventional cycle fuel-oil and gas, combined cycle gas and hydraulic and other renewables under special regime (wind, photovoltaic, etc.). The resulting balance is the following:

BALANCE OF SPANISH ELECTRIC SYSTEM IN TWh IN 2005		
Hydroelectric	19442	7,9%
Nuclear	57539	23,4%
Coal	77795	31,7%
Fuel+Gas (conventional cycle)	9848	4,0%
Gas combined Cycle (CCGTs)	48098	19,6%
Special regime	50124	20,4%
International exchanges	-1355	-0,6%

4 Electricity operators can not hold more than a maximum 1% share in REE´s capital, whereas non electricity companies may reach at most a 3% share, except from the state owned holding SEPI that will keep a minimum share of 10%.

5 Report C-94/05 Gas Natural/Endesa by Tribunal de Defensa de la Competencia

BALANCE OF SPANISH ELECTRIC SYSTEM IN TWh IN 2005		
Consumption in generation	-9597	-3,9%
Consumption in pumping	-6459	-2,6%
Total (TWh)	245434	100,0%

Source: CNE

From 1998, the year the Spanish wholesale market started up, until 2005 the generation capacity increase was higher than 25.000 MW. Half of such increase corresponds to special regime. CCGTs[6] turned up since 2002. Since 2003 CCGT account for 65% of new capacity whereas the remaining 35% corresponds to special regime (mainly wind power).

As a result, at the end of 2005 capacity amounted to nearly 75.700 MW. Power generation capacity relies largely on coal, nuclear, renewables and CCGTs[7]. In the future, though, the proportion of coal-based generation is expected to decrease as coal regulation and subsidies become stricter. Fuel generation is also expected to fall. The decreasing production capacity based on such technologies will be offset by CCGTs and special regime generation plants.

Such prospects raise two issues: on one hand, special regime contribution to security of supply is lower than the contribution offered by conventional technologies, on the other, investment trends favour gas and electricity convergence, *and as a result security of supply of electricity will be increasingly linked to security of supply of natural gas.*

Even so, excess capacity in 2006 has been more than 10% above peak demand. According to CNE, under the worst case scenario, the expected exceeding capacity will be 18% in 2010, thanks to the construction of new CCGT plants and new wind-mills that gathered momentum since 2002. The conclusion is that the liberalisation process has not gone against energy security in Spain.

3.2 Natural Gas

When the 90's liberalisation process started, there was a de facto regulated monopoly under Gas Natural, a private company. Gas Natural was the sole importer of gas into Spain and the only supplier to final consumers.

The other actor was Enagas, a state-owned company which was sold to Gas Natural in 1994. Enagas owned the transport network and all the entry points of gas to the Spanish system (three pipelines: Larrau -France-, Magreb –Morocco- and Badajoz –Portugal- and three LNG[8] regasification plants: Barcelona, Cartagena y Huelva).

Once the liberalisation process started, in 2000 Enagas was named system operator and was responsible of supplying gas to final consumers in the regulated price market. This gas is provided to Enagas by Gas Natural, using the gas coming from Argelia by the Magreb pipeline under the contract signed between Sagane (a former state owned company which nowadays belong to Gas Natural) and Argelia.

6 Generation plants that use natural gas as fuel.

7 Mainland generation mix in 2005 consisted of 29% coal, 22% nuclear, 19% special regime, 19% CCGTs, 7% Hydraulic and 4% Fuel/gas.

8 Liquefied Natural Gas, transported via ship.

At the same time, a progressive ownership unbundling between Gas Natural and Enagas, decreed by law, started. Gas Natural shareholding in Enagas passed from 65% in 2000 to 35% in 2002, and no more than 5% nowadays[9].

ENAGAS is the main gas transmission company in Spain and it has 7,538 km of high pressure gas pipelines, three of the existing regasification plants (Barcelona, Cartagena, and Huelva) among its assets, as well as the property or management of the natural gas storage.

Other gas operators different from Enagas have developed new gas infrastructures such as regasification plants for LNG imports.

Several regulatory Authorities and Bodies take part in determining and supervising security of supply in different ways.

The government is responsible for Gas System Planning, in which the regions, the Technical System Manager, transmission operators, distributors and marketers, and CNE, also take part. Planning is indicative, except from some issues such as the basic network gas pipelines or hydrocarbon strategic reserve storage plants. Planning aims at distributing entry points so that distance from consumption locations is optimised. Network is designed to offer alternative transmission ways so that security is enhanced at a minimum cost.

The legal framework, with regard to security of supply, obliges gas suppliers to the system to:

- keep security stocks of 35 days of firm sales to final consumers;
- diversify supplies, so that the supply coming from a single country does not exceed 60%, with some exemptions.

The Corporación de Reservas Estratégicas de Productos Petrolíferos (*Oil Products Strategic Reserves Corporation*), CORES, is responsible for the compliance with these conditions.

Security of supply also increased when the rules of technical management of the gas system came into force in November 2005. Besides, in order to deal with contingent circumstances, such as the lack of storage capacity of LNG, the Winter Plan 2005/6 turned to hiring support vessels near regasification plants or setting minimum security stocks equivalent to 3 days of reserved capacity in regasification plants.

In 2005, natural gas demand amounted to 375.894 GWh. As a result, its annual average growth rate since 2001 reaches 15%. Demand growth has been driven mainly by the construction of new CCGTs[10]. For the period 2006-2010, CNE expects growth of conventional demand to slow down, whereas demand by electricity generators will steadily grow at an average annual rate between 5,7% and 9,6% depending on the number of new CCGTs.

9 Following the 20th Additional Provision of the Hydrocarbons Act, ENAGAS was named as the Technical Manager of the Gas System. No physical or legal entity was allowed to participate directly or indirectly as an ENAGAS shareholder possessing more than 5% of the share capital or its voting rights.

10 14.9% of consumption of natural gas corresponds to the residential-commercial sector, 53.8% to industry, 29.6% to electricity generation an the remaining 1.7% to use of natural gas as raw material: 1.7%

Natural gas procurement in the Spanish market in 2005 amounted to approximately 32,4 Bcm: 65,1%[11] of it corresponded to LNG imports[12].

The remaining 34.9% corresponds to natural gas[13] (NG)[14]. Nearly all NG imports take shape through long term contracts with *take or pay* clauses. NG imports come from Algeria and Norway[15] (through the gas pipelines of Magreb and Lacq-Calahorra) and represent 35% of total supply.

The importance of LNG imports (from Algeria, Nigeria, Egypt, Trinidad & Tobago, Libya, Middle East…), far beyond its weigh in other European countries, is an outstanding distinctive feature of the Spanish natural gas system. The high dependence on LNG imports goes along with the relevance of regasification plants. Most of the natural gas increase in demand in 2005 was mostly covered with LNG, whose imports increased by 20%.

LNG imports, in turn, are, to some extent, diversifying their origins. In 2005 Egypt turned up as a new supplier from the Union Fenosa´s liquefaction plant of Daimietta, thus resulting in a somehow higher security of supply. Besides, LNG supply from Gulf countries is also increasing since 2003, whereas supply from Algeria and Norway is decreasing in percentage terms.

To sum up, gas supply to the Spanish system continues to be constrained by geographic conditions, the virtual absence of domestic production as well as its low capacity interconnections with Europe. Such constraints lead to a high dependence on Algerian supply (43% of total supply-NG and LNG- in 2005), which nevertheless is below the 60% dependence ratio set by the Hydrocarbon Act. Gulf countries are the second major supplier (20%).

According to CNE, existing supply contracts will cover 92% to 102% of demand of the 2006-10 period under the central scenario forecasts. However, under the high growth demand scenario such contracts would only cover 84% to 99% of consumption, which would require new supply contracts.

At present there is no minimum level of consumption for exercising the right to obtain supplies on the free market. Since 1 January 2003, all customers are eligible, regardless of their consumption level and the final use of gas.

The deregulated market reached 84% of total consumption in 2005 (10% in 2000). The remaining 16% corresponded to sales within the regulated market (90% in 2000). In the first semester 2006 only 11% of the gas was supplied at regulated prices. The only exception was the segment of residential consumers, where 64% of the clients still acquired gas at regulated prices.

Regulation in Spain prevents any gas operator from supplying more than 70% of total national consumption.

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11 In 2005 23,2% of LNG came from Nigeria, 23% from Algeria, 30,5% from Gulf countries, 15,7% from Egypt (which a year earlier was not yet an LNG supplier to Spain), 4% from Libya, 1,8% from Trinidad &Tobago and the remaining 1,7% from other countries.

12 Domestic natural gas (GN) is negligible vis à vis global demand. Domestic natural gas production amounts to only 0,15% of Spanish consumption, and its relevance is receding.

13 Natural gas transported via pipelines.

14 81.5% of NG Spanish consumption comes from Algeria, 18.1% from Norway and the remaining 0,4% corresponds to domestic production

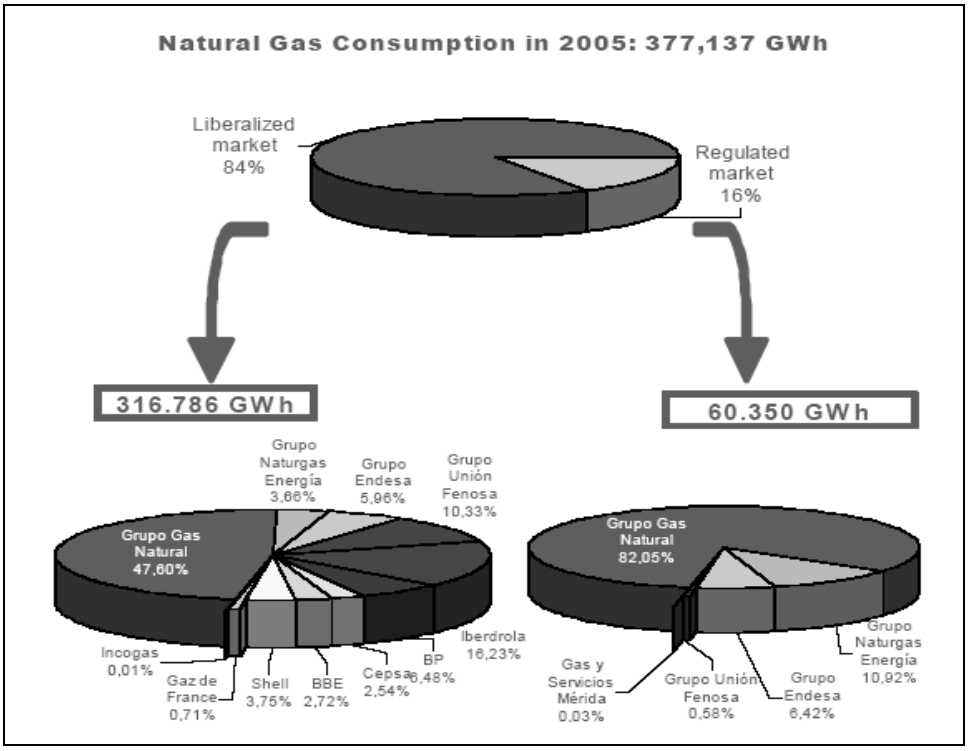
15 Norwegian NG confers significant security of supply to the Spanish system, though its importance has decreased since 2003. It covers a significant part of demand in northern Spain.

Gas Natural remains in 2005 as the dominant operator, supplying more than 50% of natural gas procured to 70% of the clients. The three largest supply companies account for about 77% of the supplied gas in 2005, through gas imports in short and long-term procurement contracts.

In particular, in the regulated market (16% of consumption in 2005) Gas Natural share is 82.1%, followed by Naturcorp (10,9%), Endesa (6,4%) and others 0,6%).

However, in the free market (84% of domestic consumption), 52.4% of gas was supplied by companies other than the incumbent, Gas Natural. In the deregulated market, Gas Natural share amounts to 47.6%, followed by Iberdrola (16.2%), Unión Fenosa (10.3%), British Petroleum (6.5%), Endesa (6%) and others (13.4%).

OPENING OF MARKET IN 2005
Shares of suppliers

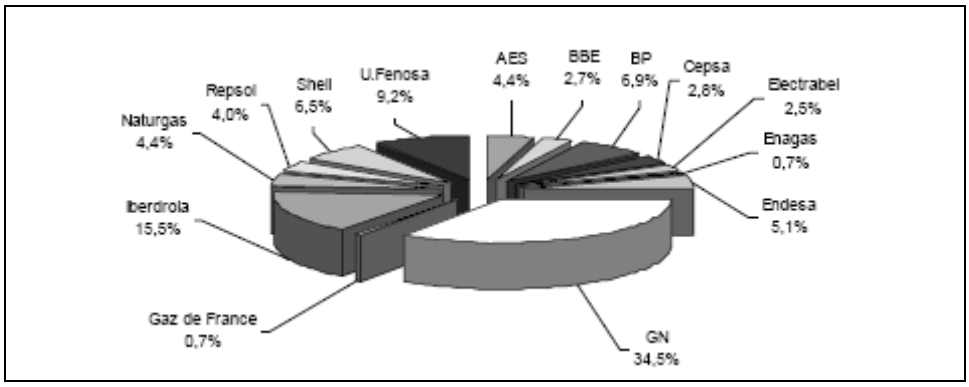


Source: CNE

According to CNE estimates, Gas Natural Comercializadora, with 34.5% of total capacity contracted in the deregulated market, is the supplier with the largest capacity of access reserved. Iberdrola stands second with 15,5%, and Unión Fenosa third with 9.2%[16].

16 Suppliers must provide their annual, quarterly, monthly and daily forecasts to the System Technical Manager. Daily nominations for inputs and monthly ones for unloading of ships of LNG are contractually binding. System Technical Manager, ENAGAS, must publish monthly in its web page information on unloading of ships, gas to be unloaded and free unloading slots.

CONTRACTED ENTRY CAPACITY IN THE FREE MARKET END 2005



Source: CNE´s "SPANISH REGULATOR'S ANNUAL REPORT TO THE EUROPEAN COMMISSION. 26 July 2006"

Entry of new gas importers (Endesa, Iberdrola, Unión Fenosa, etc[17].) has improved energy security in gas markets together with the increase in the capacity of the existing entry infrastructures and the opening of new ones: two new international pipelines (Medgaz, expected to open in 2009, and Irun), and three new LNG regasification plants (Bilbao, Sagunto and Mugardos).

Until now, the Spanish gas system has been able to cover peak demands. On 23rd February 2006, there was a peak of 1552 GWh hour, and there was a 19% of excess capacity in the system. In 2010 the expected rate of excess capacity will be around 9-16%. The main concern of is the lack of sufficient storing capacity[18].

Transmission companies must reserve 25% of their capacity (regasification, storage and input to the transmission system) to contracts of less than two years' duration. No single supplier may accede to more than 50% of these capacities. These percentages may be revised according to trends in the market.

Transporters must publish the capacities contracted and available for each of their facilities, differentiating the capacity assigned to more than two year term contracts from the capacity devoted to contracts of less than two years. As special measures to prevent congestion, the law envisages the posting of bonds and the loss of both, the bonds and the capacities reserved, in case of under use.

Current natural gas entry infrastructures basically consist of 5 regasification plants (once the Sagunto Plant has been concluded in April 2006), and 5 international connections (Morocco -1-, Portugal -2- and France -2-)[19]. From January 2005 to April 2006, storage and emission capacities increased, respectively, by 39,5% and 38,6% compared with the existing ones by the end of 2004.

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17 The liberalisation process was strengthened in 2001 when the Ministry of Energy forced Gas Natural to launch a public bid of 25% of the gas coming from the above mentioned Sagane-Argelia contract, during three years (2002-2004). Thank to this, new operators entered the gas markets, among them electricity sector operators, Endesa, Iberdrola and Unión Fenosa.

18 See: CNE. "Quinto informe marco sobre la demanda de energía eléctrica y gas natural, y su cobertura. Año 2006"

19 In Portugal there is a regasification plant in Sines. So taken as a whole, there are nine entry points to the Iberian gas network.

By and large, international connections transmit relatively stable NG flows that comply with the *take or pay* clauses of long term NG supply contracts, and their envisaged flexibility mechanisms. International NG pipeline connections from Spain are the following:

- to Morocco through Tarifa, the Magreb gas pipeline. Gas from this connection accounted for 28.5% of supplies to the Spanish market in 2005. The interconnection with Morocco is devoted to NG imports, like the new connection with Algeria planned for 2008-2009.

- to Portugal, both through Tuy (where the Spanish region of Galicia receives Algerian NG through the Portuguese network) and Campo Maior (where the Algerian NG is introduced in the Portuguese system). According to CNE, existing interconnections to Portugal have capacity enough to develop an Iberian gas market.

- and to France, both through Larrau and Irún. The interconnection with France in Larrau is a net importer, basically of Norwegian NG, though there have been short term contracts for supplies in the reverse flow.

In 2005 international connections at Tarifa (Magreb gas pipeline) and Larrau nearly reached physical congestion. The capacities of Tarifa and Larrau are intended for long term contracts; but this capacity is being used up. The new international connection at Irún, in operation since 2005, presents physical congestion which requires the development of more Spanish and French gas infrastructures.

The main envisaged projects to increase interconnection capacity are the following:

- Irún gas pipeline (Sociedad de gas de Euskadi): the start up of the new Spanish Vergara-Irún pipeline which would allow an increase of Irun interconnection capacity is planned for 2007. The final capacity of this interconnection depends, both, of French and Spanish infrastructure developments.

- Larrau connection capacity (Enagas) will be increased to 4.5 bcm/year on 31/12/2008.

- Medgaz connection is expected to start up at the end of 2008 or in early 2009. The initial capacity of this infrastructure will be 8 bcm/year, although by 2015 it is expected to be increased to 16 bcm/year.

According to CNE estimates, for the period 2006-10 regasification capacity recently set up, together with new planned capacity (new plants of Mugardos and Musel and enlargement of the capacity of 5 existing plants) will significantly increase LNG import capacity. Besides, the new Medgaz gas pipeline and the reform of the Larrau one will increase NG import capacity. As a result, in the likeliest scenario, entry capacity will cover 109% to 116% of peak demand during that period. Such ratio complies with the 10% excess capacity envisaged in gas infrastructure planning, except from year 2009. However, the alternatives offered by the entry and transmission network are still insufficient to comply with the so called N-1 security standard (namely meeting demand in cases of one of the gas entries to the Spanish system does not work, in particular, Barcelona regasification plant, the biggest one), during most of the 2006-2010 period.

Domestic production capacity is negligible (0,58 bcm). No investments in new natural gas production fields are expected over the next three years.

Natural gas is currently stored in two underground storages (depleted former oil fields), LNG tanks and to a lesser extent in gas pipelines themselves. CNE underlines the need for greater NG underground and LNG storage capacity. Underground storages take long period of time to take shape and require

important investments. As a matter of fact, slow progress in underground storage investments and access to them are the main security risks for the Spanish gas system. As a result, from 2010 on there will not be any excess capacity to cover natural gas demand.

Throughout the period 2006-10 capacity to obtain gas from underground storages will remain under 10% of overall system capacity. In terms of the N-1 security of supply criterion, underground storage will remain under 35% of the regasification Plant of Barcelona. However, new developments will cover 100% of Barcelona's plant capacity in case of breakdown, probably by 2010.

4. Competition policy and energy security

Both the competition legal framework and the sector regulation have important implications on the effectiveness of each other in the energy sector.

In particular, the Spanish Competition Authorities and the Comisión Nacional de Energía (CNE; energy regulator), together with the Government and, in particular, the Ministry of Industry may have a significant influence on energy companies activity.

CNE plays an important role when it comes to enforcing competition law. In this respect, among CNE´s main statutory responsibilities, the three following stand out:

- CNE is entitled to make sure that energy operators carry out their activities with full respect of free competition principles. Therefore, whenever CNE finds out evidence suggesting the existence of anticompetitive practices not compatible with Competition Law 16/1989, it will convey the evidence gathered to the *Servicio de Defensa de la Competencia* (SDC) and a non-binding opinion on the possible competition offence. (the so called 12th function of CNE)

- CNE is also responsible for the authorisation of the acquisition of stakes taken by companies carrying out regulated activities[20], such as electricity generation based on nuclear technology or having particular incidence in national coal production, activities in non mainland electricity systems (Canary Islands, for instance), and activities regarding natural gas storage or transport through international gas pipelines. (the so called 14th function)

- CNE´s authorisation will also be required for the acquisition of significant influence or higher than 10% in the capital of companies carrying out the previously described regulated activities.

- CNE may deny the authorisation on the grounds of the existence of significant risks for regulated activities, protection of general interest, in particular regarding energy policy objectives and strategic assets, and public security.

  Public security, in turn, is two-fold defined as:

[20] This so called "14th Function" of CNE exists since 2000. However, it was recently reformed by Royal Decree-Law 4/2006, of 24th February. This reform extended the CNE control to mergers where the undertaking doing regulated energy activities in Spain was the target, and not only the acquirer. As a result, the transaction E.ON/ENDESA was subject to CNE control. Without this transaction would not have been under the CNE control, but the competing merger GAS NATURAL/ENDESA, would have been subject to it. The European Commission has contested this reform, thus opening an infringement procedure against it.

- The existence of uninterrupted physical availability of energy products or services at reasonable prices both in the short and the long run regardless of the location of consumers
- The need for infrastructure investment and maintenance so that security of supply is guaranteed.

- CNE drafts mandatory reports, with non binding effect, on mergers between energy companies when such transactions raise competition concerns, that is to say, when they go through a second phase (in-depth) analysis under merger control procedure (the so called 15th function[21],).

Competition authorities, in turn, carry out the antitrust and merger control procedures set by Competition Law 16/1989

As a result, both Competition authorities and CNE have intervened in a significant number of cases in the last few years. Among others, the following examples are worth being pointed out when it comes to antritrust cases:

- Case 602/05: Viesgo Generación. This company was fined for exploiting its dominant position in the technical restrictions market of Southern Spain. According to Tribunal de Defensa de la Competencia, Viesgo made strategic abnormally high price offers in the pool in order to be excluded from the accepted offers. Viesgo was aware of the demand conditions and the lack of transport capacity. The system operator would be bound to turn to Viesgo generation plants to sidestep the "technical restrictions", at a price higher than the pool price.

- This case is one of the set of abuses of dominant position in technical restrictions markets that have been reported by CNE on the grounds of its 12th Function and conveyed to the Spanish Competition Service.

- Case 580/04 GAS NATURAL. This company was fined for abusing of its dominant position on the upstream wholesale supply of natural gas market and distorting competition in the downstream market of supply of gas to final consumers. On July 2001, Gas Natural signed a contract to acquire regasification capacity from Enagas to be used for the gas that Gas Natural supplied to Enagas in order to meet regulated market demand. However, this contract also reserved certain re-gasification capacity in favour of Gas Natural equivalent to excess natural gas above the finally required to supply the regulated market. Enagas, being the gas system operator, is legally obliged to give access to its re-gasification plants respecting requests in chronological order of receipt. Therefore, the reservation of re-gasification capacity exclusively to Gas Natural discriminated against the rest of gas suppliers and created an artificial barrier to entry. The discrimination consisted of imposing dissimilar conditions to equivalent transactions in the free market, at the expense of third suppliers' competitive conditions.

As for mergers, either Competition Authorities or CNE have raised important concerns in their respective analysis when it comes to the main transactions filed in the last few years.

- UNIÓN FENOSA / HIDROCANTÁBRICO (2000). The merger between the third and fourth Spanish electricity companies (with a joint market share of 15-20%) was contested under merger

[21] See Disposición Adicional Undécima.Tercero.1.Decimocuarto of Law 34/1998, of 7th October, of the Hydrocarbons Sector.

control procedure. This merger was prohibited by the Spanish Competition Authorities, because it would have reduced the number of relevant competitors from four to three, thus easing collusion among the remaining operators, and it would have eliminated a maverick, Hidrocantábrico.

- ENDESA / IBERDROLA (2000). The first and second electricity markets operators tried to merge in 2000. The transaction was approved by the Spanish Competition Authorities subject to significant divestitures. As a result, the parties decided to abandon the merger.

- GRUPO VILLAR MIR / ENBW / HIDROELÉCTRICA DEL CANTÁBRICO (2001). In this case, Grupo Villar Mir and ENBW (part of EDF) acquired joint control over Hidrocantábrico. The Commission concluded that as a result of the merger there would no longer be the incentives that existed beforehand for EDF to increase substantially its exports of electricity to the Spanish market following expansion of the interconnection capacity between France and Spain. This would both eliminate the existing Spanish generating companies' main potential independent competitor and maintain the isolation of the Spanish electricity market from other European electrical systems outside the Iberian Peninsula. In both cases, it would have the effect of consolidating the existing joint dominant position on the Spanish electricity market, which would be protected from potential competition from operators based in other European countries outside the Iberian Peninsula by an entry barrier: limited international interconnection capacity, without any real prospects for significant further development. For this reason, the Commission only cleared the merger once EDF offered a commitment to develop a minimum level of new interconnection capacity between Spain and France.

- GAS NATURAL / IBERDROLA (2003). Gas Natural was a newcomer in electricity markets and the incumbent in gas markets, and IBERDROLA was a newcomer in gas markets. The transaction was not carried out, given that CNE found, on the grounds of its 14th statutory function, that the financial costs it entailed would have threatened the financial stability in the resulting company, putting at risk its regulated activities, and therefore, security of supply. As a result, the transaction was withdrawn before concluding the merger control procedure.

- GAS NATURAL / ENDESA (2006). Endesa was a new entrant in gas markets. The Tribunal de Defensa de la Competencia recommended the prohibition of the transaction on the grounds of the likely increase in barriers to entry and the elimination of the competitive pressures exerted by Gas Natural and Endesa in each other original markets whereas CNE proposed, on the grounds of its 15th Function, to approve the merger subject to several conditions. Finally, the merger was cleared by the Government[22] subject to conditions, aimed at tackling horizontal, vertical and conglomerate effects, consisting of, by and large, on a 3 bcm gas release program (above Endesa's 2 bcm supply capacity), divestiture of power production capacity far above the horizontal overlap (4.300 MW, in contrast with Gas Natural capacity of 2.800 MW), divestiture of Endesa's assets in regasification plants, enabling third electricity producers to call off their gas supply contracts with Gas Natural, and divestiture of distribution networks (1.500.000 distribution points, exceeding the horizontal addition of Endesa's 300.000 distribution points).

Finally, Gas Natural withdrew its bid on Endesa given the scope of the competing offer made by E.On.

22 The Council of Ministries is the competent competition authority in Spain to decide over merger cases that may raise competition problems.

- E.ON / ENDESA (2006). This transaction was cleared by the European Commission, mainly because the addition of market shares of both undertakings in electricity and gas markets was minimal. However, CNE exerted its powers (14th function) as sector regulator to set some conditions. By and large, these conditions aimed at forcing E.ON to divest certain strategic assets and to keep the investments projected by ENDESA, on the grounds that Endesa, a key operator for Spain's energy security, would become a subsidiary of E.ON which, in turn, might have the incentive to transfer ENDESA assets and resources to Germany and might not be so attached to CNE control. E.ON contested the CNE decision before the Ministry of Energy, which decided that although the concerns identified by the CNE were real, some of the conditions (in particular, the divestitures) were not proportionate. Therefore, the Ministry eliminated or changed these conditions. E.ON accepted the Ministry decision and has not turned to the courts. Nevertheless, the European Commission has opened infringement procedures against Spain, because it considers that the final decision infringes European merger regulation and is not compatible with the rights of free movement of capitals and free settlement.

The case-law in merger operations in the energy shows that Competition authorities are concerned about further concentration in the energy sector, thus impeding any horizontal overlaps and compensating vertical and conglomerate effects. In the case of the regulatory control, the main concerns have been guaranteeing the stability and integrity of regulated activities and ensuring the effectiveness of regulatory control.

5. Concluding remarks

Competition and energy security are complementary issues. Availability and access to interconnections and transmission networks together with freedom of choice for final customers pave the way for further competition, diversification of energy sources and energy security. In this regard, market contestability of incumbents is linked to the existence of sufficient entry, interconnection and transmission capacity.

The structure of electricity supply in Spain has remained concentrated around the most important companies existing at the moment liberalisation started up. In particular, interconnections contribution to the balance of electric energy is modest.

Conversely, in the gas sector, a virtual monopoly at the time that liberalisation started up, market position of the leader has considerably receded as a result of the entry of newcomers that profit from growing LNG import infrastructures. 65% of natural gas procurement in Spain corresponds to LNG imports, which constitutes a distinctive feature of the Spanish market. Even if the leader continues to hold an outstanding position, the market structure has considerably changed and there has been room for gains in diversification of energy sources and security of supply. However storage capacity may constitute a future constraint.

The Commission´s report on the EU energy sector inquiry shows that EU member states energy markets face different shortcomings that prevent liberalisation from bearing full fruit. As a result it is necessary to put in place an all-embracing strategy aimed at unbundling network and supply activities, removing regulatory gaps, in particular concerning cross border issues, dealing with market concentration and barriers to entry, and increasing transparency in market operations.

Market integration will undoubtedly contribute to competition and security of supply. Interconnection among different EU member States is a cornerstone of such process. Cross-border mergers are not by themselves sufficient to integrate markets. Indeed, supranational companies operating in neighbouring markets under some conditions might hinder market integration. Interconnectivity contributes to align the

incentives of energy companies operating in different countries. In the sequence to follow for further market integration, development and management of interconnections ranks among the most urgent issues.

SWEDEN

1. Surviving the ten-year-winter

As a result of the liberalisation of the Swedish electricity market in 1996, the former excess production capacity in Sweden has gradually been phased out, while the electricity consumption, during the same period has been growing, albeit slowly. The developments in the rest of the Nordic area, more or less, follow the same tendency. This development has raised concerns regarding the liberalised market's ability to handle temporarily high demand levels.

Figure 1: A Typical winter day in Northern Sweden (photo: Karl Lundvall)

Worth noting, with respect to the issues discussed in this paper, is that the electricity market normally is considered to be Nordic, rather than Swedish, or at least that the relevant market is larger than Sweden during the majority of the calendar year. However, the peak load issue is, due to the security of supply characteristic, usually considered a national problem rather than a regional, and the mitigation measures actually adopted by decision makers also tend to be national in their scope.

In Sweden, the mitigation measure that decision makers opted for was to introduce a temporary solution in 2003, the so called "peak load reserve", under which capacity and demand reductions of up to 2 000 MW will be centrally procured by the transmission system operator Svenska Kraftnät until the winter of 2007/2008. The presumption underlying the decision was that this measure would allow ample time for the market to be able to handle demand peaks on its own.

As we are getting nearer the end of the temporary solution, no such market based solution has emerged. Instead the market players and Svenska Kraftnät have suggested that they will centrally procure a peak load reserve in the same fashion as the reserve presently handled by Svenska Kraftnät, i.e., more or less copying the present temporary solution. The privately procured reserve is to be offered under a transitory period of five years, allowing additional time for the market to be able to handle the peak load issue, and is to be organised in a privately controlled company/foundation. This development raises additional concerns with regard to the competition effects such a solution may have on the electricity market.

In this paper some of the issues raised vis-à-vis the liberalised market's ability to maintain a secure supply of electricity are introduced and discussed. The focus is on the ability of the market to handle momentary demand peaks, i.e., peak loads, rather than on the issue of establishing long run security of supply. Thus, the focus is on load rather than on the supply of electrical energy over time. In terms of prices, momentary demand peaks express themselves through price peaks while an energy shortage leads to a higher price level over time.

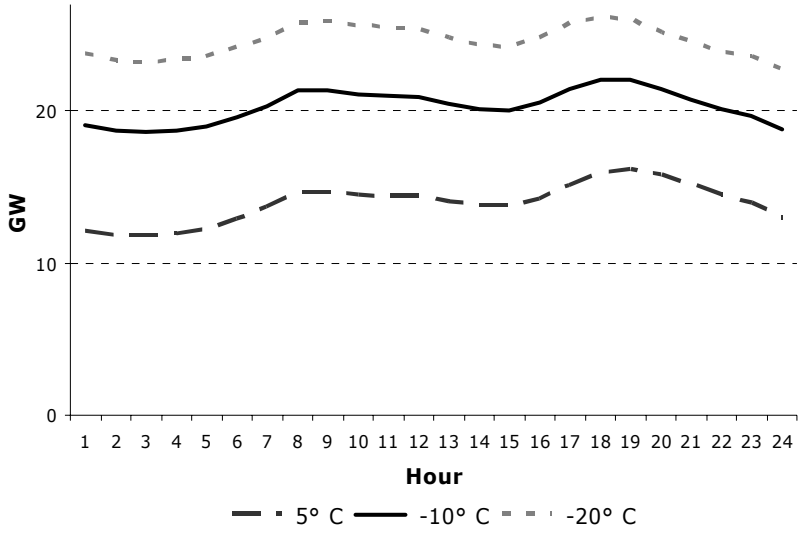
The paper continues as follows. First the Swedish electricity demand and supply conditions are described with a focus on the peak load issue. After that the various mitigation measures available to decision makers are introduced and briefly discussed. The paper ends with some concluding remarks.

2. Demand

Since electricity is used for heating to a large extent in Sweden, the demand for electricity is highest during the winter months. The need for heating increases when temperatures drop, thus, the peaks in demand occur when the temperature is extremely low in a large part of the country.

Figure 2 below shows that the demand for electricity from households and small companies can be roughly twice as large when the temperature is -20°Celsius (-4°F) compared to 5°C (50°F).

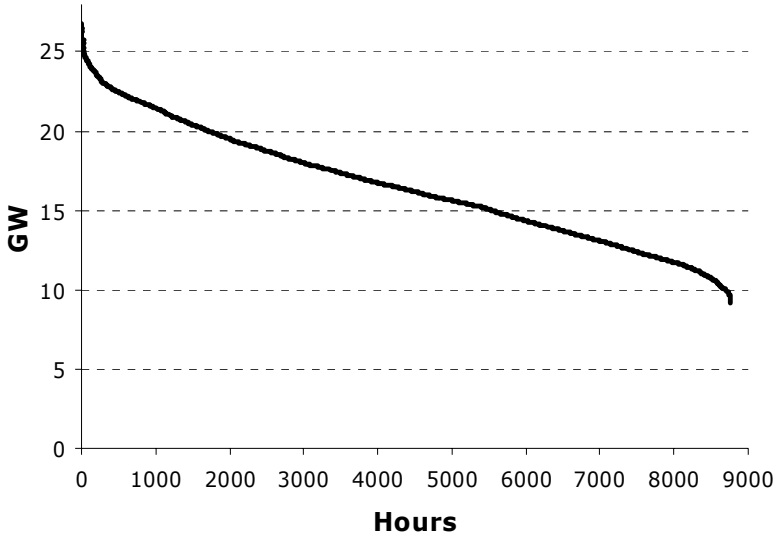
Figure 2: System load at different outdoor temperatures – households and small companies (possible scenario)



Source: Swedish Energy Agency

Demand varies during the day; the peaks occur at 8:00-10:00 in the morning and when people return home from work at around 18:00. Industrial consumption is much smoother over all of the 24 hours and not dependent on temperature. The demand can also be described by a load duration curve which shows the demand distribution over the year, for the 8760 hours during a year, Figure 3 shows the Swedish load duration curve for 2004.

Figure 3: Load duration curve for Sweden 2004



Source: Nord Pool

As evident from Figure 3, peaks in demand have a very short duration and occur infrequently. During 2004, load was higher than 24 GW (25 GW) during only 131 hours (26 hours). The very short duration of peak loads makes it difficult to profitably operate reserve capacity, since it will only be used for a few hours every year.

The peak demands have been estimated to:

- Every winter there will be peak loads of 2 000 MW higher than ”normal” during up to 100 hours. These are considered “normal peaks”.

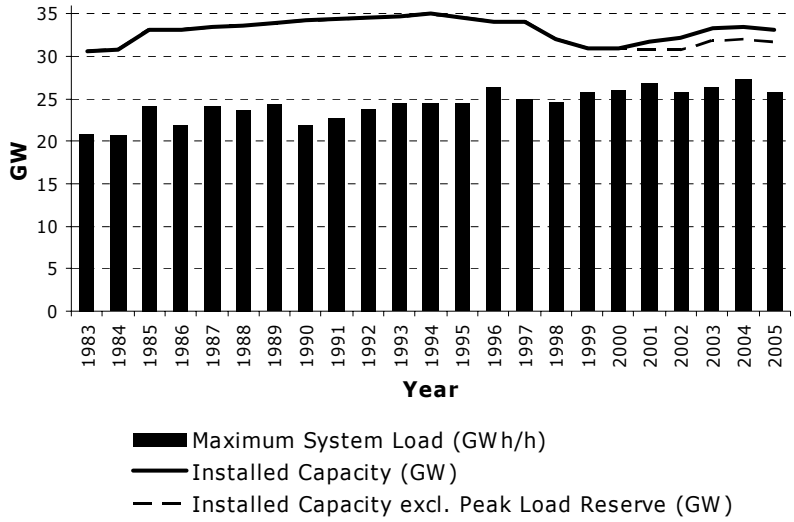
- Some extreme years, during a ”ten-year-winter”, there will be a peak of another 2 000 MW. These are considered “extreme peaks”.

The annual demand for electricity in Sweden is slowly increasing; over the ten year period 1996-2005 demand increased by 3.7 per cent (Nordel).

3. Supply

The liberalisation of the Swedish electricity market in 1996 led to some of the excess capacity being phased out or mothballed, it was simply not profitable under the new regime. The shift is clearly visible in Figure 4. The situation was further aggravated by the decision to close down the nuclear reactors at the nuclear plant in Barsebäck in the south of Sweden. The first (second) reactor in Barsebäck was closed down in 1999 (2005) which meant a capacity loss of 600MW (600MW).

Figure 4: Installed capacity and system load in Sweden 1983-2005



Sources: Nordel, Swedenergy and Svenska Kraftnät

Since 2001, as a temporary solution, the Swedish transmission system operator, Svenska Kraftnät, has, in addition to providing a reserve to handle disturbances in the transmission system, been procuring reserve capacity to specifically handle peak demand situations, the so-called "peak-load reserve". Today the peak load reserve amounts to 2 GW of stand-by capacity and demand reduction. The stand-by capacity corresponds to the area between the dotted and solid line in Figure 3.

The line in Figure 4 shows the total installed capacity, and the bars show the maximum annual system load. However, installed capacity as a measure of available supply, overestimates the actual capacity available at any moment in time, and especially during demand peaks. I.e., if the availability of individual power plants and limitations in transmission capacity are considered, the maximum production capacity during a "normal" year in Sweden is in fact between 26 and 27 GW, excluding the peak load and disturbance reserves (Svenska Kraftnät, 2004; 2005). As a comparison the all time high system load in Sweden occurred during 2004 when the load reached 27 300 MW.

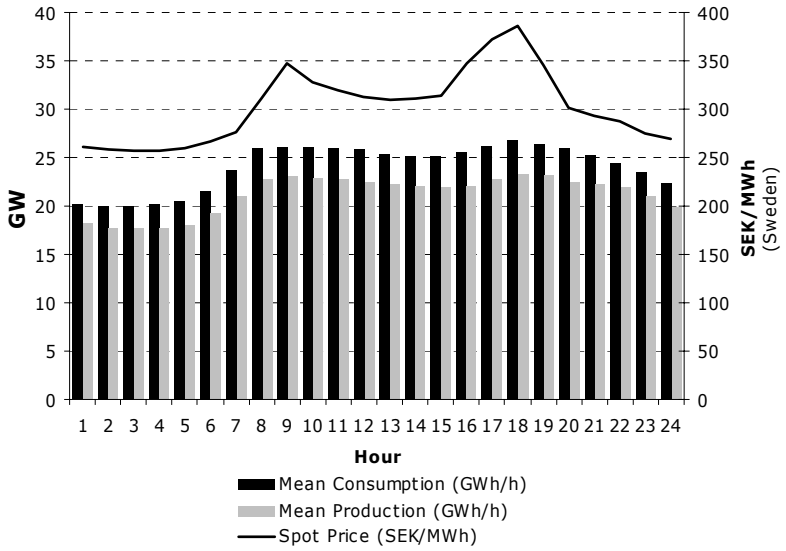
The available capacity may be increased through imports from neighbouring countries. However, in peak demand situations, with cold weather in large parts of Sweden, the weather is normally cold also in nearby countries and interconnector capacities reduced, meaning that the availability of imports is also limited.

4. Market clearing

The effect of peak loads in a capacity constrained market system is price spikes. When consumers can react to the price signals the situation is non-problematic and demand and supply clears in a normal fashion.

Figure 5 depicts the hourly system load (consumption), production, and spot price in Sweden during a typical winter day 2004. As is evident from the Figure there is a demand peak in the morning with a corresponding morning price peak, and a demand peak in the afternoon with a corresponding price peak. Thus, hourly, market clearing, prices respond to daily peaks in demand.

Figure 5: Consumption, production- and spot price patterns during a typical winter day in Sweden 2004



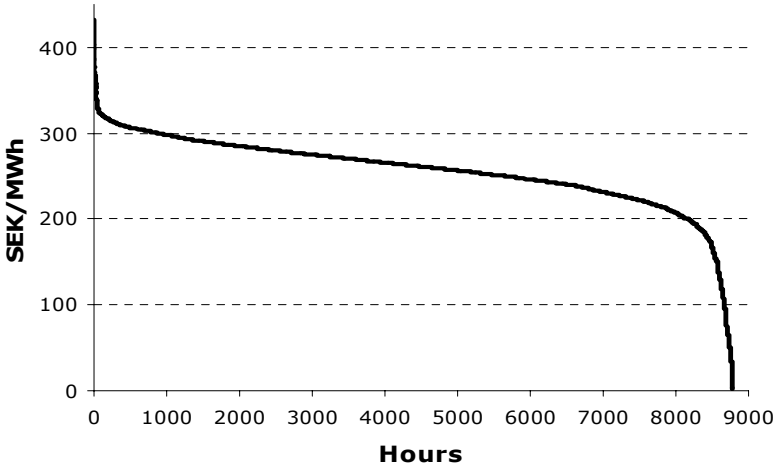
Source: Nordel

In electricity markets the consumer does not always know the price at which she is trading. This is particularly true for households and small businesses which make up the bulk of the seasonal and temperature driven variation in Sweden.

The present legal requirement is for household consumption to be read (or metered) on a yearly basis, as of July 2009 the requirement changes to monthly meter reading. Thus, there are very weak incentives for reducing usage in peak load/peak price situations.

During demand peaks the scarcity of available production on the electricity market is expressed through price peaks. Thus, one additional way of illustrating the frequency of peak load situations is by studying the distribution of prices during a year, see Figure 6.

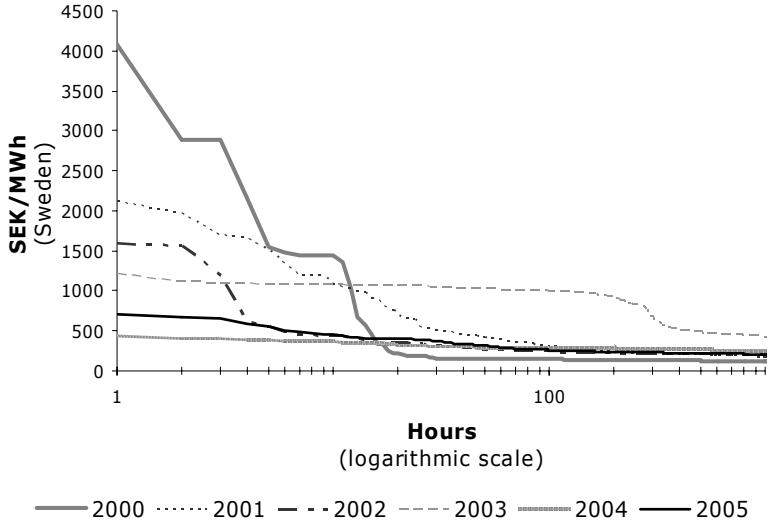
Figure 6: Price duration curve for Sweden 2004



Source: Nord Pool

2004 was a normal year for production and prices were moderate, they were above 40€/MWh during less than 15 hours. Also, as illustrated in Figure 7, the number and severity of price peaks vary over the years (note logarithmic scale).

Figure 7: Logarithmic price duration curves for Sweden

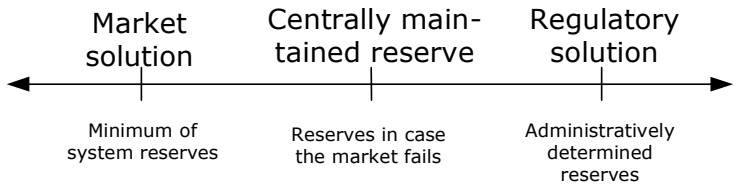


Source: Nord Pool

5. How to handle the peak load issue

There are numerous options to choose from in order to address the peak load issue. In Figure 8 the main alternatives are categorised according to the degree of administratively determined reserves. Below the available alternatives are briefly elaborated upon.

Figure 8: Classification of ways to handle the peak load issue



Source: Svenska Kraftnät (2002)

With a mandatory *regulatory* requirement regarding how much (peak) capacity that has to be made available, one party on the market is required to keep a certain minimum capacity. One example of a regulatory solution are installed capacity (ICAP) requirements, at least previously, utilised in parts of the US under which balance responsible parties are required to maintain a minimum capacity. Another example is the capacity requirements used in the pre-liberalisation Swedish system.

These types of administratively determined (or regulatory imposed) capacity requirements are normally advocated because they create a high level of security of supply and tend to reduce price

volatility during demand peaks. The most obvious drawback with a capacity requirement is that it involves a re-regulation of the electricity market, abandoning, at least some of, the positive effects of a free market. A regulatory requirement also tends to lower price peaks, thus lowering the profitability of other, more market-based, solutions that could have arisen on the electricity market. In addition, a regulatory solution gives rise to sizeable costs for administration and control. It is also possible that, in order to maintain security of supply over time, a relatively large and gradually increasing share of the available capacity would have to be withheld from the electricity market, which could be detrimental to the market's (long run) functionality. As a consequence it is not likely that a regulatory solution would lead to a cost-efficient handling of the peak load issue.

A *centrally maintained* or procured reserve involves one party on the market, e.g., the system operator, being assigned the responsibility of financially guaranteeing that a certain level of extra capacity can be made available when needed, i.e., when the market fails to meet demand. The Swedish peak load reserve is one example of this type of solution. A related example previously utilised in the UK are so called capacity payments that were introduced at the end of the 1980s and disbanded in 2000 due to the tendency for overcompensation, which created excess capacity on the market.

A centrally procured reserve like the Swedish peak load reserve is associated with two main problems. Firstly, the peak load reserve may need to continuously be expanded in order to guarantee that demand can be met even in periods with high, but not extreme, load levels. This since the mere presence of the reserve lowers the incentives to keep capacity only utilised at high levels of demand. I.e., the financial burden for the responsible party can be expected to grow over time, as can the size of the necessary reserve. Secondly, when the centrally procured capacity is to be utilised the question arises of how it should be priced into the market order to avoid distorting the functionality of the market. Centrally maintained reserves are consequently not likely to lead to a cost-efficient solution of the peak load issue.

With a *market* solution the individual market players make independent decisions on how to deploy their productive resources at demand peaks purely based on price signals and expectations thereof. It is hence the ability of the price to signal scarcity of productive resources on the electricity market that will ensure that sufficient capacity will be made available. Based on price signals, the electricity companies themselves make informed decisions that ensure a secure supply of electricity even in periods of high demand.

The price signals whether there is a shortage of peak capacity in the system, through price peaks, how large this shortage is, i.e., how much peak capacity is needed, and where the shortage is located (locational signal). The price also provides corresponding signals to the demand side (end users). Electricity demand is normally relatively price inelastic (at least in the short run), thus, the possibility for the end users to lower their demand for electricity in response to price peaks is likely limited.

With a well functioning market solution only reserves to handle system disturbances are needed. As a consequence, a market solution involves a minimum level of interference with the liberalised market, which makes a cost-efficient solution of the peak load issue, at least, obtainable.

6. How the market can handle demand peaks

There are basically three ways in which the market can meet peaks in demand (and react to corresponding prices):

- increased production (peak load capacity);
- increased imports, and/or ;

- demand reductions.

Thus, a cost-efficient market based solution would lead to the least costly alternative, at any point in time, being chosen.

New capacity specifically designed to handle peak demand will, as mentioned above, due to the very short duration of peak loads, be difficult to profitably operate, since it will only be used for a few hours every year. Import possibilities from neighbouring countries are constrained by the availability of excess capacity in these countries and of interconnector capacity. Demand flexibility is as mentioned above likely limited, at least in the short run. Thus, relying on market forces to efficiently handle the peak load issue may be complicated.

Among the "free market alternatives", a promising complement to existing (production and import) resources is to focus on increasing demand side flexibility. Large industrial end users already to some extent have the possibility to react to peaks in prices since they are more directly linked to the wholesale market than are households. It is also among these types of end users that early attempts have been made to procure demand side capacity reduction. E.g., in the procurement of the Swedish peak load reserve roughly one fourth of the procured reserve capacity is demand side reductions among electricity intense industries, 503 MW in 2005.

At the same time, in extreme demand situations it is the need for heating (mainly from households) that causes demand peaks. Thus, there is an argument to focus more on demand side flexibility among households. Increasing the price elasticity among household customers, however, call upon increasing the substitutability of electricity and/or on increasing the price pass through to households. It is hence a process that will take time and will need to involve lasting structural changes.

7. Concluding remarks

A number of alternative solutions have been proposed to the problem of securing supply in an electricity system like the Swedish one. Some of them, as shown above, have serious drawbacks. A careful analysis of the pros and cons of different solutions is necessary before taking a final view on these matters. The Swedish Competition Authority has identified the following issues from a competition perspective:

- With a regulatory requirement there is a risk that some of the positive effects strived for in the liberalisation of the electricity market may be foregone, such as overcapacity. In addition, in order to maintain security of supply over time, gradually increasing capacity may have to be withheld from the market.

- A centrally maintained or procured peak load reserve (which pays better than the expected market payoff) has the negative effect that it reduces the incentives to invest in regular capacity, which increases the need for reserve capacity which…

- It has been proposed that market participants themselves can organise a peak load reserve. This alternative which is based on collective information sharing and production decisions has less benefits compared to a centrally procured one and can potentially enable companies involved to coordinate or to engage in collusive behaviour.

- There are arguments in favour of believing that the most efficient long term solution is market based, provided that the companies themselves are individually responsible for and capable of securing the delivery of the electricity that they have sold. Increasing the demand side flexibility could be an important tool.

Much of the focus in the European debate is on establishing a common electricity market, with an intermediate phase being developing well-functioning regional markets. In many parts of Europe the relevant markets are regional. There are from this perspective good arguments in favour of adopting measures targeting the peak load issue that are regional rather than national in scope.

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SWITZERLAND

1. Introduction

Generally speaking, security issues in public utilities are of utmost importance in Switzerland as the citizen's expectations of public services are very high. Usually, reform proposals aiming at introducing more market opening are looked at with some reluctance and they risk being rejected in a referendum. In many instances, the fear of a decline in public service and supply security is still considerable. Consequently, Switzerland has chosen to label its new electricity liberalisation bill "*Law on the security of electricity supply*" (Electricity Supply Act). Against this background, it is thus vital that the unbundling rules are not only carefully designed, but also accompanied by specific provisions for ensuring the security of supply.

The current legal framework in the energy sector is still based on integrated territorial monopolies and was not designed to promote competition, and there is no independent regulator. In the federal constitutional order, energy is primarily in the competence of cantons, the Confederation can only act subsidiarily. Trade and competition are however federal competences.

A first government proposal for an electricity market opening was rejected by the Swiss people in a referendum in 2002. It is believed that the reason for this is that the government approach for market-opening did not sufficiently stress security of supply. The second attempt for market opening that is currently being discussed in Parliament foresees a two-step-approach. In a first step, market is to be opened only for large and medium consumers with more than 100 MWh yearly consumption. In a second step, all other consumers including private households will have the possibility to choose their electricity suppliers. For the elaboration of this draft the competition commission has invested considerable resources and has made use of its advocacy powers in order to promote a draft bill which is as neutral as possible from a competition point of view.

As the importance of gas is lower in Switzerland than in other countries, current reform efforts focus on electricity, taking into account Switzerland's position as a vital European trade hub and transit route. Therefore, this paper presents also a few facts and thoughts on the electricity sector and aims at highlighting those aspects which *mutatis mutandis* apply to the gas sector.

2. Main features of the Swiss gas sector

Imports are mostly in the hands of Swissgas, a company owned jointly by some of the largest regional gas monopolists. Regional distribution is in the hands of small, regionalised monopolists. While access to households and other small consumers is judged unattractive for competitors in Switzerland, access to the Swiss high-pressure network and transit system is guaranteed by the law on gas pipelines of 1963. Recently, the Swiss gas industry has by its own initiative negotiated a self-regulated access agreement. The most important transit pipeline through Switzerland is owned and managed jointly by Swissgas and a couple of foreign gas undertakings. It transits six times the volume of national consumption. Hence, the high-pressure network is open on the basis of negotiated third party access (nTPA) to a few very large industrial clients and to international transit.

Gas prices are set as a function of prices of competing energies (heavy fuel oil, heating oil, electricity). Households consuming only cooking gas pay prices approaching final consumers' electricity prices, i.e. about three times as high as household heating gas prices which are more similar to heating oil prices, i.e. about 20% higher than the latter. Gas prices for industrial customers are similar to heavy fuel oil prices, but still higher than these. According to IEA statistics, Swiss industrial and household gas prices before domestic taxation are about 20% higher than in neighbouring countries[1]. Furthermore, prices charged for transmission are very high compared to other countries according to our knowledge. The high price level in the Swiss gas market seems to support the view that a club ownership solution is not enough to ensure access and competition. A strong and independent regulator that regulates access might solve this problem.

3. Main features of the Swiss electricity sector

The Swiss power sector is characterised by the large number and structural diversity of its electricity companies. There are currently over 900 companies, which also vary considerably in ownership and legal form, size, and activity, and there are marked differences between regions as well.

Very broadly, the sector is made up of a small number of large utilities, which generate, export, import and distribute most of the electricity sold, and a large number of very small utilities, which distribute electricity to their communities (and are often interwoven with municipal budgets). Five very large vertically integrated companies dominate the value chain. Most of these play a key external as well as internal role, not only for the closer integration of regional and local economies, but also for the regional market beyond, reflecting Switzerland's position as a vital European trade and transit route. International trade goes both ways: Imports (mostly at night) amount to 82% of final consumption and exports (mostly during the day) amount to 74% of domestic production.

But there are also about 200 vertically integrated regional companies, as well as a vast number of small distribution companies. There are important cross linkages within and between the various categories (for example, the distribution utilities purchase power mainly from the five big companies, which themselves share a close relationship). Most companies are partly or wholly publicly-owned, in total about 75% public ownership, whereby for historical reasons, local companies hold regional ones, and regional companies and Cantons hold the five large national ones. The Confederation does not own any energy company. An evolutionary process is underway, partly in anticipation of market opening, toward consolidation, partnership and co-operation, and sale of public equity.

4. What is energy security?

There is no agreed definition of energy security. In principle energy security may include security of supply as well as security of demand. The security of supply aspects have received far broader attention. From the economic perspective, security of supply can be conceived as a public good, just as national security. Public goods are non-rival (consumption of the good by one individual does not reduce the amount of the good available for consumption by others) and non-excludable (it is not possible to exclude a free riding individual from consuming the good). The free rider problem requires the State to set up a burden sharing scheme (e.g. a taxation system) in order to finance the optimal production of the good. The non-rival aspect limits the scope of public goods essentially to non-material goods, as material goods can never satisfy the non-rivalness. If the non-material character of the public goods is acknowledged, it is sometimes more appropriate to refer to them as public service.

[1] Comparison made for France. Germany and Italy stopped to supply gas price data to the IEA in 2000.

In the field of marketable goods, security of supply means the constant availability of goods on the market, i.e. the avoidance of supply disruptions. In energy forms that are not grid bound, such as petroleum, energy security means strategic oil storage available in crisis times. In grid bound energy forms such as gas or electricity, the energy security is more often called public service and it means the availability of gas or power at all times and all places. In Switzerland, this means three things:

Firstly, the obligation to connect any customer to the grid. In Switzerland, this obligation exists for the electricity grid only, not for the gas grid. The gas grid has not yet a nationwide geographical spread. Even for electricity, the obligation is limited to the settlement areas, outside which no such obligation exists. The Electricity Supply Act that is currently in parliamentary debate provides for the obligation to connect and for publicly controlled connection tariffs within settlement areas.

Secondly, it is the service of network operation. The State may impose network security standards designed to keep network operations going at all times. For electricity it will inter alia take over the private UCTE (Union for the Coordination of Transmission of Electricity) grid standards as they are harmonised all around Europe.

Thirdly, the Electricity Supply Act proposal provides for the obligation of distribution network operators to accept any energy of renewable sources at regulated feed in tariffs. It is believed that this enhances the share of renewable indigenous electricity and thereby increases long term security of supply.

5. How much is energy security worth?

If conceived as public good, the market will not normally fix a correct price for energy security. The State fixes a mandatory level of energy security (e.g. a maximum network failure time per year) and provides for cost sharing. This fixed security level may not suit all consumers. Thus, e.g. hospitals or aluminium producers may need higher security levels. They will acquire backup electricity systems and finance them on their own. Large gas consumers may want (or be obliged) to run as bi-fuel (gas and oil) consumers in case of emergency. In that case they are obliged to hold strategic oil stocks, too. All strategic oil stocks are being financed by a special tax (0.37 CHF / ton) on oil imports. The feed in tariffs for electricity from renewable sources will be financed by the national transmission system operator which will have to pass on the cost surplus (max. 0.5 or 0.6 cts. / kWh, depending on final decision by Parliament) to all its users via its network tariffs.

6. What is the effect of competition on energy security?

Generally speaking, competition provides for multiple producers of energy supply, which is likely to enhance energy security, too. For this reason, the Swiss legislation considers energy security as being primarily the responsibility of the market, whereby the government only intervenes if the market fails (subsidiarity). The particular task of monitoring energy security is however conferred to special agencies or bodies having exclusivity status in this field: For petroleum it is the Carbura, the supervising agency for oil stocks. Oil stocks themselves remain private. For gas, there is no special agency. Supplementary oil stocks for bi-fuel consumers are also under Carbura supervision. For electricity, the draft Electricity Supply Act provides that Swissgrid, the transmission system operator, monitors security of supply. For this purpose it will receive special powers in the law.

7. Decisions by the Swiss competition authorities in the energy sector

7.1 Gas sector

Many agreements between gas enterprises have been notified to the Swiss Competition Authority. For instance, an enterprise had agreements with other gas enterprises to purchase jointly gas abroad at a

defined price. This agreement had therefore the effect to fix the gas price on the procurement side. The Swiss Competition Authority (Como) stated that this agreement was prima vista justified by efficiency reasons because it increases the bargaining power of the Swiss enterprises vis-à-vis the large foreign gas suppliers and ensures a long-term security supply in gas. This agreement had no effect on the formation of prices to end consumers and gas energy was in competition with many other sources of energy.

Nonetheless, numerous notifications in the gas sector prompted the Swiss Competition Authority to observe more thoroughly this sector. A sector enquiry, opened in Fall 2006, focuses on gas prices, its transmission, as well as end customers' possibilities to choose their gas supplier.

7.2 Fribourg Electricity Power Company (limits of application of Competition Law to the electricity sector)

Although this case deals with the electricity sector, its conclusions are also valid for the gas sector.

The lack of any competition provisions in the electricity specific laws has put the spotlight on the Swiss Competition Act (Cartel Act) as the main law, in practice, that has the scope for dealing with competition issues in the electricity sector. This law has proved effective at opening important breaches in the currently unliberalised framework.

The Swiss Competition authority had to deal with many cases concerning the refusal of regional suppliers to transmit electricity from another supplier through their network. In this regard, the "Entreprises électriques fribourgeoises" case (from now on, the "EEF Case") is considered as a milestone.

According to art. 3, the Cartel Act does not apply if provisions of law do not allow competition in a market for certain goods or services. Such provisions take precedence over the provisions of this Act, including in particular:

a) provisions which establish an official market or price system;

b) provisions which entrust certain enterprises with the performance of public interest tasks, granting them special rights.

EEF alleged that the Cartel Act is not applicable because EEF was entrusted by the Fribourg canton with a legal mandate to supply power in this canton, which amounts to a public interest task. Furthermore, the electricity tariffs of EEF are subject to approval of the said canton. They also argued that the transmission of electricity from third parties could jeopardise this task and endanger supply security.

In a decision dated 17 June 2003, the Supreme Court ruled that the legal monopoly of the operation and construction of the grid does not imply a legal monopoly in the use of this network. Electricity prices are not regulated prices. The transmission of power from competitors through the electric grid does neither deteriorate energy security nor does it imply that EEF is *per se* an unprofitable business. If in particular circumstances energy security were to be endangered, the government could intervene by excluding the application of competition law for political reasons (exceptional authorisation according to art. 8 Cartel Act). Therefore, there are no provisions of law which prevent the application of the Cartel Act. Consequently, the Swiss Supreme Court stated that EEF was abusing its dominant position and ordered it to comply with the dispositions of law contained in art. 7 Cartel Act.

Following the Supreme Court's decision, EEF applied to the Federal Council (government) for an exceptional authorisation on grounds of public interest. This application was deprived of its suspensive effect by the Federal Department of Economic Affairs. Still, the Supreme Court's decision did not take effect because 1) the canton of Fribourg introduced a legal monopoly for the use of its grid network and 2)

EEF concluded a new electricity supply contract with its client and adapted the price to the one of its competitor. The case became without object, but still showed some economic effects.

7.3 Swissgrid (merger and security of supply)

The 2003 Italian blackout crisis has been carefully analysed for its causes. The results of this analysis emphasises the importance of setting up independent system operators to ensure separation of particular commercial interests from more general network interests. This is expected to guarantee that the grid is run with security margins and is not overloaded. The aim is to coordinate different network regions and to serve as a contact point for foreign partners. The current reform proposals take this issue into account and set out tasks and duties of such a system operator.

Due to the delay in the adoption of the Electricity Supply Act, seven Swiss regional grid companies decided in 2004 to transform their common network operator ETRANS into a new joint-venture company called "Swissgrid", responsible for operating the national transmission grid.

The Swiss Competition Authority held in its merger investigation that the new entity would occupy a dominant position in the electricity transmission market in various regions of Switzerland and could eliminate effective competition in these markets. The merger control test in Switzerland allows for an authorisation of the merger subject to conditions or obligations, if the concentration in one market leads to the strengthening of competition in another market, which outweighs the harmful effects of the dominant position (art. 10 para. 2 lit. b Cartel Act).

The Swiss Competition Authority took into account that the new entity Swissgrid, as the sole point of contact for all the matters related to the Swiss high-voltage grid, would simplify the transmission of electricity to customers and thus guarantee supply security in the Swiss transmission extra-high-voltage grid.

The positive effects were national in scope whereas the dominant position was restricted to a few regions in Switzerland. For these reasons, the Swiss Competition Commission authorised the merger subject to conditions which were similar to the modalities proposed in the draft of the Electricity Law, except for the so-called "boardroom-unbundling" (the condition that the Members of the Swissgrid board may not belong at the same time to organs of legal entities who are active in the production and sale of electricity). This condition is not part of the EU Acquis on electricity either. The Comco conditions principally aimed at ensuring access to the network to third parties on the basis of objective, transparent, and non-discriminatory criteria.

The Appeals Court for Competition Matters quashed in May 2006 the decision of the Swiss Competition Authority and authorised the concentration without conditions or obligations. The Swiss Competition Commission lodged an appeal, in late-May 2006. The case is now pending before the Supreme Court.

On 15 December 2006, Swissgrid AG started its operations as a national Transmission System Operator. As a member of the Union for the Coordination of Transmission of Electricity (UCTE) and the European Transmission System Operators (ETSO), it is also responsible for grid monitoring and network use with regard to cross-border electricity trade.

7.4 Long-term exclusive distribution agreements

The Swiss Competition Authority opened an investigation in one case concerning the illicitness of a distribution partnership agreement concluded by the cantonal services grouped within AXPO and some cantonal services who supply electricity to final distributors (AXPO case). This investigation aimed at

determining whether such an agreement was an abuse of dominance and could prevent the entry of potential competitors or disadvantage final distributors.

With regard to the duration of the distribution contracts, the Swiss Competition Authority stated that these long-term contracts (5 years) were justified since they contribute to the security planning and demand anticipation in a sector characterised by high fix costs. Long-term distribution agreements are thus not problematic if customers are also offered supply agreements for a maximum duration of one year, as an alternative to long-term agreements. Concerning the distribution exclusivity, the Swiss Competition Authority recognised that exclusivity is justified as long as it is tied to the obligation of integral supply to the end customer.

8. What are the limits to the application of competition law in this area?

As a matter of principle, competition law is applicable to private and public enterprises (Art. 2 para. 1bis Cartel Act). The cantonal legislator can exclude the application of federal competition law particularly with provisions which establish an official market or price system or with provisions which entrust certain enterprises with the performance of public interest tasks, granting them special rights (see above, art. 3 Cartel Act).

So far, the problem in Switzerland lies less on the possible non-applicability of competition law than on the fact that in the currently non-liberalised framework it is the only tool for market opening.

Although the application of competition law has so far made a considerable contribution to the market opening for large clients, some important weaknesses of relying solely on this approach soon became apparent: There remains a lot of legal uncertainty in the market as competition legislation only allows market opening on a case-by-case basis (so-called negotiated Third Party Access, nTPA); whenever disputes arise, network access based on the application of competition law needs to be achieved through litigation.

Moreover, the Swiss Federal Court has not pronounced itself as to the question whether the federal constitution allows the cantons to specifically exclude the application of competition law by means of cantonal monopolies on grid use.

Therefore, reform is the only way to deal with both, efficiency *and* system reliability, since the current legal uncertainty has a negative impact in particular on the latter issue as investments are made more reluctantly. Furthermore, the Swiss Competition Authority does not have the power to regulate access price to the grid.

Comco's endeavours to impose conditions for the establishment of Swissgrid are another example of efforts to use the competition route for improving market conditions. Contestation of this case is ongoing, however, which highlights - once again - the weakness of relying solely on the competition law for market opening.

UNITED KINGDOM

Introduction

This paper responds to the five questions set out in the invitation to the *Roundtable on Energy Security and Competition Policy.*

Specifically, the paper outlines:

- the competition and regulatory framework for the gas industry in Great Britain,[1] including the arrangements for mergers and competition enforcement;
- discusses the definition and arrangements for energy security in the UK;
- the UK's policy on gas security and how the market has responded in the face of threats to gas security;
- the recent European Commission report on the energy market; and
- arrangements and policy on individual merger and anti-trust cases in the energy sector, including a couple of examples; and
- any limits to the application of competition law in the energy sector.

1. Competition and Regulatory framework for the UK's gas industry

Within Government, the Department of Trade and Industry (DTI) leads on energy policy although many other Government departments, and the Devolved Administrations,[2] have considerable energy policy interest.

The Energy Regulator, known as the Office of Gas and Electricity Markets (Ofgem), was established by the Utilities Act 2000, and is responsible for the privatised energy utilities, gas and electricity. A duality approach, with a principal objective and general duties shared with the DTI Secretary of State, ensures consistency of approach by the Government and the Regulator. The principal objective is to protect the interests of consumers wherever appropriate through effective competition.

1 "Great Britain" comprises England, Scotland and Wales, whereas the "United Kingdom" includes Northern Ireland.

2 Under devolution in the UK, the UK Parliament at Westminster devolved some of its political power by establishing separate legislative and executive local authorities. This created Devolved Administrations in the form of a Parliament and Executive for Scotland, an Assembly and Executive for Northern Ireland and an Assembly for Wales.

Ofgem is responsible for the regulation of energy markets in Great Britain; it was established to be demonstrably independent of Government to ensure that the regulatory process is free from political interference and to avoid creating unacceptable levels of uncertainty in the markets. It is for the Regulator to decide how it should balance, and interpret, its principal objective and general duties. The Secretary of State has no powers to direct the Regulator.

Key functions of the Regulator include issuing licences, the power to modify licences, setting price controls in the natural monopoly licensed sectors, investigating and penalising licensees who breach their licence.

The Regulator can be held to account in a number of ways: parliamentary scrutiny, appeals to the Competition Commission, judicial review, transparency through regulatory impact assessments, and consumer representation.

Ofgem also has the same (anti-trust) competition powers as the OFT with regard to the gas and electricity industries (i.e. principally, the Competition Act 1998, Articles 81 and 82, and the Enterprise Act 2002, which deals with market investigation references, similar to the European Commission's sectoral inquiries). In theory, either body may enforce, although it should usually be the better placed authority. In any individual case involving the gas and electricity industries, the OFT and Ofgem will agree who is better placed to act.

1.1 Arrangements for mergers

Exclusive competence for UK merger control under the Enterprise Act 2002 lies with the OFT for the first stage of merger scrutiny (including mergers in the energy sector) and with the Competition Commission (CC) for second phase in-depth investigation where necessary. Ofgem, the energy regulator, is consulted on mergers in the energy sector but is not determinative. The substantive test for merger control is a competition test based on a 'substantial lessening of competition' (SLC).

The UK merger regime is independent of ministerial control with the exception of certain narrow residual powers. The Secretary of State for Trade and Industry has the power under the Enterprise Act 2002 to issue an intervention notice in the case of mergers that have a public interest. These are currently specified in section 58 of the Act as:

- national security;
- plurality of the media; and
- UK water mergers.

If an intervention notice is issued, the case is handled in the following way:

- The OFT provides definitive advice to the Secretary of State on jurisdictional and competition issues, which must be accepted. The OFT can also advise on the public interest considerations that are relevant to the Secretary of State's decision on reference, and must pass to the Secretary of State a summary of any representations it has received that relate to these public interest matters.
- The Secretary of State then makes a judgement on the outcome of the case in the light of the OFT's advice. References can be made either because the merger results in a substantial lessening of competition and, combined with the public interest issues, will operate or be

expected to operate against the public interest; or because, while there is no substantial lessening of competition arising from the merger the public interest issues are such that the merger may be expected to operate against the public interest. The Secretary of State will also consider whether undertakings in lieu of a reference are justified.

- If a reference is made on public interest grounds (with or without competition grounds) the Secretary of State will also make the final decision on the merger following the CC's report.

It is possible for the Secretary of State to determine that a merger raises legitimate public interests on grounds other than related to national security. This can be done by order to modify section 58 of the Act for the purpose of specifying a new consideration or removing or amending any consideration specified under the section. Any modification of section 58 requires positive resolution by each House of Parliament. This must be achieved within a period of 28 days commencing on the day that the order is laid before the House. This power by the Secretary of State has not as yet been used.

2. What is energy security?

Energy security of supply is about electricity and gas customers not being subject to involuntary interruptions. Non-domestic customers may negotiate lower price interruptible contracts or may be compensated richly if they are interrupted. Domestic customers do not have the option of interruptible contracts but are generally compensated. In market-based arrangements, the key way in which expectations of levels of gas security of supply are expressed is through the price mechanism.

Security of supply depends on three things. First, that there are sufficient supplies of electricity and gas available to meet customers' demand at all times, including peak periods. Second, that there is capacity on energy transmission and distribution networks to transport supplies from producers to customers. Third, that energy networks are reliable so that network capacity is available.

Many customers will also consider price as important when assessing whether their energy supplies are secure. Even if their physical supplies are maintained they may see supplies as less secure if prices are high and volatile – as has been the case recently in the British gas market.

Not all customers are concerned to the same degree about continuity of energy supplies. In particular some businesses elect to be on 'interruptible' contracts which allow for interruptions to their supply in exchange either for an overall lower price or compensation at the time of interruption. Some businesses also choose to have back up fuels available in order to reduce their gas demand in response to price movements. These elements of 'demand-side' response make an important contribution to energy security.

When assessing whether there are adequate supplies to maintain security of supply, it is helpful to consider the following factors:

- **Expected volume of supply and expected volume of demand-side response.** These are the fundamental determinants of whether supplies in the future are likely to be adequate, and therefore should be the central consideration in assessing security of supply. The price elasticity of customer demand should also be assessed: the 8 per cent drop in temperature-adjusted demand for gas in Great Britain last winter provides clear evidence that smaller businesses and even domestic consumers are price-sensitive.

- **Diversity.** Generally speaking, energy supplies are more secure if they are more diverse. In electricity markets diversity is measured by looking at the different types of fuels used to generate electricity and their sources. In gas markets, diversity can be measured by looking at the

number of countries supplying imports and the number of different pipelines and production facilities that supply demand at different times of the year.

- **Flexibility.** Gas and electricity markets need flexibility for two reasons: to meet the short-term peak requirements of customers (daily winter peaks in gas and peaks for a few hours each day in winter in electricity) and to meet sudden unexpected breakdowns in key electricity or gas production facilities without interrupting customers.

It is also important to recognise that a key mechanism through which security of supply is delivered is through a properly functioning energy market and a set of supporting arrangements that align commercial incentives of parties with the provision of an appropriate level of gas security of supply. In Great Britain, this alignment is primarily achieved by the cash out arrangements, through which parties that do not purchase sufficient gas or electricity to meet their needs (i.e. contributing to the system being 'short') are required to pay a price for their gas that reflects the costs they impose on the system.[3] In the absence of a means to limit energy consumption if a customer's supplier is short of gas or electricity (for example, by sophisticated metering), an imbalance mechanism is needed to minimise the actions that the system operator will be required to undertake in order to balance the network.

3. How much is energy security worth?

The value of energy security depends of course on many factors, such as the definition of energy security, the assumptions made etc. A definitive estimate cannot therefore be produced.

The DTI consulted about the security of supply for gas in autumn 2006.[4] In an energy review, the DTI had commissioned detailed analysis[5] looking at the future risks to the UK's gas security in the next 10-15 years.

The consultants (Ilex) found that the probability of an interruption between 2008 and 2014 to be minimal as the planned large expansion in gas supply infrastructure over this period would provide substantial spare capacity (both in import and storage capacity) and flexibility in sourcing supplies. In the period after 2015, however, the modelling work indicated that it is possible that the level of spare gas capacity could again become tight in the UK, resulting in a 1-2% chance of a significant supply interruption.

Even if this is seen as a low probability, supply-side tightness could again lead to price rises as seen in winter 2005/6; and the costs of an actual shortfall to British industry and the economy as a whole could be substantial. The main impact of an interruption would fall on large gas consuming sites – energy intensive industries – together with their suppliers and consumers. The study estimates that the cost to industry of a one day interruption could be £235 million and the costs of a six-week interruption to gas supplies could be of the order to 1% of GDP, if the impacts on the industries directly upstream and downstream are also included.

While such studies attempt to measure the impact of a supply interruption on the UK economy as a whole, it is also very important to recognise that customers do not all place the same value on the security

3 Clearly, this only applies to those parties that have contracted for the delivery of gas or electricity. Those parties that have not bought ahead face the risk of having no opportunity to purchase supplies on the day.

4 DTI (2006): *Gas Security of Supply: the Effectiveness of Current Gas Security of Supply Arrangements* .

5 Ilex Consulting (2006): *Strategic storage and other options to ensure long-term gas security*

of their energy supplies - indeed, as witnessed over the last couple of winters in Great Britain, even smaller customers are sensitive to price.

As stated above, in Great Britain some business customers choose to have interruptible gas supply contracts and have back-up fuel available if their supplies are interrupted, whereas most domestic customers and many business customers would prefer not to have their energy supplies interrupted for significant periods of time, if ever.[6]

These elements of demand-side response make an important contribution to energy security. As such, Ofgem considers it essential that any methodology used to measure the level of security of supply should be sufficiently sophisticated to reflect the diversity of customers and markets that consume energy.

To provide the right signals to the market, it is therefore crucial to allow the price mechanism to operate and enable security of supply to be maintained in both the short-term and the long-term. In the short- term, a price spike may help bring the system into balance. When the system is short of energy, the System Operator enters the market to purchase additional energy. This usually results in short-term price rises that convey information about the shortage to all participants in the market. The customers respond to this signal and price-sensitive customers voluntarily reduce their consumption to control their costs.

Over the winter of 2005-06, combined cycle gas turbine power station operators provided unprecedented levels of demand-side response. These parties demonstrated that in response to commercial incentives they were able to run their power stations more flexibly than ever before. As stated above, smaller commercial and domestic gas users reduced demand by 8 per cent in response to higher prices, indicating that such customers are less willing to pay high prices for secure supplies than previously thought. The recent experience in Great Britain demonstrates clearly that only a small proportion of the total demand needs be flexible and willing to adjust their energy demand in order to significantly reduce the overall risk of loss of supplies.

Longer-term price signals allow investors to estimate the expected returns of infrastructure projects that will supply additional energy to the market. Provided barriers to entry are low, higher prices in energy markets will lead to investment in additional energy production facilities, leading to improved security of supply. Where arrangements are centrally planned, important information regarding customer preferences (including willingness to pay for energy security) is not revealed. Investment decisions taken under such arrangements are therefore more likely to be inefficient.

In the same way that different types of customer may value differently the security of their energy supplies, the value attached to secure energy supplies varies from country to country. For example, peak demand for domestic consumers in France and Italy is limited by their tariff choice, such that if they try to consume more than a prescribed volume the meter will shut down the supply until load is reduced. This is not the case in Great Britain where domestic supplies are not limited. However, the existence of these tariffs further demonstrates that smaller customers, even domestic customers level, are sensitive to price.

[6] The majority of interruptions to domestic consumers are caused by network problems, for instance as a result of adverse weather conditions. Domestic consumers generally tend to accept infrequent, short duration trips and/or losses of supply under these circumstances, especially where compensation payments are made.

4. What is the effect of competition on energy security?

It is difficult to take a definitive view given the complexity of the issues. As discussed in the next section, analysis of the case law does not provide a clear answer to the relationship between competition measures and security of supply.

Within this context, though, it is worth noting that Ofgem and its predecessors (working with the UK Government) have carefully considered the issue of security of supply on a number of occasions since privatisation. It has on each occasion concluded, and continue to conclude, that a market-based approach is the best way of delivering a level of security of supply that reflects what business and domestic customers want and are willing to pay for.

In recent years, the British gas market has shown that the price mechanism is very effective in both the short-term and the long-term at signalling the extent of any potential gas security of supply issues. For example, where prices are high (and expected to stay high) and provided barriers to entry are low, energy markets will respond with investment in the development of new gas fields and/or improved gas infrastructure, improving security of supply as a consequence.

Recent events provide a number of good examples of how the market has been shown to respond to price signals to ensure security of supply is maintained in both the short-term and the long-term.

One issue the British market has experienced in recent times, however, has related to the UK interconnection with continental energy markets that are not as 'mature' as the liberalised arrangements in Great Britain. As such, we welcome the recent report published by the European Commission[7] in which they have signalled their clear commitment to pushing for wider liberalisation in these markets.

Indeed, contrary to the view that markets may 'under insure' against low probability event risks, the British market response on both the supply and demand side to the events experienced over winter 2005/06 demonstrates why it is important to have an overall assessment including qualitative as well as quantitative assessment of policies.

4.1 Gas import infrastructure, gas storage and long term supply contracts

4.1.1 Short term

Last winter presented a number of challenges for the British gas market, not least the incident at Rough in February 2006 when there was a fire on an offshore platform which was used to inject and withdraw gas from the storage facility. This led to the complete shut down of the facility for the remainder of the winter and the loss of a major supply source (in the 3 months leading up to the outage supplies from Rough accounted for 5 per cent of gas supplied to the market and for 10 per cent on the peak demand day in winter 2005/06).

Following this incident, the UK experienced a cold snap leading to high levels of demand. As a consequence of tighter supply-side conditions, prices rose significantly. The market responded to these prices with a combination of higher flows from other storage facilities, flows from liquefied natural gas (LNG) storage and, unprecedented levels of demand-side response. Over winter 2005/06, gas-fired power stations provided over 40mcm/day of additional gas supplies by switching to coal or distillate in response

[7] 'Inquiry pursuant to Article 17 of Regulation (EC) No 1/2003 into the European gas and electricity sectors (Final Report)', Communication from the Commission, published 10 January 2007.

to the high and volatile prices experienced. This provided storage deliverability equivalent to the Rough storage facility.

4.1.2 Long term

The UKCS[8] is in long-term decline. As a consequence, the UK's security of supply depends upon ensuring that sufficient additional sources of gas are brought on-stream in time to meet the future requirements of gas consumers. In response to this, the UK market has responded with unprecedented levels of investment in gas supply infrastructure including:

- around £6.4bn in additional offshore infrastructure investment to bring new supplies to the UK;
- investment in new LNG importation capacity (43 bcm/year by 2010); and
- investment in new storage facilities (5.4 bcm of additional capacity by 2010 - effectively doubling Great Britain's gas storage capacity).[9]

The UK has also recently seen two new pipelines start flowing gas, both on schedule. These are:

- Langeled, which has an annual capacity of 25 bcm, and an estimated daily capacity of 68 mcm/d; and
- Balgzand-Bacton Pipeline (BBL), which has an annual capacity of 16 bcm and an estimated daily capacity of 44mcm/d.

In addition, the UK has also seen the market respond in new and innovative ways to increase the supply of gas. In particular this has included the Excelerate project at Teesside (due to start commissioning later this month) - and other technologies where older LNG ships are being converted into floating storage facilities[10].

Together, these projects will add a further 255mcm/day to gas import capacity to the UK by 2010. This is equivalent to 49 per cent of peak demand during a very cold (1-in-50) winter. A significant proportion of this new infrastructure is backed by long-term gas supply contracts.[11] What this means in practice is that we could have a serious disruption to supply (such as a repetition of the fire that occurred at the Rough storage facility in early 2006) and still have sufficient gas to meet the gas demand of domestic, industrial and commercial customers.

Ofgem also considers that the market has delivered (and is expected to continue to deliver) significant diversity of gas supply. This is illustrated in Figure 1 below.

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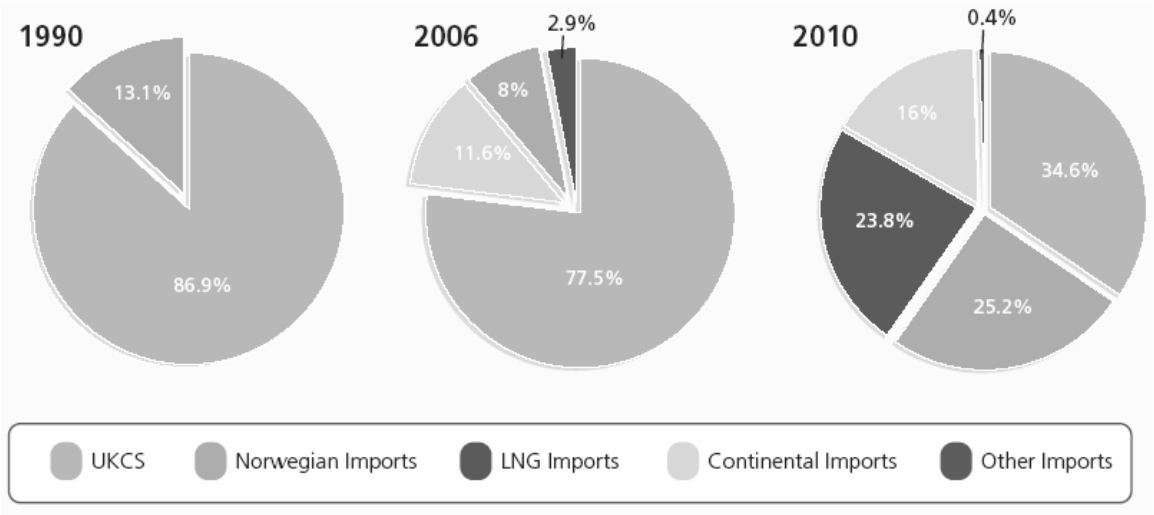
8 UKCS: United Kingdom Continental Shelf

9 Subject to planning permissions being granted.

10 The Excelerate project is delivering up to 11 mcm/d of LNG will at Teesside using Excelerate Energy's "Energy Bridge" shipboard regasification technology. This project is expected to be operational later this month (subject to global LNG prices).

11 Long term supply contracts are often seen as being incompatible with competitive energy markets. This is not necessarily the case. Provided there are sufficient actively competing producers and actively competing suppliers, and so long as neither party to a long term contract is dominant in a particular market, then contract duration and conditions are unlikely to pose either competition or security of supply concerns.

Figure 1: Diversity of Gas Supply in the UK



Source: IEA Statistics Natural Gas Information 2004, National Grid 10 Year Statement 2005, www.kslaw.com.

Ofgem considers diversity of gas supply to be a key consideration in assessing whether gas security of supply is appropriate. As Figure 1 illustrates, the decline of the UKCS has required gas market participants to find alternative sources of gas supply - leading to a significant increase in the diversity of gas sources. This trend towards more diverse sources of gas supply is expected to continue as UKCS declines further. In 2010, only around a third of our gas is expected to come from the UKCS, with the remainder being sourced from imports of gas from a very diverse range of sources including Norway and the Continent and from LNG (with sources including Qatar, Algeria, Trinidad and Tobago, Oman, and Egypt). By diversifying its sources of gas supply, the competitive gas supply market in Great Britain is increasing its capacity to withstand supply shocks and so is enhancing security of supply.

In the shorter-term, the winter of 2005-06 led some observers and market participants (particularly industrial customers) to question whether the market in Great Britain was capable of delivering an appropriate level of gas security of supply. However, as already described, the difficult market conditions experienced over this period produced an unprecedented market response. Ofgem thinks that the overall experience of the last two winters provides strong evidence to suggest that markets can be relied upon to deliver security of supply both over the longer term and in response to short-term disruptions to supply.

5. Does applying competition law to energy markets harm or help energy security?

The relatively advanced state of energy liberalisation in the UK compared with most other EU member states means that the UK is experienced in applying competition policy to energy markets.

Applying competition law to energy markets poses a number of challenges relating to the specific economic conditions to be found in the sectors. No infringement decisions have yet been taken in this sector under the Competition Act 1998, and sector specific case law will clearly take some time to develop.

The gas and electricity industries have certain characteristics which, taken together, are likely to affect the manner in which competition law is applied as compared to other sectors. The relevant factors which will vary on a case-by-case basis include:

- the importance of 'unbundling', business separation, divestment and structural change more generally in the transition from monopoly to competition across a range of activities;

- the existence of monopoly providers of gas transportation, and electricity transmission and distribution networks, which are unlikely to be replicated due to the cost conditions faced by any undertaking seeking to duplicate such networks (including the costs arising from planning and environmental constraints);

- the extent of residual incumbent market power in parts of the gas and electricity industries, including supply, metering, meter reading, connections and storage markets;

- the limited storability of electricity, and to some extent gas, which limits the opportunities to substitute between time-periods on either the supply-side or the demand-side and the low elasticity of demand for electricity and gas, particularly over short periods which can lead to companies being in a position of market power over short periods and with levels of market share that are lower than would normally be taken as suggesting dominance.

As noted earlier, we welcome the recent publication by the European Commission of its final report on the energy sector competition inquiry. We concur with the Commission's central conclusion that consumers and businesses have been losing out because of inefficient and expensive gas and electricity markets.

In its communication on the Inquiry the Commission made clear that "the three policy objectives of competitiveness, security of supply and sustainability are closely interlinked and complementary. Competitive markets provide the necessary signals for investment, which leads to supply security in the most cost efficient manner. Similarly, the creation of a competitive internal market will allow the Union's energy companies to operate in a market of a larger dimension, which will improve their ability to contribute to security supply".

We believe that the Commission has correctly identified the main problems: high levels of market concentration; vertical integration of supply, generation and infrastructure leading to a lack of equal access to, and insufficient investment in infrastructure; and, possible collusion between incumbent operators to share markets.

The Commission is right to tackle these problems in individual cases under the competition rules (anti-trust, merger control and state aids) and by pursuing new European legislation to improve the regulatory framework for energy liberalisation. We agree with the Commission that a competitive internal market is a key instrument in delivering security of supply goals.

Examples in the question above suggest refer to specific merger and anti-trust cases by the national competition authorities. As opposed to wider steps to liberalise market through, for example, privatisation and unbundling. As mentioned above, there has been little case law in terms of the effects of merger and anti-trust cases in terms of security of supply.

Within this, as far as anti-trust cases are concerned, we might want to differentiate between run-of-the-mill competition cases (where energy security still may be a concern) and agreements (or behaviour) specifically (or primarily) aimed at achieving energy security, to which competition law still applies (although may be exempt in specific cases).

5.1 Mergers

The UK energy markets have been liberalised since the 1980s and the UK has one of the most open economies in the EU. Most former nationally-owned energy interests are now in the ownership of large European companies. A large proportion of the mergers leading to these changes in ownership fell for consideration under the ECMR.

Since June 2003, UK mergers have been considered under the Enterprise Act 2002. Prior to then, mergers were considered under the public interest test of the Fair Trading Act 1973, under which ministers had a discretion whether to refer a merger to the Competition Commission under the public interest test upon the advice of the OFT.

In recent years, the energy mergers which were considered by the UK competition authorities have mainly concerned small acquisitions such as the purchase of power stations and supplier of last resort. The exception is a merger considered in 2003 under the Fair Trading Act 1973 (and hence under the public interest test where the Secretary of State was responsible for the final decision), where aspects of energy security were considered as part of the assessment of a merger by UK competition authorities – Competition Commission (2003): *Centrica plc and Dynegy Storage Ltd and Dynegy Onshore Processing UK Ltd: A report on the merger situation.*

Centrica (the main UK gas retailer) acquired from Dynegy Inc (Dynegy) which owned and operated the Rough gas storage facility and associated assets. Rough, a partly depleted offshore gas field, is by far the largest gas storage site in the UK. Gas storage is used to help deal with fluctuations in gas supply and demand and the associated movements in gas prices.

A major issue for the inquiry was whether, as a result of the merger, Centrica would have access to market sensitive information gained in its role as storage operator which they could use in trading, and would be able to discriminate against its downstream competitors by withholding their sources of gas in order to force up wholesale gas prices. The CC noted that while Centrica might have the ability to do so post-merger, all things considered there was insufficient evidence to conclude it would do so. The concerns raised were considered under the public interest test and concerned access to downstream competitors requiring storage of gas, however, these were assessed as competition issues rather than security of supply issues as understood in the context of current concerns. (This distinction would have been clearer had the reference to the CC been made four months later as it would have been made under the Enterprise Act 2002 SLC test).

The CC did though identify a number of other anti-competitive strategies open to Centrica as a result of the merger (e.g. discriminate between customers in giving access to capacity at Rough).

The CC considered that, as a result, competition in the markets for flexible gas and domestic gas supply would be weakened, with the likely consequence that prices would be higher than in the absence of the merger. The CC commented that there would be some benefit to the public interest in Centrica, as owner of Rough, being a better known quantity with regard to operational experience, reputation and financial strength, whereas the alternative to the merger was uncertain. The CC did not consider that this benefit outweighed the adverse effects they identified, and therefore concluded that the merger might be expected to operate against the public interest.

The remedies included Centrica selling its full capacity on non-discriminatory terms (and retaining the existing standard storage services contract (SSC)); and ensuring that market information obtained by Rough as a result of its trading activities was not passed to Centrica.

The Enterprise Act 2002 merger control allows parties to argue an efficiency gain resulting from the merger, but it is a high threshold to meet. Such efficiencies must be merger-specific and the parties must be able to demonstrate that consumers will benefit from them, by for example price reductions.

5.2 Anti-trust cases

In *Rough*, the post-merger ability of Centrica to abuse its position in terms of supply was seen as a key issue (though mainly in terms of price).

Familiar anti-competitive behaviour, exclusionary conduct and excessive charging may of course be seen as threats to security of supply. Cartels may also threaten security of supply.

There is a separate question about the extent to which competition law could be used to address wider concerns about catastrophic failure. The DTI discussion paper, *Gas security of supply – The effectiveness of current gas security supply arrangements* considered the options available to address gas security of supply.

When considering a specific agreement or behaviour that has as its purpose energy security, it is possible that cooperative agreements aimed at achieving security of supply may fall foul of competition law, but may meet exemption criteria. An example of this is the Memorandum of Understanding on the supply of oil rules in an emergency (MoU).

The MoU was signed by the Government, major oil companies, oil independents, road hauliers, the police and trade unions following the September 2000 fuel crisis in order to preserve the supply of oil fuels and, in the event of unavoidable supply disruption, to protect supplies to essential users. It was notified by the major oil companies.

The OFT concluded that an individual exemption from the Chapter I prohibition was merited because: the MoU improved the distribution of oil fuels during an oil fuel emergency; consumers in the form of essential users would benefit directly and consumers in general would benefit from the priority given to these users, who for example, provided emergency services, maintained public safety or supplied food; the restrictions upon competition arising from the MoU were no more than necessary; and, as the MoU did not affect competition for a substantial amount of oil fuel that was surplus to the Government's allocation requirements, the MoU did not eliminate competition in respect of a substantial part of the products in question.

This exemption illustrates the point that while agreements to achieve energy security may infringe competition law, there may be scope for exemption (or objective justification if Chapter II). However, the agreement must be the least restrictive possible in order to achieve its objective.

It is possible that joint ventures with similar purposes may be assessed in the same light.

6. What are the limits to the application of competition law in this area?

There is no requirement to limit the application of competition law in energy markets on security of supply grounds:

- energy suppliers owned by the public sector are likely to count as undertakings subject to EC and UK competition law;

- foreign-owned undertakings active in the UK market are subject to EC and UK competition law.

Much of this has been discussed above. Merger law no longer has a public interest test, although there are public interest gateways for broader national security issues. It would seem that anti-trust law is not generally a good way of addressing catastrophic risk (although it may address abuse of a dominant position).

The Competition Act 1998 prohibitions do not apply to activities undertaken in accordance with a legal requirement (Competition Act 1998 Schedule 5 (1,2)).

Under Schedules 6 and 7 of the Competition Act 1998, the Secretary of State for Trade and Industry may disapply the prohibitions in order to avoid conflict with an international obligation, or for exceptional and compelling reasons of public policy. This facility has never been used.

Exemption under Article 81/Chapter I and objective justification under Article 82/ Chapter II provide means for (respectively) restrictive agreements and behaviour falling within competition law to be permitted. In such cases, it is usually necessary to establish that the agreement or behaviour is the least restrictive required to achieve the stated aim.

7. Conclusion

The paper began by outlining the regulatory framework for the UK gas industry, with particular focus on the competition law regime. The most significant point is that competition law applies in this sector in very much the same way as most other sectors of the UK economy. For example, there is now no public interest merger test based on security of energy supply. Perhaps the most significant distinguishing feature is that OFT and Ofgem have concurrent powers to apply competition law.

Issues therefore arise primarily out of the nature of the sector itself. The recent EC report has identified many of the features of this sector, such as incumbency, which are relevant when considering the application of competition law. Two further key features are, first, that it is a specifically regulated sector, and, second, that it is subject to other policy interests, such as security of supply.

Further, there are comparatively few merger and anti-trust cases in the sector where security of supply was a major issue. Current arrangements for mergers do not allow a reference to the Competition Commission on public interest grounds of security of supply, but may only be done by order, requiring positive resolution by each House of Parliament.

There is though much evidence to suggest that market forces do much to promote energy security. This is true on the demand-side (e.g. incentives not to use energy at peak or high priced times) as well as on the supply-side, with the market responding to the high prices through investment and diversification of supply etc.

However, this does not mean that agreements and joint ventures aimed at increasing energy security fall outside competition law. The emphasis here must be to achieve the least restriction of competition consistent with the desired aim of energy security.

UNITED STATES

1. Introduction

The Competition Committee is sponsoring a roundtable on the links between energy security and competition policy with a focus on natural gas. A central topic of the discussion is the appropriate roles for markets and governments in attaining energy security. The United States' experience is that competitive markets, supported by sound enforcement of antitrust laws, play an important role in achieving energy security.

There is more than one definition of "energy security." For purposes of this paper, the United States antitrust agencies define energy security as ensuring a reliable and plentiful supply of energy provided in an efficient manner. A robust and competitive market – with prices that signal appropriate levels of demand, supply, and innovation, and thus with only moderate volatility – is important and necessary in efficiently achieving this result. In general, fuel supplies, like other commodities, are most efficiently produced and allocated through competitive markets. In the absence of an identified market failure, United States economic policy favors competition over government intervention. Fluctuations in the conditions of supply and price volatility alone do not generally warrant government intervention, as competitive forces are particularly well suited to respond quickly and efficiently to these occurrences.[1]

The United States' own historical natural gas supply situation and resulting natural gas security situation have differed significantly from those of many other OECD members. The United States has long been "natural gas independent," aside from relatively small imports from Canada and minimal liquefied natural gas ("LNG") imports. In 2002, only one percent of United States natural gas consumption was from imported sources. Furthermore, North American natural gas production comes from geographically dispersed producing basins, providing additional protection against supply disruption.

To date, the United States has not had the experience of an external natural gas supply disruption, as it has been mostly self-sufficient in its supply of natural gas. Nevertheless, the United States is not a stranger to energy supply shocks more generally, and it has participated in international efforts to limit the effects of shocks on the world petroleum market. First prompted by the Arab oil embargo of 1973,

[1] The United States recognizes that a serious external disruption to the energy supply can threaten a nation's security and, in that case, market forces alone may not be sufficient to assure energy security. National security is an example of a "pure public good." A "pure public good" is technically defined as a good that is "non-rival" and "non-excludable." "Non-rival" goods are goods with the characteristic that consumption of a unit of the good by one consumer does not affect the amount available to other consumers. "Non-excludable" goods are goods for which it is not feasible to exclude any consumer or group of consumers from receiving the benefits. Government intervention may be necessary for optimal output of such goods, since private markets usually do not provide sufficient incentives. Not every potential disruption to supply raises national security concerns, however, and it is important narrowly and carefully to define those that do before abandoning market solutions. As antitrust agencies, it is not our function to analyze threats to national security. We will, therefore, focus on the aspect of energy security within our expertise – the role of competition policy in energy security.

industrialised petroleum-consuming nations, through the International Energy Agency ("IEA"), have built an elaborate system designed to mitigate the effects of energy shocks on their economies.[2]

2. Competition and Energy Security

In some nations, government ownership or control of petroleum infrastructure is seen as the best means to ensure energy security. The United States takes a different view. In the United States, the petroleum industry is almost entirely privately owned and operated and is subject to vigorous enforcement of the United States antitrust laws. That is, private ownership of the means of production and distribution – and prices determined by the interplay of supply and demand in a free market – are relied upon to encourage, among other things, efficient investment decisions in energy-producing capacity and in the infrastructure necessary to distribute energy efficiently to users. Antitrust laws, in turn, promote strong competition among petroleum companies and a diversified, robust industry that can be expected to react quickly to internal or external shocks.

The United States' experience shows that a private industry organised around competitive market principles, and complemented by sound and well-administered antitrust laws, is compatible with – and indeed is a necessary element of – efficiently achieving energy security. Competitive markets can provide for efficient supply routes and the price signals to attract capital to the industry to meet both current and expected future demand.

The United States generally relies on market-based competition, with limited exceptions, as the means of organising the production and delivery of goods and services to consumers. Antitrust laws support this goal. Our experience has shown that competitive markets enhance consumer welfare by encouraging sellers to provide goods and services that are attractive to consumers. Competition also promotes the efficient allocation of society's scarce resources and encourages higher rates of innovation. Information provided by competitive markets is also likely to result in efficient long-term investment decisions.

Challenges to competitive markets can arise, however, when significant externalities – that is, spillover effects arising from the production or consumption of a good or service for which no compensation is paid – result in too much or too little of a good or service. For example, because purchasers and sellers of electricity do not fully incorporate the costs of pollution emitted by the plant, free markets can result in the over-provision of electricity generated by power plants burning high-sulfur coal. Free markets similarly can lead to under-provision of elements of common infrastructure, such as public parks, that create public benefits and are subject to a free-rider problem. Nevertheless, even when such failings occur in competitive markets, addressing them with the creative use of market-based mechanisms usually leads to more efficient solutions than relying on direct government regulation.[3]

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2 In 1974 the members of the IEA enacted the Agreement on an International Energy Program. Specifically designed to apply to crude oil and refined petroleum products, the current system is coordinated through the IEA. Within the individual member nations of the IEA, national policies also promote energy security on a countrywide basis. *See* International Energy Agency, Energy Policies of IEA countries - 2006 Review. For an example of United States response to a supply disruption following Hurricane Katrina, *see* John H. Seesel, Associate General Counsel for Energy, Market Forces, Competitive Dynamics, and Gasoline Prices: FTC Initiatives to Protect Competitive Markets, Testimony Before the Committee on Commerce, Science and Transportation, United States Senate, at 2-3 (Sept. 21, 2005), *available at* http://www.ftc.gov/os/testimony/050921gaspricestest2.pdf; Federal Trade Commission Report, "Investigation of Gasoline Price Manipulation and Post-Katrina Gasoline Price Increases" (Spring 2006), *available at* http://www.ftc.gov/reports/060518PublicGasolinePricesInvestigationReportFinal.pdf.

3 For instance, the U.S. Environmental Protection Agency's Acid Rain Program creates a market for the trading of sulfur dioxide emissions credits. The information and incentives generated by the market for

Some sectors of the United States economy are currently regulated in whole or in part. The energy sector in particular has had substantial regulation during much of its history. Nevertheless, because of new technology, changing market conditions, and new economic thinking, there has been a re-examination during the past 30 years of whether the energy sector and other industries require continuing comprehensive regulation.[4] Specifically, policymakers in the United States have identified emerging opportunities to introduce competition into at least some aspects of once extensively regulated industries. Where those opportunities have appeared, competitive alternatives have been sought through deregulation and industry restructuring. The United States energy sector, including natural gas, has undergone substantial deregulation. As a consequence, the United States relies today much more on competition, safeguarded by its antitrust laws, to satisfy the demand of its consumers for energy.

Energy security as it relates to natural gas should encompass not only physical security but also economic security and the ability to recover quickly from disruptions. Competitive markets do just that. Competitive markets react to a rapid increase in demand without extended shortages that could necessitate non-price rationing. They can provide a mechanism for replacing, in an orderly fashion, a supply source that shifts to a different buyer. Competitive markets are flexible and allow market participants to react nimbly to unforeseen events without waiting for a central decision-maker.[5] They also send accurate and timely price signals to capital markets in order to give rise to incentives for appropriate investment decisions in new plant and equipment as well as infrastructure.[6] Another positive feature of competitive natural gas markets is transparent and reliable information that supports voluntary market transactions in the trading of natural gas.[7] In particular, well-functioning futures markets reflect the collective expectations of all market participants regarding how prices will react to any changes in demand and supply conditions.

Antitrust laws that promote efficiently functioning, competitive markets are necessary for achieving energy security, though they may not be sufficient because of externalities related to energy security. The key features of competitive markets that help to maintain energy security are the diversity of market participants, the efficient use of resources in the productions and delivery of energy, and superior long-term investment decisions.[8]

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tradable emissions credits provides for much more efficient distribution of the costs of restricting emissions than traditional regulatory mandates could achieve.

4 *See* Natural Gas Supply Association, The History of Regulation, *available at* http://www.natural/gas.org/regulation/history.asp.

5 Daniel Yergin, *Ensuring Energy Security,* Foreign Affairs, at 4 (March/April 2006). For a recent United States Government statement about energy security in a broader context, *see* Paul E. Simons, Deputy Assistant Secretary of State for Energy, Sanctions and Commodities, Energy and National Security, Testimony before the Committee on Government Reform, United States House of Representatives, at 1 (May 16, 2006).

6 IEA web page, Shared Goals ("Undistorted energy prices enable markets to work efficiently."), *available at* http://iea.org/Textbase/about/sharedgoals.htm.

7 Paul E. Simons, Deputy Assistant Secretary of State for Energy, Sanctions and Commodities, Energy and National Security, Testimony before the Committee on Government Reform, United States House of Representatives, at 2 (May 16, 2006).

8 IEA, Shared Goals, at 1 ("Diversity, efficiency and flexibility within the energy sector are basic conditions for longer-term energy security . . ."), *available at* http://www.iea.org/Textbase/about/sharedgoals.htm.

3. The United States' Move to a Competitive Market for Natural Gas

The United States has not always had a competitive market in natural gas. For many years, the United States natural gas market was tightly controlled by a strict regulatory scheme, which included price controls at the wellhead. Before 1938, the regulation of natural gas was the responsibility of the individual states. In that year, the Natural Gas Act ("NGA")[9] gave the Federal Power Commission the authority to establish rates for the interstate transmission of gas and to regulate asset acquisitions and changes in facilities and service.

In the 1970s, new technology and changing market conditions called into question whether comprehensive regulation was still justified, and United States policymakers began to re-evaluate regulatory policy across a number of historically regulated sectors, including natural gas. Among other measures, in 1978, Congress passed the Natural Gas Policy Act[10] ("NGPA") and established as national policy the movement toward a less regulated natural gas sector. The NGPA started a partial and phased relaxation of wellhead price controls, based on a finding "that direct federal price control exacerbated supply and demand problems by preventing the market from making long-term adjustments."[11] In 1989, the NGPA was amended to require the removal of all remaining wellhead price controls by 1993.[12] Congress also acted to remove a number regulatory restraints that had stifled demand, including restrictions on using natural gas as a primary energy source for new electric power plants and new large industrial boiler facilities.

The Federal Energy Regulatory Commission, the successor to the Federal Power Commission, has used its regulatory powers to introduce competition into several previously regulated aspects of the natural gas sector. The centerpiece of this effort was Order No. 636, issued in 1992,[13] which required pipelines to unbundle their services and become open-access carriers. Order No. 636 required pipelines to separate out the charges for each service and give customers the option of choosing different suppliers for each service. The Order also enabled shippers to sell excess capacity and eased the regulatory burdens for building new pipelines.

The Department of Energy, exercising its own regulatory powers, also has promoted competitive markets, in one case specifically finding that energy security is enhanced by selling natural gas from the North Slope of Alaska to Japan. The Department authorised such a sale based on a finding that it expects the "export project to provide important benefits in the areas of energy security, energy production, international relations, trade deficit reductions, and the Alaskan economy."[14] The Department found that use of the gas in a competitive market sale makes all parties better off because it fosters all aspects of competition. It noted that "the approval is intended to spur competition to develop North Slope natural gas efficiently, with the marketplace determining the course of development. The public interest lies in bringing this immense energy resource to market in an efficient and timely manner."[15] Congress and the

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9 15 U.S.C. §§ 717 *et seq.*

10 15 U.S.C. §§ 3301 *et seq.*

11 *Transcontinental Gas Pipe Line Corp. v. State Oil & Gas Board,* 474 U.S. 409, 424 (1986).

12 Natural Gas Wellhead Decontrol Act of 1989, Pub. L. No. 101-60.

13 Pipeline Service Obligations and Revisions to Regulations Governing Self-Implementing Transportation; and Regulation of Natural Gas Pipelines After Partial Wellhead Decontrol, 57 Red. Reg. 15267 (Apr. 16, 1992); *order on rehearing,* Order No. 636-B, 57 Fed. Reg. 57911 (Dec. 8, 1992).

14 DOE/FE Opinion and Order No. 350, Yukon Pacific Corporation (ERA Docket No. 87-68-LNG), Order Granting Authorization to Export Liquefied Natural Gas from Alaska (Nov. 6, 1989).

15 *Id.* at 7.

regulatory agencies have made clear and consistent findings that competition enhances energy efficiency, creates incentives to increase supply, and thus bolsters energy security.

4. Competition Policy Applied to the Natural Gas Industry in the United States

Policies that promote competition will be ineffective without an enforcement system designed to make sure that those policies are carried out. Both the Federal Trade Commission and the Antitrust Division of the Department of Justice have been active in enforcing the federal antitrust laws in the natural gas industry. Most of the enforcement action has taken place in the context of mergers involving natural gas transportation and storage infrastructure.

The following cases are examples of how the United States antitrust agencies have protected competition in the industry, enhancing energy security in the process.[16]

4.1 In the Matter of Dan L. Duncan; EPCO, Inc.; Texas Eastern Products Pipeline Company, LLC; and TEPPCO Partners, L.P.[17]

On August 18, 2006, the Commission announced a law enforcement action challenging a 2005 acquisition that was not reportable under the Hart-Scott-Rodino Act. The transaction combined the natural gas liquids ("NGL")[18] storage business of Enterprise Product Partners, L.P. and TEPPCO Partners, L.P. under the common ownership of Dan L. Duncan. The NGL storage system in Mont Belvieu is the largest in the world and represents a critical component in the United States natural gas infrastructure. According to the Commission's complaint, the acquisition violated Section 7 of the Clayton Act and Section 5 of the

16 *See, e.g., In the Matter of TC Group, L.L.C., a limited liability company, Riverstone Holdings LLC, a limited liability company, Carlyle/Riverstone Global Energy and Power Fund II, L.P., a limited partnership, and Carlyle/Riverstone Global Energy and Power Fund III, L.P., a limited partnership* ("Carlyle/Kinder Morgan") FTC Docket No. C-4183 (2007) (complaint alleging competition issues in terminal services for refined petroleum products); *In the Matter of Chevron Corporation and Unocal Corporation*, FTC Docket No. C-4144 (2005) (consent order including a requirement not to enforce certain reformulated gasoline patents); *In the Matter of Enterprise Products Partners L.P., and Dan L. Duncan* ("Enterprise Products Partners/GulfTerra Energy Partners"), FTC Docket No. C-4123 (2005) (consent order resolving issues in natural gas pipeline transportation system and a propane storage and terminaling services facility); *In the Matter of Conoco Inc. and Phillips Petroleum Company*, FTC Docket No. C-4058 (2003) (consent order requiring divestiture and agreements to resolve issues related to the markets for natural gas gathering, fractionation of natural gas liquids, and propane); *In the Matter of Southern Union Company and CMS Energy Corporation*, FTC Docket C-4087 (2003) (consent order requiring termination of agreements to manage pipeline and natural gas delivery, and limiting future pipeline activity); *In the Matter of El Paso Energy Corporation and The Costal Corporation*, FTC Docket No. C-3996 (2001) (consent order requiring divestiture of natural gas pipeline systems); *In the Matter of Valero Energy Corporation and Ultramar Diamond Shamrock Corporation*, FTC Docket No. C-4031 (2001) (consent order addressing competition issues in California Air Resources Board refining and market assets); *In the Matter of El Paso Energy Corporation and Sonat Inc.*, FTC Docket No. C-3915 (2000) (consent order requiring divestitures in transportation of natural gas).

17 *See* http://www.ftc.gov/os/caselist/0510108/0510108.htm.

18 NGLs comprise a group of light hydrocarbons – including ethane, propane, normal butane, isobutane, and natural gasoline – that are used for a variety of purposes, including as feedstocks in the production of ethylene and propylene, as fuel for heating or industrial processes, and in blending components for gasoline. They primarily are stored in large underground wells formed out of geological salt domes under the Earth's surface until they are delivered to end-users, usually via pipelines. Mont Belvieu, Texas, contains the largest NGL storage system in the world, including pipeline connections that allow NGL marketers to reach the broadest array of end users. There were no viable competitive alternatives for NGL salt dome storage in Mont Belvieu.

Federal Trade Commission Act by reducing competition in the market for salt dome storage for NGLs in Mont Belvieu. Specifically, the complaint alleged that the transaction likely would result in higher prices and service degradations by reducing from four to three the number of commercial salt dome NGL storage providers in Mont Belvieu. In settling the Commission's charges, TEPPCO was required to sell its interest in an NGL storage facility and associated assets to a Commission-approved buyer by December 31, 2006.[19]

The market for salt dome storage for NGLs in Mont Belvieu is highly concentrated, and Enterprise and TEPPCO were the two largest suppliers based on storage volumes at the time of the acquisition.[20] Before the acquisition, Enterprise and TEPPCO competed directly for NGL salt dome storage volumes in Mont Belvieu based on price and service levels, with many customers ranking Enterprise and TEPPCO as their first and second choices for NGL storage. Both companies were connected to the Dixie Pipeline and competed for customers that wanted to ship products – primarily propane – into the southeastern United States. The acquisition significantly increased concentration in NGL salt dome storage in Mont Belvieu, leaving the merged entity with ownership of a dominant share of storage volume and capacity. The Commission alleged that a merged Enterprise/TEPPCO – combining the market leaders for NGL salt dome storage – would have an enhanced ability to exercise market power unilaterally, given that the remaining suppliers in the market could not replace the lost competition. Finally, entry into the Mont Belvieu NGL salt dome storage facility market was not likely to be timely or sufficient to offset the alleged anticompetitive effects of the transaction. The Commission's challenge to this transaction preserved competition among vital facilities to ensure that Americans do not pay more for products derived from natural gas liquids, including plastics, heating fuels, and gasoline.

4.2 In the Matter of Chevron Corporation and Texaco, Inc.[21]

On October 14, 2000, Chevron agreed to acquire all of the outstanding common stock of Texaco in exchange for common stock of Chevron, resulting in Chevron shareholders' holding approximately 61 percent of the new, combined company (and Texaco shareholders' owning the rest). On September 7, 2001, the FTC issued a complaint, alleging that the acquisition violated Section 7 of the Clayton Act and Section 5 of the Federal Trade Commission Act. The complaint specifically alleged that the merger, as proposed, would substantially reduce competition in eleven markets, two of which specifically pertained to natural gas: the pipeline transportation of offshore natural gas to shore from locations in the Central Gulf of Mexico[22] and the fractionation of raw mix into natural gas liquids products at Mont Belvieu.[23] Pursuant to

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19 The Commission's order required TEPPCO to divest its interest in the Mont Belvieu Storage Partners NGL salt dome facility, as well as certain related pipeline, land, and other assets, no later than December 31, 2006. The Commission received an application for approval of divestiture in November 2006, and public comments on the application were received until December 27. The Commission will determine whether to approve the divestiture.

20 The merging companies together accounted for approximately 70 percent of all commercially available salt dome storage capacity in Mont Belvieu. Two other firms owned the remaining volume.

21 *See* http://www.ftc.gov/opa/2001/09/chevtex.htm.

22 Natural gas pipelines are used to transport natural gas from offshore producing platforms to the shore for processing and distribution. There are no alternatives to pipelines for the transportation of natural gas from offshore gas producing platforms. Chevron and Texaco owned controlling interests in competing offshore natural gas pipelines. Chevron and its affiliate Dynegy owned a combined 77 percent interest in the Venice Gathering System. Texaco owned approximately 33 percent of the Discovery Gas Transmission System. Texaco's ownership share was sufficient to allow it to exercise effective control over important aspects of the business of the Discovery pipeline.

23 Fractionators are specialized facilities that separate raw mix natural gas liquids into "specification products" by means of a series of distillation processes. These specification products are ultimately used in the manufacture of petrochemicals, in the refining of gasoline, and as bottled fuel, among other uses.

the consent order that settled the case, Texaco was required to divest, within six months after the merger, (1) its one-third interest in the Discovery natural gas pipeline system in the Central Gulf of Mexico and (2) its interest in the Enterprise fractionating plant in Mont Belvieu.

The pipeline transportation of offshore natural gas to shore from each of the markets[24] is highly concentrated and would have become significantly more concentrated as a result of the proposed merger, giving the combined Chevron and Texaco controlling interests in the only two pipelines, or in two of only three pipelines, in each of the markets.[25] Moreover, the acquisition of Texaco, as proposed, would have given Chevron a financial interest in three of the four fractionators in Mont Belvieu.

According to the Commission, if the transaction had been allowed to proceed as proposed, either unilateral behavior by the combined Chevron/Texaco, or coordinated behavior among Chevron/Texaco and its remaining competitors, would have led to higher consumer prices.[26] The Commission contended that new entry was unlikely to constrain anticompetitive behavior in the identified markets, that new entrants typically face significant obstacles to become effective competitors, and that it was unlikely that such entry would constrain a price increase resulting from the merger as proposed.

5. Conclusion

Energy security – including for natural gas – has become an important part of the energy policy debate in industrialised countries.[27] The United States antitrust agencies believe that security, in its broadest sense, is enhanced by private ownership of the means of production and distribution, buttressed by antitrust laws and enforcement policies that provide the maximum incentives for an efficient, diverse, and robust industry. In our view, competitive markets are an important part of achieving energy security, though some government action may be necessary in response to externalities related to energy security.

There are no substitutes for fractionators for the conversion of raw mix natural gas liquids into individual specification products.

24 The relevant offshore natural gas markets consisted of more than 60 individual lease blocks in the Central Gulf of Mexico.

25 Chevron and Texaco are competitors for the pipeline transportation of offshore natural gas to shore from certain locations in the Central Gulf of Mexico, including the South Timbalier and Grand Isle Areas (and their South Additions), as defined by the Department of Interior Minerals Management Service, including, but not limited to, South Timbalier Blocks 30, 37, 38, 44, 45, 58, 59, 61-63, 86-88, 123-35, 151-53, 157, 158, 178-80, 185-87, 205-08; South Timbalier South Addition Blocks 223-27, 231, 233-37, 248, 251, 256 and 257; Grand Isle Blocks 52, 53, 59, 62, 63, 70-76, 84, and 85; and Grand Isle South Addition Block 86.

26 With regard to the pipeline transportation of offshore natural gas, the Commission's complaint alleged that the proposed merger eliminated direct competition between Chevron and Texaco; increased the likelihood of collusion or coordinated interaction among the combined Chevron/Texaco and its competitors; and increased the likelihood that the combined Chevron and Texaco would unilaterally exercise market power, with each of these effects increasing the likelihood that the price of offshore natural gas pipeline transportation would increase in the relevant sections of the country. With regard to the fractionation of natural gas liquids, the complaint alleged that the proposed merger eliminated direct competition between Texaco and Chevron's Dynegy affiliate; provided Dynegy with access to sensitive competitive information from one of its most important competitors at Mont Belvieu; provided Chevron with the ability to prevent competition among fractionators in Mont Belvieu; and increased the likelihood that the combination of Chevron and Texaco would unilaterally exercise market power, with each of these effects increasing the likelihood that prices would increase for fractionation services in the vicinity of Mont Belvieu.

27 On April 10-12, 2007, the FTC will host a public conference on "Energy Markets in the 21st Century: Competition Policy in Perspective." For more information, *see:* http://www.ftc.gov/opa/2007/01/energywrkshp.htm.

Part of ensuring that markets are free includes enforcement of antitrust laws to prevent, for example, mergers that would substantially lessen competition in energy markets. Sound enforcement of antitrust laws in this area therefore furthers energy security.

EUROPEAN COMMISSION

EU COMPETITION SECTOR INQUIRY INTO THE EUROPEAN GAS AND ELECTRICITY MARKETS

1. Introduction

Well functioning energy markets that ensure secure and sustainable energy supplies at competitive prices are crucial for achieving growth and consumer welfare in the European Union. To achieve this objective the EU decided to open up Europe's gas and electricity markets to competition and to create a single European energy market. The process of market opening has significantly changed the functioning of the markets, provided new market opportunities, and led to the introduction of new products and services.

However, while progress has been made, the full market opening has not yet been achieved. Barriers to free competition remain. Significant rises in gas and electricity wholesale prices that cannot be fully explained by higher primary fuel costs and environmental obligations, persistent complaints about entry barriers and limited possibilities to exercise customer choice led the Commission to open an inquiry into the functioning of the European gas and electricity markets in June 2005.

This inquiry[1], aimed at assessing the prevailing competitive conditions and establishing the causes of the perceived market malfunctioning. It is the largest competition sector inquiry to date and is based on the responses to questionnaires that were sent to several thousand market participants.

Competitive markets provide the necessary signals for investment, which leads to supply security in the most cost efficient manner. Similarly, the creation of a competitive internal market allows the Union's energy companies to operate in a larger market, which improves their ability to contribute to security of supply. At the same time, market forces oblige European operators to use the most cost effective methods of production, which in the appropriate regulatory environment can benefit sustainability.

Consumers will be able to choose between different providers and contract schemes, and can thus reduce their energy costs and adapt their consumption to market developments. Competitive, cost reflective prices will help encourage energy efficiency, which supports the Union's objective for sustainability and security of supply.

The Final Report of the energy Sector Inquiry was adopted on 10 January in the form of a Commission Communication[2], which is annexed to this paper, accompanied by a full technical report[3]. It

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1 Based on Article 17 of Regulation 1/2003, Council Regulation (EC) of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty (OJ L 1 of 4.1.2003, p.1), as amended by Council Regulation (EC) No 411/2004 (OJ L 68 of 6.3.2004, p. 1).

2 Communication from the Commission: Inquiry pursuant to Article 17 of Regulation (EC) No 1/2003 into the European gas and electricity sectors (Final Report) - COM(2006) 851.

3 Commission staff working paper SEC(2006) 1724.

was adopted together with a comprehensive package of measures to establish a new Energy Policy for Europe to combat climate change and boost the EU's energy security and competitiveness.[4]

2. The findings of the Energy Sector Inquiry

The energy sector inquiry has identified serious shortcomings in the electricity and gas markets. To enter a market, and provide real competition, new players need access to energy supplies, to the network and to customers. However, three major structural problems, and a number of other barriers, remain.

Firstly, many energy markets are too highly concentrated. The sector inquiry shows that incumbents still have very high market shares in their respective national gas markets. The level of concentration has also remained very high in many electricity markets, but with some fairly competitive markets. Markets themselves remain national in scope, with little new entry and many incumbents have retained firm control of the liberalised markets.

All this gives scope to incumbents to exercise market power, and so impose high prices. To protect their market positions and profits, incumbents engage in various practices that make it harder for new entrants to compete.

Secondly, many energy markets are characterised by a high degree of vertical integration, in particular insufficient unbundling of network and supply activities. When incumbents control the network, they also control the supply market. It is therefore no surprise that incumbents view their networks as strategic assets that allow them to exclude competition through discrimination. Moreover, where network and supply companies are integrated, there are too few incentives to invest in networks - a major obstacle to new entry and a threat to security of supply.

Concerns with respect to vertical integration also relate to the insufficient tradable supplies on energy markets – in other words energy markets are not as liquid as they need to be. Long-term contracts contribute to locking-in the markets - for instance they prevent alternative suppliers from supplying customers on the retail markets.

Thirdly, there is an absence of *cross-border integration* and cross-border competition. Many of Europe's electricity interconnectors are chronically congested. In other words capacity requests by interested network users exceed the amount of available capacity. Incumbents largely keep to their traditional markets, and rarely enter other national markets as large scale competitors. Energy prices for commercial users vary significantly from Member State to Member State, and these differences are not eroded through import competition. One of the reasons is that incumbents stick to their home markets. Different market designs between Member States contribute to these problems, rendering it difficult to move energy from one point in Europe to another.

The sector inquiry has shown that Europe needs more interconnection capacity. But at the moment, there is insufficient investment to build additional interconnection capacity. For example, the report shows that a selected group of transmission system operators – so called TSOs – collected significant congestion revenues. These revenues are generated by auctioning off the scarce interconnector capacity. The total amount of revenues collected by these TSOs between 2001 and 2005 was about 1.3 billion euros. However, only 250 million euros of these revenues, i.e. less than 20%, was invested back into increased capacity. This is particularly worrying because it is the vertically integrated companies, i.e. those active in supply and network, that failed to invest in network expansion.

[4] Communication from the Commission "An Energy Policy for Europe" - COM(2007) 1.

On top of this outdated market structure, there is a lack of transparency, for example with respect to available transport capacity, resulting in disadvantages for everybody except the incumbents. As a result, there is limited trust in the pricing mechanisms. When prices do not react to changes in actual supply and demand, security of supply and investment in alternative energy sources is threatened.

A public consultation was held following the presentation of a preliminary report in February 2006. The responses provided large support for the findings and enabled the further development of several aspects of the inquiry. The consultation also provided wide support – except, to some extent, among incumbents - for firm and decisive action.

3. The follow-up to the Sector Inquiry

There is a need for full and combined use of the Commission's powers under antitrust rules (Articles 81, 82 and 86 EC), merger control (Regulation (EC) No 139/2004)[5] and State aid control (Articles 87 and 88 EC). The findings of the Sector Inquiry enable the Commission to focus its enforcement action on the most serious concerns. They also make it easier to identify efficient remedies that can resolve competition problems in individual cases.

Already following the Preliminary Report, the Commission initiated a number of anti-trust cases where the Commission suspects that anti-competitive behaviour is contributing to the problems identified by the sector inquiry. These cases relate mainly to suspicions of foreclosure of wholesale markets and infrastructure - including cross-border capacity - by incumbents, as well as to collusion between incumbents in the form of market sharing. Other recently launched investigations relate to the withholding of capacity on electricity markets and abuses on balancing markets.

However, competition law cannot open markets by itself, and the Commission needs to complement its enforcement through an improved legal framework. Here, the Sector Inquiry plays an important role in the Commission's work on identifying necessary regulatory changes, as set out in its Communication on "Prospects for the internal gas and electricity market"[6].

A legislative priority is to reinforce the current insufficient level of network unbundling. The Sector Inquiry and the ongoing case investigations are pointing to very serious problems. The Commission's preferred option, in order to create the proper incentives for investment and fully do away with discrimination, is a structural one, i.e. no more ownership ties between supply companies and network business.

There is also a need for substantial strengthening of the powers of regulators and enhanced European coordination, in particular for cross-border issues. Only a strengthened regulatory framework can provide the transparent, stable and non-discriminatory framework that the sector needs for competition to develop and for future investments to be made – crucial for security of supply.

In order to achieve a level and efficient playing field, it is also essential to improve transparency by ensuring better and equal access to information for all market participants. In addition, it is also important to look closely at the possible options for further measures that could increase liquidity and encourage market integration.

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5 Council Regulation (EC) No 139/2004 of 20 January 2005.

6 Communication from the Commission: Prospects for the internal gas and electricity market - COM(2006) 841.

4. Conclusion

The EU is heavily depends on secure, sustainable and reliable provision of energy at competitive prices. However, the energy Sector Inquiry has identified serious problems with the functioning of European electricity and gas markets. A strong and vigilant enforcement of competition rules is needed, combined with a reinforced regulatory framework, if the EU is to achieve a well-functioning Internal Market for energy – the best guarantee for security of supply on a competitive and sustainable basis.

Reference

January 2007 EC Communication
http://ec.europa.eu/comm/competition/antitrust/others/sector_inquiries/energy/index.html

ANNEX 1

Brussels, 10.1.2007
COM(2006) 851 final

COMMUNICATION FROM THE COMMISSION
Inquiry pursuant to Article 17 of Regulation (EC) No 1/2003 into the European gas and electricity sectors
(Final Report)

{SEC(2006) 1724}

COMMUNICATION FROM THE COMMISSION

Inquiry pursuant to Article 17 of Regulation (EC) No 1/2003 into the European gas and electricity sectors
(Final Report)

1. INTRODUCTION

1. Well functioning energy markets that ensure secure energy supplies at competitive prices are key for achieving growth and consumer welfare in the European Union. To achieve this objective the EU decided to open up Europe's gas and electricity markets to competition and to create a single European energy market. The process of market opening has significantly changed the functioning of the markets, provided new market opportunities, led to the introduction of new products and services. Competition initially lowered energy prices in Europe in line with market fundamentals.

2. However, while progress has been made, the objectives of market opening have not yet been achieved. Despite the liberalisation of the internal energy market, barriers to free competition remain. Significant rises in gas and electricity wholesale prices that cannot be fully explained by higher primary fuel costs and environmental obligations, persistent complaints about entry barriers and limited possibilities to exercise customer choice led the Commission to open an inquiry into the functioning of the European gas and electricity markets in June 2005. This inquiry, based on Article 17 of Regulation (EC) No 1/200[1] on the implementation of the Treaty rules on competition, aimed at assessing the prevailing competitive conditions and establishing the causes of the perceived market malfunctioning. The Final Report (Commission Communication) summarises the results of the inquiry, which are presented in more detail in the

[1] Council Regulation (EC) No 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty (OJ L 1 of 4.1.2003, p. 1), as amended by Council Regulation (EC) No 411/2004 (OJ L 68 of 6.3.2004, p. 1).Commission staff working paper SEC(2006) 1724.

Technical Annex[2] to the Final Report.

3. While the Sector Inquiry was launched amidst perception that consumers were not reaping the full benefits of liberalisation, it should be underlined from the outset that it was not the object of the inquiry to describe the progress made in the liberalisation process and the advantages resulting from it. There are many such achievements and customers in markets where liberalisation has been successfully introduced are still among those benefiting from the widest choice of suppliers and services. They also pay – compared to customers in other Member States – more cost-reflective prices on average. The Commission remains thus convinced that there is no alternative to the liberalisation process. It is, therefore, essential to ensure that existing liberalisation Directives are fully and effectively transposed[3]. However, more needs to be done before consumers can reap the full benefit.

4. The Energy Sector Inquiry has focused on identifying areas where competition is not yet functioning well and those areas which need to be addressed the most rapidly in order for liberalisation to bear fruit. For the purpose of the inquiry the key areas were grouped under the following headings: (1) market concentration/market power, (2) vertical foreclosure (most prominently inadequate unbundling of network and supply), (3) lack of market integration (including lack of regulatory oversight for cross border issues), (4) lack of transparency, (5) price formation, (6) downstream markets, (7) balancing markets, and (8) liquefied natural gas (LNG).

5. The shortcomings identified in these key areas call for urgent action and priority should be given to four areas: (1) achieving effective unbundling of network and supply activities, (2) removing the regulatory gaps (in particular for cross border issues), (3) addressing market concentration and barriers to entry, and (4) increasing transparency in market operations. The Commission's intentions concerning regulatory proposals to be made in this regard are set out in its Communication on "Prospects for the internal gas and electricity market"[4] which is presented in parallel to the Final Report.

1.1. The wider context

6. The introduction of competition in Europe's gas and electricity markets is an integral part of European energy policy which is directed at achieving the three closely related objectives of: a competitive and efficient energy sector, security of supply and sustainability. All European consumers, i.e. households, commercial users and industrial users, heavily depend on the secure and reliable provision of energy at competitive prices. Also, the achievement of the Union's goal of adequate protection of the environment is of fundamental importance as can be demonstrated by the commitment to reduce the emission of greenhouse gases in implementation of the Kyoto Protocol. The Sector Inquiry therefore has to be seen against this wider policy context.

7. European energy policy was set out in the Commission's Communication to the 2006 Spring European Council[5] concerning the renewed Growth and Jobs strategy. That Communication puts

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2 Commission staff working paper SEC(2006)1724

3 The Commission is conducting infringement procedures against a number of Member States in this respect – see further in the Commission's Communication on the Prospects for the internal gas and electricity market, referred to below.

4 Communication from the Commission: Prospects for the internal gas and electricity market COM(2006) 841.

5 Time to move up a gear -Annual Progress Report on Growth and Jobs, 25 January 2006.

the creation of an efficient and integrated energy policy at the heart of the Commission's priorities. This goal was further underlined in the Commission's Green Paper "A European Strategy for Sustainable, Competitive and Secure Energy"[6] which was adopted by the Commission in March 2006.

8. The Final Report of the Sector Inquiry is presented in parallel to the Commission's Strategic EU Energy Review[7] and the Energy Package that includes the "Communication on Prospects for the internal gas and electricity market" referred to above and the follow-up to the Green Paper. Account is also taken of the work undertaken within the High Level Group on Competitiveness, Energy and the Environment, which underlined the need for better functioning electricity and gas markets in its first report adopted in June 2006.

9. It transpires from all these documents that the three policy objectives "competitiveness, security of supply and sustainability" are closely interlinked and complementary. Competitive markets provide the necessary signals for investment, which leads to supply security in the most cost efficient manner. Similarly, the creation of a competitive internal market will allow the Union's energy companies to operate in a market of a larger dimension, which will improve their ability to contribute to security of supply. At the same time, market forces oblige European operators to use the most cost effective methods of production, which in the appropriate regulatory environment can benefit sustainability. Consumers will be able to choose between different providers and contract schemes, and could thus reduce their electricity costs and adapt their consumption to market developments. Competitive, cost reflective prices will help encourage energy efficiency, which can reduce the dependence on external suppliers and which supports the Union's objective for sustainability and security of supply.

10. The Final Report concentrates on the competition aspects of Europe's energy policy and the remaining obstacles to creating a single European energy market. Quite apart from the fact that this aspect merits a thorough analysis in its own right, the focus is also dictated by the procedural framework (Regulation (EC) No 1/2003), in which the inquiry was carried out. This does not mean that e.g. security of supply goals are not taken into account when assessing likely pro-and anti-competitive effects in the context of applying the Community competition rules in individual cases. Indeed a competitive internal market is a key instrument in delivering this objective. However in the context of the Sector Inquiry the main focus has been on competition.

1.2. The procedure leading to the adoption of the report

11. The Sector Inquiry into the European energy markets was launched on 17 June 2005. Initial results were presented in the form of an Issues Paper published on 15 November 2005. Following publication of the Preliminary Report on 16 February 2006 the Commission launched a public consultation. In their submissions stakeholders welcomed the report, generally praising its objectivity as well as the wealth of information. Contributions came from companies operating in the sector, both from incumbents and new entrants, from national regulators, competition authorities, consultancies, law firms, energy traders, grid operators, customers, industry associations and national government agencies.

12. The majority of the stakeholders support the findings, although there were variations in the assessment of the gravity of the situation and whether the situation is improving or not. As regards the possible ways forward there was both support and opposition to the ideas put forward

6 COM(2006) 105, 8.3.2006, SEC(2006) 317.

7 Communication from the Commission "An Energy Policy for Europe" -COM(2007) 1.

in the Preliminary Report such as structural unbundling, while some called for even more radical remedies. Generally speaking the vertically integrated incumbent companies were not in favour of further measures, whilst consumers, traders/new entrants and authorities supported the call for legislative initiatives.

2. THE FINDINGS

13. The main findings of the Sector Inquiry can be grouped – as indicated above – under eight headings. Whilst there are some obvious differences between the gas and electricity sectors, the many similarities and inter-relationships between the sectors plead for a common presentation.

2.1. Market concentration

14. At the wholesale level, gas and electricity markets remain national in scope, and generally maintain the high level of concentration of the pre-liberalisation period. This gives scope for exercising market power.

15. Wholesale gas trade has been slow to develop, and the incumbents remain dominant on their traditional markets, by largely controlling up-stream gas imports and/or domestic gas production. Incumbents trade only a small proportion of their gas on gas exchanges ("hubs"). With little new entry in retail markets, customer choice is limited and competitive pressure constrained. The overall picture for potential new entrants is one of dependency on vertically integrated incumbents for services throughout the supply chain.

16. Although electricity trading is more developed, sales on wholesale electricity markets generally reflect the significant level of concentration in generation. Analysis of trading on power exchanges shows that, in a number of them, generators have scope to exercise market power by raising prices, a concern also expressed by many customers. Analysis of trading positions on forward markets, which overall shows less concentration, demonstrates that the electricity markets depend on few suppliers with long positions (i.e. generate more than they resell). Analysis of generation portfolios also shows that the main generators have the ability to withdraw capacity to raise prices.

17. In the context of the inquiry, a study has been conducted on concentration levels in the electricity sector[8]. An analysis of concentration on an hourly basis shows that even during off-peak hours markets remain highly concentrated and that concentration levels, even in the less concentrated markets, reach significant levels at peak hours. The analysis based on measurements of the structure of the market in every hour also reveals that, in certain markets, long-term contracts and, to a lesser extent, the reserve requirements can reinforce concentration levels. Further, the analysis shows that the existing level of interconnection capacity is not sufficient to significantly reduce concentration.

2.2. Vertical foreclosure

18. The current level of unbundling of network and supply interests has negative repercussions on market functioning and on incentives to invest in networks. This constitutes a major obstacle to new entry and also threatens security of supply.

19. New entrants often lack effective access to networks (in gas, also to storage and to liquefied

[8] This issue is presented as a separate chapter in the Technical Annex to the Final Report.

natural gas terminals) despite the existing unbundling provisions. The operators of the network/infrastructure are suspected of favouring their own affiliates (discrimination). Vertical integration also leads to a situation where operational and investment decisions are not taken in the interest of network/infrastructure operations, but on the basis of the supply interests of the integrated company (including grid connection for competing power plants). This is highly damaging to security of supply.

20. Another form of vertical foreclosure was found to exist by way of the integration of generation/imports and supply interests within the same group. This form of vertical integration reduces the incentives for incumbents to trade on wholesale markets and leads to sub-optimal levels of liquidity in these markets. In particular, the prevalence of long-term supply contracts between gas producers and incumbent importers makes it very difficult for new entrants to access gas on the upstream markets. Similarly, electricity generation assets are in the hand of a few incumbent suppliers or are indirectly controlled by them on the basis of long-term power purchase agreements (PPAs) giving the incumbents control over the essential inputs into the wholesale markets. Low levels of liquidity are an entry barrier to both gas and electricity markets.

2.3. Market integration

21. Cross-border sales do not currently impose any significant competitive constraint. Incumbents rarely enter other national markets as competitors. Insufficient or unavailable cross-border capacity and different market designs hamper market integration.

22. For gas, available capacity on cross-border import pipelines is limited. New entrants are unable to secure transit capacity on key routes and entry capacity into new markets. Very often, the primary capacity on transit pipelines is controlled by incumbents based on pre-liberalisation legacy contracts which are not subjected to normal third party access rules. Incumbents have little incentive to expand capacity to serve the needs of new entrants. This is reinforced by ineffective congestion management mechanisms, which make it difficult to secure even small volumes of short-term, interruptible capacity on the secondary market. In many cases, new entrants have not even been able to obtain a sufficient amount of capacity when there have been expansions of transit pipeline capacity. Expansions have generally been tailored to the needs of the incumbents' own supply businesses.

23. In electricity, integration is hampered by insufficient interconnector capacity and a lack of adequate incentives to invest in additional capacity to eliminate long-established bottlenecks. In addition, on certain borders, long-term pre-liberalisation capacity reservations still exist despite the ruling of the European Court of Justice that such reservations are not compatible with EC law, unless they were notified under Directive 96/92/EC. Improving access to existing interconnectors requires better methods of congestion management. However, better use of capacity is often not in the interest of vertically integrated network operators.

2.4. Transparency

24. There is a lack of reliable and timely information on the markets.

25. Network users require more transparency going beyond the current minimum requirements set by EU legislation. Of particular importance is data relating to network availability, especially for electricity interconnections and gas transit pipelines. Data on the operation of generation capacity and gas storage also needs to be more widely available. For electricity, in particular, it was noted

that rules on proper market conduct and supervision differ significantly between Member States, as there is little harmonisation at EU level of the transparency requirements.

26. To ensure a level playing field, all market participants require information to be made available on an equal footing and in a timely manner. At present there is an information asymmetry between the vertically integrated incumbents and their competitors. Improved transparency would minimise risks for new market players and so reduce entry barriers and improve trust in the wholesale markets and confidence in price signals. Obviously it needs to be ensured that no collusion takes place on the basis of the published information and, although commercial confidentiality is important, this should not be allowed to undermine effective transparency by being given too wide an interpretation.

2.5. Price formation

27. More effective and transparent price formation is needed in order to deliver the full advantages of market opening to consumers. Many users have limited trust in the price formation mechanisms, while regulated supply tariffs below market prices discourage new entry.

28. Gas import contracts use price indices that are linked to oil derivatives (e.g. light fuel or heavy fuel) and prices have, therefore, closely followed developments in oil markets. This linkage results in wholesale prices that fail to react to changes in the supply and demand for gas, which is damaging to security of supply. No clear trend towards more market based pricing mechanisms can be observed in long-term import contracts. Ensuring liquidity is crucial to improving confidence in price formation on gas hubs, which will allow for a relaxation of the linkage to oil.

29. Electricity price formation is complex. Increases in the price of primary fuels have certainly played a role in recent electricity price developments, especially in marginal plants. However this does not appear to fully explain the recent price rises. Similarly, the effect of the EU CO2 emissions trading scheme on electricity prices is not yet entirely clear.

30. In several Member States, regulated tariffs have generated adverse effects for the development of competitive markets, since they have been set at very low levels compared to market prices and cover a large part of the market, thereby effectively leading to re-regulation. Similarly, in several Member States, special measures to reduce electricity bills for energy intensive industries have been considered. Such schemes must be compatible with antitrust and State aid rules.

2.6. Downstream markets

31. Competition at the retail level is often limited. The duration of retail contracts for industrial customers and local distribution companies can have a substantial impact on the opportunities for alternative suppliers to successfully enter the market.

32. The cumulative effect of long contract durations, contracts with indefinite duration, contracts with tacit renewal clauses and long termination periods can be substantial. The analysis shows that the degree to which the industrial customers are tied to incumbent suppliers on a long-term basis differs significantly between Member States.

33. Customers demand more competitive offers from non-incumbent suppliers and regret the absence of pan-European supply offers. The number of competitive offers that customers receive is particularly unsatisfactory in some Member States characterised by a high level of concentration.

34. For gas, restrictions on how customers can dispose of their gas, in combination with restrictive practices by suppliers regarding delivery points, limit competition and prevent the achievement of efficiencies by these customers. In electricity, certain standard contracts contain restrictions, which may also raise competition concerns.

2.7. Balancing markets

35. Currently, balancing markets often favour incumbents and create obstacles for newcomers. The size of the current balancing zones is too small, which leads to increased costs and protects the market power of incumbents.

36. For gas, the small size of current balancing zones increases the complexity and costs of shipping gas within Europe. Costs are increased by highly complex and divergent rules in each zone, and by the obligation to reserve capacity at each border point. These problems are exacerbated by the time dimension: the shorter the balancing period, the higher the risk of imbalance for the supplier. All these aspects create major obstacles for new suppliers to enter the market, which the vertically integrated incumbents have little incentive to remove. Furthermore, balancing charges, clearing costs and penalty charges are not transparent and often contain unjustified penalty charges, favouring incumbents. Effective unbundling is necessary to create a level playing field in the balancing markets and to reduce barriers to entry.

37. In electricity, the markets on which transmission system operators have to acquire balancing and reserve energy are highly concentrated, which gives generators scope for exercising market power. This can result in entry barriers for new suppliers facing a high risk of high imbalance prices and/or high network charges (to the extent that balancing costs are included in the costs of the network). Concentration in balancing markets could be reduced if the geographical size of control areas was enlarged. Harmonisation of balancing market regimes would be an important step to increase the size of control areas, improve market integration and simplify trade. In some Member States the structural relation between TSOs and their affiliated generation provides an incentive for the TSO to buy excessive reserve capacity and/or to pay high prices, thereby favouring their affiliated generation arm. Results indicate that the amount of capacity reserves bought differs substantially between TSOs.

2.8. LNG markets

38. LNG supplies widen Europe's upstream supplier base and are therefore important for both security of supply and competition between upstream suppliers. The potential for LNG supplies to favour less concentrated downstream markets still needs to be realised.

39. Traditionally LNG has been imported by national incumbents who also own LNG terminals, and this situation has prevented LNG imports from increasing downstream competition. Recent trends, however, point to more capacity going to new entrants and to producers themselves. This is likely to have a positive impact on fostering downstream competition unless such effects are frustrated by anticompetitive rules or behaviour. Strong investment in LNG terminals has taken place and is scheduled to take place in the coming years. Investments in some LNG terminals have benefited from exemptions from third party access obligations under a test applied by national regulators with Commission supervision. This test seeks to achieve a balance between ex ante incentives to invest and competition once the investment has been made. While experience is largely positive, improvements are possible.

3. REMEDIES

40. In order to address the malfunctioning of the market identified in the Sector Inquiry and to significantly improve the scope of competition, it is essential to apply both competition and regulatory-based remedies. Competition law enforcement can make a significant contribution, but cannot by itself open markets and resolve all the shortcomings identified by the Sector Inquiry: a number of regulatory measures are, therefore, also needed.

3.1. Competition law enforcement

41. Full and combined use of the Commission's powers under antitrust rules (Articles 81, 82 and 86 EC), merger (Regulation (EC) No 139/2004)[9] and State aid control (Articles 87 and 88 EC) is needed to maximise the impact of the Commission's enforcement action. The Commission is forcefully pursuing infringements of Community competition law (antitrust) in the sector wherever the Community interest so requires, in close cooperation with National Competition Authorities.

3.1.1 Market Concentration

42. Market concentration has been identified as a major concern for the success of the liberalisation process. The market power of pre-liberalisation monopolies has not yet been eroded. This makes the Community's action under the merger regulation essential so as to ensure that the competitive structure in relevant markets (which currently are at most national in scope) does not further deteriorate. In recent merger cases remedies such as divestitures, contract and/or gas release have been applied. In addition, the impact of long-term upstream contracts on downstream concentration has emerged as a major theme.

43. Energy release programmes (i.e. electricity Virtual Power Plant auctions and gas release programmes) are a means to develop market liquidity and increase entry opportunities. They constitute suitable remedies to competition concerns not only in the merger area but also under antitrust rules. In order to be fully effective they must be well-designed and large scale. Substantial experience has been gathered with such programmes by competition and regulatory authorities at national level (e.g. in Spain, France, Austria, Germany) and by the European Commission (in merger cases) allowing the authorities to avoid pitfalls and ensure their effectiveness. For gas, such release programmes have the additional advantage that they are likely to increase hub liquidity which supports the introduction of price signals not biased by the gas-oil-price link.

44. In certain circumstances applicable antitrust law also permits the application of farther reaching structural measures as a remedy to infringements of competition rules. This is the case where behavioural remedies would be less effective to bring the infringement to an end, where there is a substantial risk of a lasting or repeated infringement that derives from the very structure of the undertaking, or where behavioural remedies would be more burdensome[10].

3.1.2 Vertical foreclosure

45. Wherever competition infringements are facilitated by vertical integration between supply and generation and infrastructure businesses and insufficient unbundling, the full force of the

9 Council Regulation (EC) No 139/2004 of 20 January 2005.

10 See Article 7(1) and recital 12 of Regulation (EC) No 1/2003.

Commission's powers to prevent future abuse needs to be applied.

46. The Sector Inquiry has also confirmed the vertical tying of markets by long-term downstream contracts as a priority for review of case situations under competition law and for providing guidance where required. When such contracts, concluded by dominant firms, foreclose the market, Article 81 or 82 EC may be infringed unless there are countervailing efficiencies benefiting consumers[11]. Similarly, power purchase agreements in the electricity sector can have foreclosure effects.

47. Furthermore, the concentration of gas import contracts in the hand of a few incumbents is one of the main reasons why competition at the subsequent level of trade does not take off. Whilst this does not as such put into question existing and future upstream contracts, it requires attention with respect to their effects for the downstream markets.

3.1.3. Market integration

48. Foreclosure can also arise at other levels of the value chain, most prominently as regards access to infrastructure (transmission and distribution networks and/or storage facilities), particularly in cases where cross-border access is concerned, thereby preventing market integration. Such access can be blocked through long-term transmission contracts and through the associated risk of capacity hoarding. Action in this field should include an analysis of the competition effects of pre-liberalisation long-term contracts and the compatibility of such contracts with competition rules.

49. Additionally, lack of investment and delayed investments by transmission companies with vertically integrated supply companies are other serious sources of concern. It is recalled that one National Competition Authority has found that a vertically integrated network operator deliberately stopped an investment project in order to benefit its supply branch by depriving competitors of access to more capacity[12].

50. Market partitioning remains one of the most serious obstacles to market integration. The fight against collusion between incumbents remains a priority of antitrust enforcement action, reflecting the overall priority of the Commission to fight attempts by undertakings to coordinate rather than to compete.

3.2. Structural issues and pro-competitive regulatory environment

51. The findings of the Sector Inquiry will enable the Commission to focus its enforcement action on the most serious concerns identified in the report. They also make it easier for the Commission to identify efficient remedies that can effectively resolve the competition problems identified in individual cases.

52. However, key issues relating to market structure and the regulatory environment will have to be addressed in parallel, in order to remedy the malfunctioning of the markets that has been demonstrated by the inquiry.

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11 In the analysis of long-term contracts, sunk investments, if any have been made by the parties, are taken into account -see Commission Guidelines on the application of Article 81(3) of the Treaty (OJ C 101, 27.4.2004, p. 97, paragraph 44).

12 The Italian Competition Authority has recently taken action against the delaying tactics of an incumbent operator to expand an important import pipeline.

The Sector Inquiry has identified the following main fundamental deficiencies in the competitive structure of current electricity and gas markets:

Structural conflicts of interest: a systemic conflict of interest caused by insufficient unbundling of networks from the competitive parts of the sector;

Gaps in the regulatory environment: a persistent regulatory gap particularly for cross border issues. The regulatory systems in place have loose ends, which do not meet;

A chronic lack of liquidity, both in electricity and gas wholesale markets: the lifeblood for our markets is lacking and the market power of pre-liberalisation monopolies persists;

A general lack of transparency in market operations in the sector.

Options for regulatory action at EC level are discussed by the Commission in its Communication on "Prospects for the internal gas and electricity market". The findings of the Sector Inquiry and the resulting deficiencies identified below support and confirm the analysis brought forward by the Commission in that Communication.

3.2.1. Unbundling

53. The Sector Inquiry confirms the finding that it is essential to resolve the systemic conflict of interest inherent in the vertical integration of supply and network activities, which has resulted in a lack of investment in infrastructure and in discrimination. It is crucial to ensure that network owners and/or operators do not have incentives that are distorted by supply interests of affiliates. This is particularly important at a time when Europe needs very large investments to ensure security of supply and to create integrated and competitive markets.

54. To achieve this, it will be necessary to decisively reinforce the current inadequate level of unbundling. This would, in turn, also facilitate cooperation among network operators.

55. Economic evidence shows that full ownership unbundling is the most effective means to ensure choice for energy users and encourage investment. This is because separate network companies are not influenced by overlapping supply/generation interests as regards investment decisions. It also avoids overly detailed and complex regulation and disproportionate administrative burdens. The independent system operator approach would improve the status quo but would require more detailed, prescriptive and costly regulation and would be less effective in addressing the disincentives to invest in networks.

56. Furthermore, the public consultation has not revealed any significant synergy effects linked to vertical integration. Indeed, where ownership unbundling has been implemented, experience shows that both the network business and the (production and) supply business continue to thrive after separation.

3.2.2. The regulatory environment

57. Whilst ownership unbundling would substantially contribute to reducing problems of market power and lack of liquidity, it is clear that also other measures will be needed. As the Sector Inquiry confirms, Europe needs a substantial strengthening of the powers of regulators and enhanced European coordination. This goes in hand with the findings presented by the Commission in its Communication on "Prospects for the internal gas and electricity market". Only a strengthened regulatory framework can provide the transparent, stable and non-

discriminatory framework that the sector needs for competition to develop and for future investments to be made.

58. The main ingredients of such a strengthened framework should be:

-enhanced powers for independent national energy regulators,

-reinforced coordination between national energy regulators,

-reinforced cooperation between Transmission System Operators (TSO), and

-substantially enhanced consistency of regulation in cross-border issues.

59. Reinforced coordination between national energy regulators, with a stronger role for Community oversight to ensure the Internal Market interests, particularly as regards cross-border issues and areas most critical for market entry, will be necessary to overcome the current regulatory cross-border gap which cannot be remedied by application of competition rules alone. Options for regulatory measures are discussed in the Communication on "Prospects for the internal gas and electricity market".

3.2.3. Chronic lack of liquidity

60 Reinforced unbundling rules and an improved regulatory environment for cross border issues in particular should, in the medium term, substantially reduce the problems of market power and lack of liquidity in a sustained manner, by bringing additional supplies to concentrated national markets. However, there remain serious concerns in the short term, as regards the lack of sufficient liquidity and sustained market power in wholesale markets, which is leading to higher prices in retail markets just as full liberalisation is to be implemented on 1 July 2007.

61. As already indicated, competition law enforcement will be an important tool to address any anti-competitive conduct concerning this issue. However, more may be needed. As the levels of concentration in gas and electricity markets have remained high, often reflecting pre-liberalisation monopolies, national energy regulators should analyse conditions in their respective markets in co-operation with competition authorities and make appropriate proposals. Measures taken in the past by a number of Member States include release programmes (i.e. electricity Virtual Power Plant auctions and gas release programmes).

62. It is also recalled that certain Member States have introduced under national law ceilings on ownership of electricity generation and control over long-term upstream gas contracts (imports and national production), as an effective measure to rapidly reduce market power. For electricity, such measures could imply either divesture or asset swaps of power plants on a European scale. For gas, it could mean contract release, contract swaps and/or divesture of domestic production, as have been applied in recent merger cases. Widening of small TSO areas and introducing more open and flexible tendering procedures for balancing energy could reduce the current high levels of concentration in balancing markets and remove obstacles to entry, with a positive knock-on effect in wholesale markets.

63. Furthermore, the Sector Inquiry has highlighted the importance of enhancing the scope for entry through investment in new generation and gas import infrastructure as well as strict application of use-it-or-lose-it provisions for infrastructure and suitable generation sites.

3.2.4. Lack of transparency in market operations

64. There is general recognition that access to market information should be further enhanced. All relevant market information should be published on a rolling basis in a timely manner. Any exceptions should be very strictly limited to what is required to reduce the risk of collusion. Guidelines as well as monitoring and eventually adaptation of existing regulation should serve to further enhance transparency in the gas and electricity sector. Intended proposals are outlined in the Communication on "Prospects for the internal gas and electricity market".

3.2.5. Other important issues

65. In addition to these four fundamental areas, other issues of pro-competitive market environment need consideration. On these issues, specific suggestions for regulatory action at EC level are made by the Commission in its Communication on "Prospects for the internal gas and electricity market".

66. Regulated retail tariffs can have highly distortive effects and in certain cases preempt the creation of liberalised markets. It is of crucial importance to assess the impact of remaining regulated supply tariffs on the development of competition, and remove distortions[13].

67. In order to achieve that access to new infrastructure is not unduly restricted, the Commission should continue to ensure that exemptions from access provisions are not detrimental to the development of competition. It is important that projects continue to be scrutinised on a case by case basis with strict application of competition principles striking a proper balance between incentives for ex ante investment and ex post competition, and that the exemption procedures are streamlined.

68. In order to achieve a single European network from the perspective of the network user, there is a need for appropriate harmonisation of market design, especially regarding methods having an effect on cross border trade. Action is needed, wherever current capacity is insufficient, to develop interconnector capacity as a necessary condition for the development of competition and the integration of markets. These aims can only be achieved through increased cooperation between national regulators inducing increased cooperation among TSOs across national borders within a well-defined procedural framework.

69. In order to put more gas transmission capacity on the market, it will be important to clarify the legal position of pre-liberalisation long-term gas transmission contracts under the Second Gas Directive[14], which are already now subject to strict use-it-orlose-it rules and to the rules of competition law.

70. Further changes are needed regarding the method for allocating limited interconnector capacity. For electricity, implicit day-ahead auctions or equivalent measures should be promoted as much as possible to ensure that interconnectors are used to their maximum extent. TSOs should also

13 For the household market segment, there is a need to strike the right balance between competition and universal public service obligations.

14 Directive 2003/55/EC of 26 June 2003 concerning common rules for the internal market in natural gas (OJ L 176, 15.7.2003, p. 57). Replaces the First Gas Directive.

have incentives to maximise the amount of cross border capacity made available to the market[15].

71. In order to provide sufficient guarantees for effective access, third party access for gas storage should be reviewed so as to strike the right balance between the need for effective access and maintaining incentives for new storage developments.

72. A monitoring system for trading on wholesale markets (e.g. power exchanges) would increase market participants' confidence in the market and limit the risk of market manipulation. Regulators should be empowered to collect and exchange relevant information in this respect. They should have the power to make recommendations for enforcement action or have the power to carry out such enforcement action themselves.

4. CONCLUSION

73. The Sector Inquiry has identified a number of serious shortcomings which prevent European energy users and consumers from reaping the full benefit of the liberalisation process. The findings support the conclusions of the Communication on "Prospects for the internal gas and electricity market", which has been carried out by the Commission in the follow up to the Green Paper and in the course of the preparation of the Strategic EU Energy Review. These initiatives bring forward the Commission's intentions as to proposals for regulatory reform, aiming at an Internal Market for energy that contributes to sustainability, competitiveness and security of supply. In addition, and in parallel, the Final Report also draws conclusions with regard to enforcement action under EC competition law. Both these documents aim at identifying and remedying obstacles to creating a single European energy market, in which consumers fully benefit from the opening of markets to competition.

[15] E.g. Scarce capacity that is kept in reserves by some TSOs for emergency situations may be offered to the market as interruptible capacity, and can be bought back when required, using for instance cross border congestion rents.

BRAZIL

POLICIES FOR BRAZILIAN ENERGY SECURITY

1. Introduction

The energy security is a permanent issue of any country's national policy, and it is motivated by several reasons, such as national sovereignty or economical issues. In Brazil, important changes in the institutional framework and economic regulation have taken place in the last few years in order to promote energy security and the sustainable development of the energy sector.

In this scenario, this paper intends to present two actions to improve the Brazilian energy security concerning with the role performed by natural gas and its competition aspects involved like: (i) the new legal framework for the natural gas industry; and (ii) the reduction of external dependence and diversification of natural gas imports.

This work will first discuss the Brazilian Power Sector generation and the role played by natural gas industry. After this, it will be possible to list the actions that have been taken to guarantee the energy security, in other words, to avoid an unbalanced demand-supply in the Brazilian energy market[1].

2. Brazilian power sector and the natural gas industry

The Brazilian power sector has particularities that differs it from the general global standard, such as the prevailing hydraulic electricity generation and a wide transmission system, mostly interconnected. In general, the transmission lines cross large distances in order to link the hydroelectric power plants to consuming centers (markets). Some states in the north side of the country do not belong to the interconnected system and they are supplied by small thermal power plants or by neighboring hydroelectric power plants.

The prevailing hydroelectric power generation (77% of the total electric energy available in the market) is due to Brazilian natural endowment characteristics, including a high volume of surface waters. The natural gas thermoelectric power plants role (only 4% of the whole generation) is to provide security to electric energy supply. In this sense, the thermal power plants are not responsible for continuous electrical supply, but mainly to complement the hydroelectric generation owing to vagaries of rainfall. In such situations, when the water reservoirs of National Integrated System (NIS) have less water than expected, the thermal generation must supply energy. Otherwise, the present or future energy supply would be jeopardised.

Such generation system features require coordinated operation (energy dispatch) of the power plants in order to optimise the use of available resources. The great number of hydroelectric plants work integrated so as to make good use of climatic diversity in the different hydrographical basins.

[1] As a matter of fact, the expression energy safety can assume several meanings. This work defines energy safety as a risk mitigation of unbalance between demand and supply of energy. Such an unbalance may be related to either domestic factors or external ones (which refer to imports dependence for energy or its generation related inputs.

Since the energy from the thermal power plants is only dispatched when hydroelectric plants have their energy dispatches restricted, those agents play a central role in energy supplying security policy. Their operation is complementary to hydroelectric dispatch. An increase of the system risk (energy deficit) may happen if there is not enough input (natural gas or another energetic source) to thermal power plants.

In fact, given thermal power plants are complementary, there is no competition between them and the hydroelectric power. The competition takes place among sources used for their operation, such as natural gas, fuel oil, uranium (in case of thermonuclear plants) and biomass.

Because of the significant function that thermal power plants will continue to perform in Brazilian power sector, the natural gas market consolidation is relevant. It will help to guarantee the required thermal power expansion.

In order to avoid electric energy supply crisis during low rainfall periods, strategic actions involving natural gas have been taken, mostly by the supply side. The main actions are: (i) domestic production development and natural gas imports diversification; (ii) a new legal framework.

3. Reduction in the external dependence on gas imports and diversification of natural gas supplying countries

The use of natural gas by thermal power plants has been increasing since the end of 90's. Because of that, Brazil has also been expanding the supply of this product in the domestic market.

This process has begun with natural gas imports from Bolivia by a pipeline connecting the Bolivian production areas to Brazil. The gas transported through this pipeline represents 96.2% (an average of 23.7 million m^3/day in 2005) of the Brazilian imports of this product. The remaining 3.8% (an average of 0.94 million m^3/day) are imported from Argentina, which recently interrupted the supply to Brazil because of power shortage.

This dependence on Bolivian gas was not a problem until recently, when the new Bolivian Government decided to introduce changes in the gas sector. In this scenario increasing the gas domestic supply and diversifying the imports of this product is a way to guarantee the Brazilian energy security.

3.1 Increasing the domestic production

The choice to increase the domestic gas production was made in order to ensure the energy security and because Brazil has reserves to do that. In fact, more reserves have been discovered. In 2005, the Brazilian natural gas reserves were 454 billion m^3 (of which 75%, or 339 billion m^3, in maritime fields).

The proven reserves (reserves with high degree of profitable exploitation) have also grown substantially during the last 40 years. In 2005, these reserves reached 306.4 billion of m^3 against 16.5 billion m^3 in 1964 (average growth rate of 7.4% per year).

In Brazil, there is a positive correlation between natural gas reserves growth and petroleum exploitation. It is explained by the predominance of oil-associated gas over non-associated gas. However, the discovery of non-associated natural gas reserves is changing it. The most important one is Santos Basin Reserve. This basin has about 42% of the new fields of natural gas.

Over the last years, the exploitation of these reserves has been intensified. The natural gas production grew about 11.7% a year in the period 1954-2005. In 2005, the production reached 48.5 millions m^3/day (53% from maritime fields).

In the face of this domestic potential to be exploited, ANP (the Brazilian agency for oil and gas regulation) is prioritising authorisation for exploitation of these fields. This action will reduce the dependence on gas imports as well as it will increase the Brazilian energy security.

3.2 Diversification of natural gas sources

In order to diversify gas supply sources, Brazilian government has included as objectives of the national energy policy: (i) enhancement of the South America energy integration and (ii) Liquefied Natural Gas – LNG imports.

The South America energy integration will be driven by the complementary status among these countries: there are net exporters (Venezuela and Bolivia) and net importers (Brazil and Chile). This cross-border trade has increased as the result of the bigger participation of natural gas in the power sector in the last years. This energy integration can supply a cheaper natural gas than the imports of LNG.

The gas integration in South America has been characterised by a bilateral model. It began in the early 1970s, when the first international gas pipeline connecting Bolivia to Argentina was built. Later, two pipelines started to operate: GasAndes (in 1997) and Gasbol (in 1999). The first one connects Argentina to Chile and the second one connects Bolivia to Brazil. Indeed, Gasbol contributed to increase the Brazilian thermal power capacity in the beginning of 2000s.

International integration introduces additional concerns in regard to uncertainties. In South America, political and economic risks are outstanding as well as the regulatory and financial ones. Almeida (2005) identifies the following aspects as barriers to encourage private investments in this continent: energy policies and regulatory frameworks asymmetries, lack of price regulation to power sector, and currency volatility.

According to this author, the absence of a regional strong currency to be used in energy trade transactions is an obstacle to consolidate this integration. As the external account equilibrium depends on the dollar flows to the countries, the currency volatility plays a key role in investments performances.

For example, Argentina, where natural gas has a large participation in the power sector, had its gas market affected by its energy policy and economic issues. In 2002, after the end of the currency board regime, the domestic price of natural gas (in the local currency) increased dramatically. The government policy of maintaining fixed prices to natural gas was useful as way to keep the inflation down, but it caused undesirable impacts on the investments in the natural gas industry. Later, in 2004, a power rationing took place in Argentina as result of the low level of investments in this sector. As a consequence, the domestic energy supply and the natural gas exports (that depended on the local consumption) were curtailed.

In a similar way, economical and political issues have inhibited projects to expand the regional natural gas network in South America. One of them is Northwest Pipeline, the main investment of the Argentinean Strategic Plan for 2004-2008. The other one is the expansion of Gasbol, whose public bidding in order to identify possible agents interested in using the transportation service has been interrupted two times. The last interruption has occurred due to uncertainty about the Bolivian government policy to natural gas industry.

According to Kozulj (2006), the South America's projects involving natural gas include 22,000 km of pipelines (74% in the Brazilian territory). The greatest pipeline, "*Gasoduto do Sul*" will integrate Venezuela, Brazil, Argentina, Paraguay and Uruguay. This pipeline is planned to run 10,000 km. According to the project, it will transport 150 million m^3/day. Brazil and Venezuela signed, in last January, a joint statement to study the implementation of the first phase of this project. It will connect Mariscal Sucre gas fields, in Venezuela, to Suape Seaport**,** in Brazil. This phase will run 5.000 km and the pipeline

would be able to transport 50 million m^3/day. The statement is the first phase of the project. After this step, the conceptual project will be elaborated until the end of this year. Finally, the basic engineering project should be finished in 2009.

Considering the high investment levels required by natural gas industry, and the risks and transactions costs involved, South American Governments should have integrated policies involving some issues like: investments coordination, regulation, and guarantees to support the supply.

With respect to LNG imports, the main Brazilian natural gas producer (Petrobras) has initiated the construction of two regasification plants. They will be able to produce 20 millions m^3/day from 2008 and 2009 onward (when they will start their operation). Most of this capacity will supply gas to thermal plants. It is a way to guarantee the energy supply during the drought period and it can also reduce energy price.

As a consequence of LNG imports, more flexible contracts among thermal plants and the supplier of this product will be signed. Nowadays, these plants must pay the pipeline owner even without energy production. The use of LNG will allow thermal power plants purchase natural gas in international market when the LNG price is low. The explanation for this fact is simple: energy generation requirement by thermal power plants in Brazil happens in a period of the year when the other countries reduce their natural gas demand.

4. A new legal framework for the natural gas sector in Brazil

For achieving both objectives (increasing the domestic production of natural gas and diversifying import supply) it is important a well designed legal framework. Besides that, this legal framework must promote competition and investments.

In Brazil, the current legal framework (Law n^o 9,478/97) does not consider some features from natural gas sector. This law focuses on the oil industry. Because of that, the Congress has been discussing a new legal framework since 2005. There are two bills concerning this subject[2].

Both bills contemplate an important characteristic of the natural gas chain: the interaction between competitive and non competitive sectors. Transportation by pipelines and distribution of natural gas are natural monopolies. As a consequence, the monopolist carrier can use the essential facility control to reduce competition in the competitive segments (like production and exploitation).

With respect to natural gas transportation, the bills in Congress establish that this activity will be done through concession contracts (after public biddings)[3]. Public biddings will follow transparency and equity principles, regulated by ANP (the Brazilian agency for oil and gas regulation) which will consider criteria for project dimensions, pickup and delivery points, the maximum transportation tariff and the methodology used for its calculation and conditions for changes in project components. The projects make clear that concessions for natural gas transportation will be given to companies that only develop this type of activity[4].

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2 One of these bills was written by the Executive and the other one by the Legislative. They have similarities and divergences.

3 According to one of the bills, authorisation contracts will be possible in some kind of pipelines. The difference between authorization and concession contracts is that de first one does not have some guarantees as the assured profitability to carriers.

4 But, according to both bills, another firm from the same group of the transporter can perform in other sectors of the natural gas supply chain.

Besides the exclusivity requirement to operate in the transportation sector, both projects created rules for carriers that perform in more than one segment of the natural gas chain. If an economic group wants to act in other segment beyond transportation or distribution, it will be necessary to create distinguished firms for that. This requirement helps the regulatory and competition agencies to investigate anticompetitive conducts like discriminatory practices, mainly in situations where the monopolists are involved.

To reduce the risk of dominant position abuse by the monopolist transporter, both bills establish that any carrier interested in using natural gas transportation service is allowed to develop this activity as long as tariff payments are made. In fact, before the public bidding to select the transporter carrier, ANP will identify all carriers interested to use the transportation service. From this point, ANP will define the pipeline dimensions. These carriers will have to pay the transporter by the availability capacity. It is a way to stimulate investments in the transportation sector and to reduce free riders agents[5]. Besides that, capacity offer will be publicly announced by the carrier in the presence of available transportation capacity.

The projects also detail the principles behind natural gas transportation tariffs. According to one of the projects, the tariffs will be fixed by the Executive. The other one establishes that tariffs will be fixed in the public biddings. It is also important that the regulation prohibits the discriminatory treatment to avoid price squeeze conduct by the monopolists.

Considering the distribution of pipelined gas, each Brazilian state will exploit local services either directly or through concessions. Concessions can be granted only to firms that exclusively perform this type of activity. Besides that, both bills keep the possibility that, in the future, residential and non-residential users will be able to acquire the product from any seller that uses distributors' pipeline networks to transport the product to their facilities[6].

The expectation is that this new legal framework will: attract investments to develop the natural gas industry in Brazil, bring new firms and increase the competition in this sector.

5. Conclusions

In the Brazilian power sector, the thermal generation is important because of the vagaries of rainfall (mainly during the severe drought period). As the main source of thermal generation is the natural gas, it is a key element to energy security in Brazil.

Taking this fact into account, Brazil is establishing a new legal framework for the natural gas sector. The objective is to improve the atmosphere for investments and, consequently, to increase the domestic production.

Besides that, Brazil is trying to diversify the foreign sources of natural gas. Nowadays, Bolivian gas represents more than 90% of the Brazilian natural gas imports. The diversification will be possible with pipelines among Brazil and others countries from South America and by GNL imports.

Others solutions can be adopted. Brazil has been using more sources in thermal generation like uranium and biomass (mainly from alcohol production). These inputs can be able to become competitive substitutes to natural gas in thermal generation and it will reduce Brazilian dependence of this product. However, such alternatives were not the focus of this paper.

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5 Some carriers can require the access after the pipeline construction. This could jeopardize those carriers that contributed with the construction.

6 The bills focus on the transportation sector because just the Brazilian states can legislate about distribution sector.

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LITHUANIA

1. What is energy security and how much is it worth?

Energy security may be described shortly as a reliable and diversified supply of energy at a reasonable (or market) prices. Effectively functioning energy sector is a backbone of the economy of every modern state. Therefore threats to energy sector may have direct or indirect impact on state's economy and national security. Growing deficit and prices of traditional energy resources and the need to take into account climate change requirements make impact to energy security.

Energy security is not a problem until it remains an economic category and is solely used for economic purposes. But in the 21st century we can see growing temptation to use energy as a political tool in the international relations. Therefore energy security becomes a part of foreign diplomacy. Tendency to use energy as a political leverage can be explained by the consequences of globalisation. World energy sector develops in contradiction with the processes of globalisation. 85-90% of world energy is concentrated in the national state owned companies with a growing inclination to further re-nationalisation and monopolisation. Redistribution of energy supply and demand centers in the world also contributes to the "energy politisation."

It must be noted that both energy supply and demand may be used as political tool. Therefore binding rules based on competition, transparency and non-discrimination in the global energy relationship between the energy producing and consuming countries would be desirable thus helping to prevent geopolitical tensions in the world related to energy resources.

Russia as an energy partner deserves special attention. Russian vertically integrated monopolies dominate in the supply of energy to Europe. Some of the EU states depend on one single monopoly supplier of energy. From the economic and security point of view it is not acceptable. Energy relations with Russia must be balanced better. Most of the European energy companies are not even comparable in size and strength with Russian hyper-monopoly Gazprom. In parallel with the ongoing liberalisation of energy market in the EU by unbundling of the monopolies, EU should elaborate effective safeguards against eventual distortion of competition by the vertically integrated monopolies from the third countries.

Lithuania is not interconnected with energy infrastructure of European Union because of historical heritage and is considered as an "energy island" in European Union. Therefore energy security is a top priority of Lithuanian State.

Lithuania imports all its natural gas from a single source which is the Russian Federation. Domestically produced nuclear energy presently accounts for the largest share in the primary energy supply (approximately 30% in 2005) and a large percentage of the electricity generated (approximately 70% in 2005). The second largest share in the primary energy supply belongs to oil (approximately 31%) and the third largest share belongs to natural gas (approximately 28%). Natural gas is very important for the whole economy now and its importance will only increase after the only nuclear power station in Lithuania is decommissioned in 2009. Reliability of natural gas supply is posing a problem of national security now and it will become more acute in case Lithuania is not able to secure the alternative sources of natural gas supply from countries other than Russian Federation. It is difficult to quantify the worth of energy security but clearly, it is a necessary condition for the sustainable growth of the economy.

2. What is the effect of competition on energy security?

In general, competitive markets make industry supply as efficient as possible and eliminate undue market power and supra-normal profits. Transparent and liquid wholesale markets for energy provide clearer signals and encourage efficient use of energy. There is no reason to believe that natural gas market could be an exception. Therefore the only suitable way to ensure energy security for customers in Lithuania is to create as much competition as possible on the market starting with diversification of supply.

At present time the only technically possible supply alternative to Russia's Gazprom OAO is an underground natural gas storage facility in Latvia. Unfortunately, this does not help much because Latvia gets its natural gas also from the same source and the majority of natural gas stored in this facility is owned by Gazprom OAO. The dependency on a single import source is further exacerbated by the isolation from the gas infrastructure of the rest of Europe. The Government of Lithuania is exploring possibilities of constructing interconnections with the gas pipelines of other EU countries and especially its southern neighbour Poland. According to the public statements of the Presidents of both countries such interconnection of pipelines is needed to ensure and strengthen the energy security in Central and Northern Europe[1].

Lithuania and Poland recognise that geographical location of both countries makes it difficult to find the alternative sources of natural gas supply. The most promising alternative source is the Caspian Sea region because such countries as Azerbaijan, Kazakhstan, and Turkmenistan are rich in natural gas resources. The major problem for Lithuania in diversifying natural gas supply sources is to find a way to circumvent the transmission pipelines controlled by Gazprom OAO. The Russian Federation refuses to ratify the Energy Charter and therefore Gazprom OAO avoids EU's rules of competition in non-EU markets. Furthermore, in 2006 Russian Duma passed the legislation which granted exclusive rights to Gazprom OAO to export gas from Russia to Europe. This makes it impossible to Lithuania to get gas from the alternative supply sources through the gas transmission system operated by Gazprom OAO. Although a successful common European energy policy could in the future change the situation for the better, other alternatives must be explored as well.

Privileges granted to Gazprom OAO by the Duma only strengthen the situation that has existed for over a decade. Gazprom OAO purchases gas from Kazakhstan, Turkmenistan and to a lesser degree from Uzbekistan at low prices and sells it to the European customers at much higher prices. One of the most significant changes that could expand export possibilities from the Caspian region to Europe is South Caucasus Pipeline. It should open access to gas from Azerbaijan although it is not clear yet how it might affect the gas exporters in Central Asia. In 2006 the major energy companies of Turkey, Bulgaria, Romania, Hungary, and Austria established the Nabucco Gas Pipeline international Company which should develop the gas pipeline connecting these countries. This project has the utmost importance to Europe because presently both Iran-Turkey gas pipeline and the South Caucasus Pipeline have Turkey as the final destination. This could help the EU to find the alternative ways to Middle Eastern, Caspian and possibly Central Asian gas and reduce its dependence on the most important natural gas source. Lithuania could benefit from the Nabucco project if it was extended towards Poland. The recently announced Georgia-Ukraine-European Union pipeline project could be a third possible way to deliver gas from Azerbaijan to Europe avoiding Gazprom OAO infrastructure. Such project would potentially benefit Lithuania if its infrastructure became interconnected with Poland.

[1] "Polish, Lithuanian Presidents Call for Pipeline Connection," *Interfax News Agency*, 5 September 2005.

Another possibility to avoid or at least reduce the dependence on a single supply source is to get a reliable access to a LNG terminal. Presently Lithuania is exploring the possibilities of co-operating with Poland, Latvia and Estonia in building such terminal in the Baltic region[2].

Probably the best way to improve resilience to supply shocks is by employing emergency stocks. At present time Lithuania is performing research works to build the domestic underground storage facility. Also participation in the future expansion of the underground storage facility in Latvia is under discussions.

The isolation of Lithuanian gas infrastructure from the rest of Europe and the inevitable reliance on the single source of supply severely distorts the functioning of the domestic gas market. The liberalisation of the natural gas sector was started in 2000, when the Parliament adopted the Law on Natural Gas. Although all customers with annual consumption of natural gas exceeding 1 million cubic meters were eligible to choose their supplier in 2004, the opening level of the natural gas market has been stable since then. A new draft of the Law on Natural Gas has been submitted to Parliament for consideration. In this draft, all provisions of the Directive 2003/55/EC are to be implemented including the requirement to open the gas market to all consumers on 1 July 2007. No matter how good these legislative measures could be, they would not introduce the additional wholesale suppliers of natural gas in a country with a single source of supply. In 2005 and 2006 there were only two wholesalers (Lietuvos Dujos AB and Dujotekana UAB), that purchased their natural gas under pre-defined quotas from Gazprom OAO and supplied all customers eligible to choose their supplier. Although the National Control Commission for Prices and Energy (NCC) has issued several supply licenses no other supplier has entered the market so far. One of the reasons why entry did not occur is the duration of the long term contracts between Lietuvos Dujos AB and Gazprom OAO (until 2015) and between Dujotekena UAB and Gazprom OAO (until 2012). Unusually long contracts are permitted because Lithuania has decided to apply the provisions of article 28 of the Directive 2003/55/EC (emergent market). Lietuvos Dujos AB[3] supplied 62% and Dujotekana UAB[4] supplied 38% of the total natural gas requirement of the eligible customers in 2005. The eligible customers had only two suppliers to choose from; therefore one of the suppliers was able to exercise a significant influence on natural gas prices. Lietuvos Dujos AB sold natural gas with profit margin that could not exceed 15% because the owners of this enterprise were obligated not to violate such a condition of the privatisation agreement signed with the Government of Lithuania. The other wholesale supplier Dujotekana UAB was able to get almost 21% profit margin in 2005.

Lietuvos Dujos AB supplies not only the eligible customers but also the regulated retail market where natural gas is purchased by households. According to the national law, gas companies selling natural gas to households are obliged to have their retail gas tariffs approved by the Regulator and can not exceed the approved tariff. According to the Directive 2003/55/EC, this is a public service obligation (PSO) which has to be notified to the European Commission. There is the on-going discussion in Lithuania concerning the extent of gas market liberalisation and regulation including the need for tariff regulation. Opponents of price regulations usually argue that there is little economic sense to exercise price regulation on the domestic market when it is Gazprom OAO that has the market power and is outside the reach of the national regulator.

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2 *National Strategy on Energy*, approved by Seimas of the Republic of Lithuania on 18 January 2007.

3 Lietuvos Dujos AB is owned by Gazprom OAO (37.1%), E. ON Rurhrgas (38.9%), the State Property Fund (17.7) and private individuals and legal persons (6.3%).

4 According to the official information provided by the Gazprom OAO and Dujotekana UAB, the former does not have any direct or indirect shareholdings in the latter.

One of the wholesale suppliers Lietuvos Dujos AB also operates the natural gas transmission system and the largest of the distribution networks. Six local distribution systems are managed by other private operators. The Law on Natural Gas provides that vertically integrated gas undertakings must keep separate accounting systems for gas transmission, distribution, storage, and supply activities. Accounting systems for all activities must be handled in such a way as they would be handled, if such activities were carried out by separate undertakings. Legal unbundling of natural gas transmission and supply is not implemented because the current Law on Natural Gas does not contain the requirement for legal unbundling of vertically integrated natural gas undertakings. Lithuania has applied the provisions of article 28 of the Directive 2003/55/EC (derogation because of an emergent market). Consequently, the gas transmission system and the largest gas distribution system are operated by the same undertaking that is also the largest supplier of natural gas. The market opening and unbundling requirements may not be met until 2010.

Despite a clear lack of competition on the domestic market and a single source of supply, the natural gas prices in Lithuania are among the lowest among the EU Members States. The prices for households in 2006 were about 47% below the European average although they have increased by 14.5% since 2004. Similarly, the gas prices for industrial customers were 46% below the European average. Nevertheless, it is expected that from 2007 natural gas prices will begin to approach the Western European prices and will reach 220 USD for 1000 cubic meters[5].

3. Does applying competition law help to increase energy security?

In 2002 the Competition Council received a notification from Ruhrgas AG and E.ON Energie AG concerning their intentions to acquire 34 percent share of Lietuvos Dujos AB during its privatisation. After the clearance of the notified merger Ruhrgas AG and E.ON Energie AG together with the State Property Fund have acquired joint control of Lietuvos Dujos AB. Later that year the Government of Lithuania invited companies to participate in an international tender to become a natural gas supplier to customers in Lithuania and to acquire 34 percent shareholding in Lietuvos Dujos AB. Gazprom OAO was announced a winner of the tender. On 23 January 2004 the Government and Gazprom OAO signed an agreement establishing that Gazprom OAO will supply Lietuvos Dujos AB with the quantity of natural gas that satisfies at least 70 percent of the total requirement of all customers in Lithuania[6] which will be expressed by Lietuvos Dujos AB. The discretion of Gazprom OAO was not restricted with respect to how to supply the remainder of the total requirement.

The Competition Council took into account the fact that Lietuvos dujos AB had a dominant position in the markets of natural gas transmission and distribution. Gazprom OAO was and still is the only feasible supplier of natural gas into Lithuania. Transmission network that belongs to Lietuvos dujos AB was not connected with the networks of other EU Member States, except Latvia. The latter country also receives its entire natural gas requirement from Gazprom OAO. Technically it is possible to receive natural gas from other companies in Russian Federation or former Soviet Republics in Central Asia. However, their ability to deliver natural gas to Lithuania is very remote because it is severely limited not only by the capacity of the transmission network that is operated by Gazprom OAO but also by the policy of the Russian Federation.

The Ministry of Economy of Lithuania expressed a written opinion that the agreement concluded between the Government of Lithuania and Gazprom OAO does not preclude the eligible customers from entering into purchase agreements with other suppliers of natural gas. The Competition Council decided to

5 *National Strategy on Energy*, approved by Seimas of the Republic of Lithuania on 18 January 2007.

6 Excluding the two largest industrial consumers of natural gas in Lithuania, that is Achema AB and Kauno Termofikacine Elektrine UAB. These undertakings import natural gas for their own needs and do not participate in the domestic wholesale market of gas as sellers.

allow Gazprom OAO to implement concentration according to the submitted notification by acquiring a 34% shareholding of Lietuvos dujos AB and acquiring joint control with State Property Trust, Ruhrgas AG and E.ON Energie AG. The permission was issued subject to the condition that undertakings participating in the concentration will not create any obstacles for gas suppliers holding appropriate licenses and having concluded contracts with buyers in Lithuania, as well as consumers using gas for their own needs to conclude the gas purchase contracts with any natural gas production or supply company, as well as other undertakings producing natural gas to supply it to buyers in Lithuania.

4. What are the limits to the application of competition law in this area?

In the case study presented above the Competition Council took all necessary steps to ensure that the merger would not create barriers to entry. This case is also relevant to the question to what extent state actors are subject to competition law and to what extent enterprises compelled to behave in an anticompetitive way by a foreign government are subject to competition law. We believe that anticompetitive conduct of Gazprom OAO with respect to alternative gas suppliers for Lithuanian customers could result in revocation of merger clearance because the Competition Council issued only a conditional clearance for the merger in which Gazprom OAO has acquired 34% shareholding of Lietuvos Dujos AB. However, all actions of the foreign government are beyond the reach of the national institution responsible for competition policy. Therefore the exclusive rights to export gas from the Russian Federation to Europe granted to Gazprom OAO by the Duma of the Russian Federation allow this subject to behave in anticompetitive way and creates immunity against possible investigations by the foreign antitrust agencies.

Finally, it seems that attention should be paid to another limitation of the competition law. Competition law, at least when confined to antitrust matters and merger control, is typically designed to prevent certain actions of market players. The latter are expected to act as profit maximising entities. Fro example the SSNIP test employed in the market definition explicitly assumes profit maximising behaviour. Post-merger effects are simulated in oligopoly settings using game theoretical models that also assume profit maximising market players. Therefore one can wonder whether the antitrust law can prevent an undesirable behaviour of an entity which may not be a profit maximising in a reasonably defined relevant market. Such an entity could be a foreign government and its conduct might be very different from a profit-maximising business entity. This leads to a conclusion that in merger review (or some other cases that are so important that their consequences can affect energy security) competition law may be complemented by considerations of national security. In 1996 the Parliament of Lithuania adopted the Law on Fundamentals of National Security. The law specifically forbids a single investor to dominate in one or several sectors of national economy that are important to national security, e.g. the energy sector. The Government is obligated to present a list of objects that are strategically important to the national security and must remain under the ownership of the Government to the Parliament for approval. The list also includes the objects that can be owned by private domestic and foreign investors according to the specified proportion on condition that a foreign investor fulfils the criteria of European and Trans-Atlantic integration provided that the decisive influence is reserved for the Government.

RUSSIAN FEDERATION

Security of Energy Supply

Security of energy supply constitutes one of the most important elements of the national safety of Russia. Therefore, ensuring national safety is one of the main objectives of the Russian energy policy.

Security of Energy Supply – means guaranteed protection of the country, its citizens, Russian society, State and the economy from the threats against reliable fuel- and energy supply. Such threats can be generated by external (geopolitical, macroeconomic or market fluctuations) factors as well as by essential conditions and functioning of the Russian energy sector.

The above factors restrain development of the Russia fuel and energy complex and at the same time threaten security of energy supply. Furthermore, threats to the economy also come from weakening the Russian economic space and its integral elements such as energy, production and technology, and transport links. The issue is aggravated by the pattern of geographical distribution of primary energy resources as well as oil products output and power generation in various regions throughout the country, and insufficient capacity of power lines connecting the Russian Far East and Siberia with the European part of the country.

National antimonopoly policy is devised taking into account the requirements of energy supply security. It sets the objectives to create an efficient system of natural resources utilisation; unite economic centers of Russia, develop competitive environment and ensure unimpeded entry of economic agents to regional and international markets; provide high-level infrastructure services; and continue reforming companies – natural monopolies that possess enormous resources for competition development. Reforming the monopolies should pursue the interests of consumers of goods and services - the citizens of Russia, lead to cost reduction and ultimately make excessive administrative intervention in the economy impossible.

In particular, the ongoing reforms of power industry are based on separating natural-monopolistic and competitive activities, transforming the existing federal (wholesale) market of electric power (capacity) into a well-developed competitive wholesale energy market, and developing competitive retail energy markets.

Regarding structural changes in the gas industry, priority will be put on increasing transparency of financial and economic activity of GASPROM OJSC, which can be achieved through separate cost accounting of different activity categories; improving the system of domestic gas trading, in particular, by preventing bottlenecks in the gas transportation system; ensuring stage-by-stage transition to efficient domestic gas market; and non-discriminatory access of producers to the gas transportation system.

Coherent measures on price (tariff), tax and customs regulation will be used to secure sustainable macroeconomic and social development and create favourable conditions for economic growth in Russia. Due consideration will be given to improvement of financial soundness and investment attractiveness of Russian fuel and energy companies. To this effect, there will be, in particular, stage-by-stage elimination of price distortion on main energy products. Initially the natural gas prices should be made matching the level of industry self-financing (in light of the required investment level), and further on they should be driven to

the level when gas export and domestic market supplies become equally beneficial (for instance, by applying various measures of tax and customs regulation).

Exchange trade development will enable reliable determination of prices on fuel resources in a specific region; objective calculation of taxes and charges; comparison of prices on the same fuel resources in different regions, as well as prices of contracts concluded within oil companies or by exchange trade in the same region. Exchange trade of physicals will facilitate derivatives trading (futures, forward and option contracts, hedging), essential for managing risks on the markets with considerable price fluctuations.

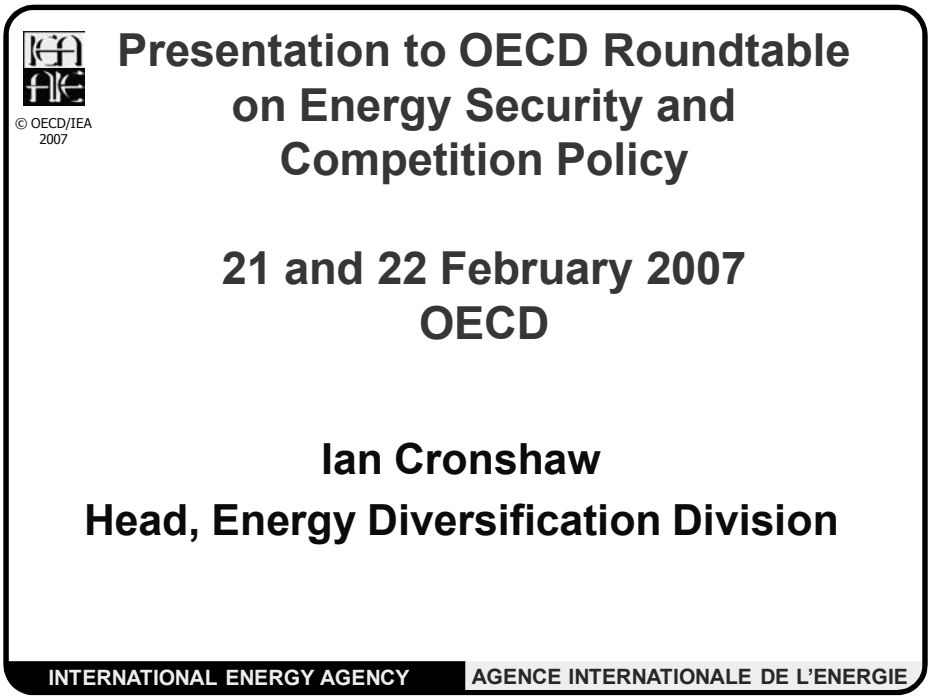
In terms of the *impact of competition upon security of energy supply,* creating and developing mechanisms for public control of deregulated energy markets is of utmost importance:

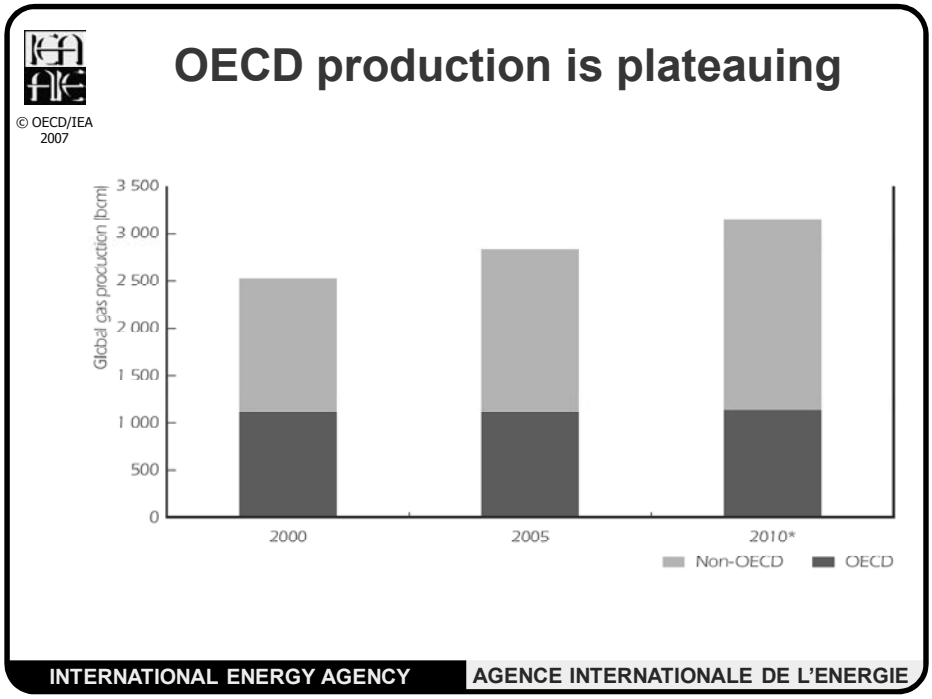
- Advancing the methods of antimonopoly regulation of the energy market (national and regional/ local), and preventing monopolisation of separate market segments;
- Achieving efficient regulation of technology and commercial operators on the energy market, as well as commercial activities of power resources suppliers;
- Taking measures to prevent or eliminate practices of economic agents abusing their dominant position on relevant markets;
- Controlling economic concentration (applying conduct and structural tests to ensure competition development);
- Developing an integrated system to monitor the fuel and energy markets.

To secure energy supply in Russia, the government should implement and make the best use of market mechanisms of power resources trade in both domestic consumption and relationship with foreign consumers. Limiting its functions of an economic agent, the State endeavor to increase its role in shaping market infrastructure and improving efficiency of public regulation in designated legal relations, in particular, antimonopoly regulation, taxes and tariffs, or regulating the tariffs set by natural monopolies.

PRESENTATION BY IAN CRONSHAW

(IEA)




OECD production is plateauing
© OECD/IEA 2007
Global gas production (bcm)
3 500
3 000
2 500
2 000
1 500
1 000
500
0
2000
2005
2010*
Non-OECD
OECD
INTERNATIONAL ENERGY AGENCY
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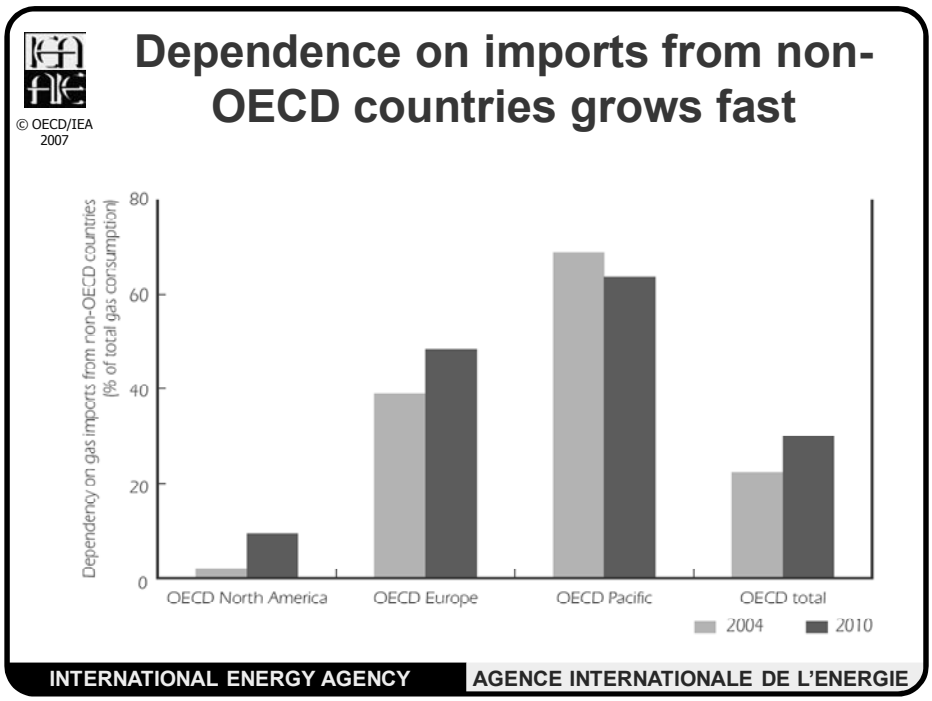
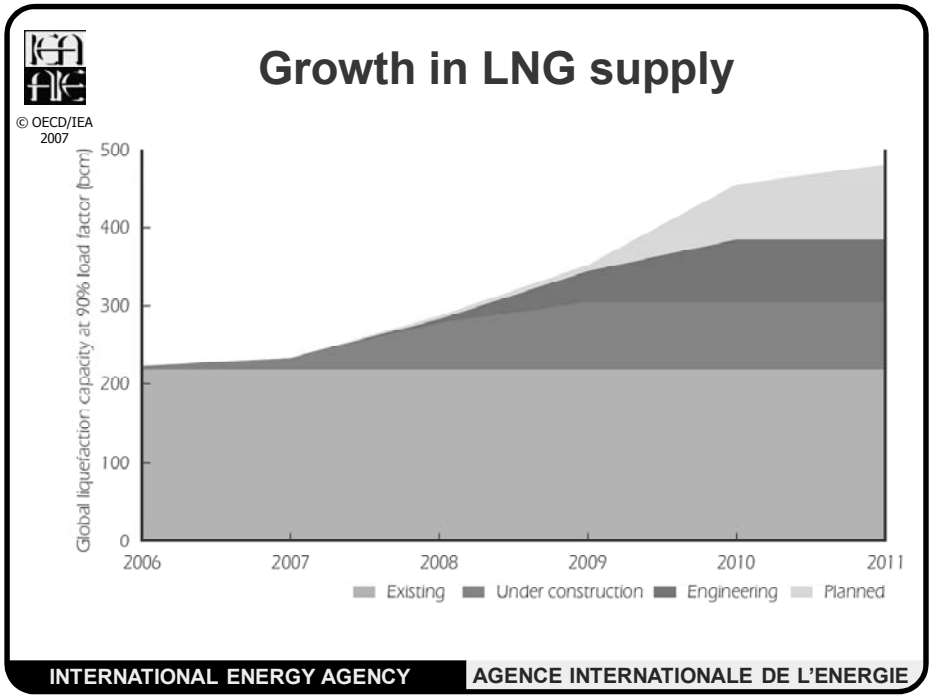
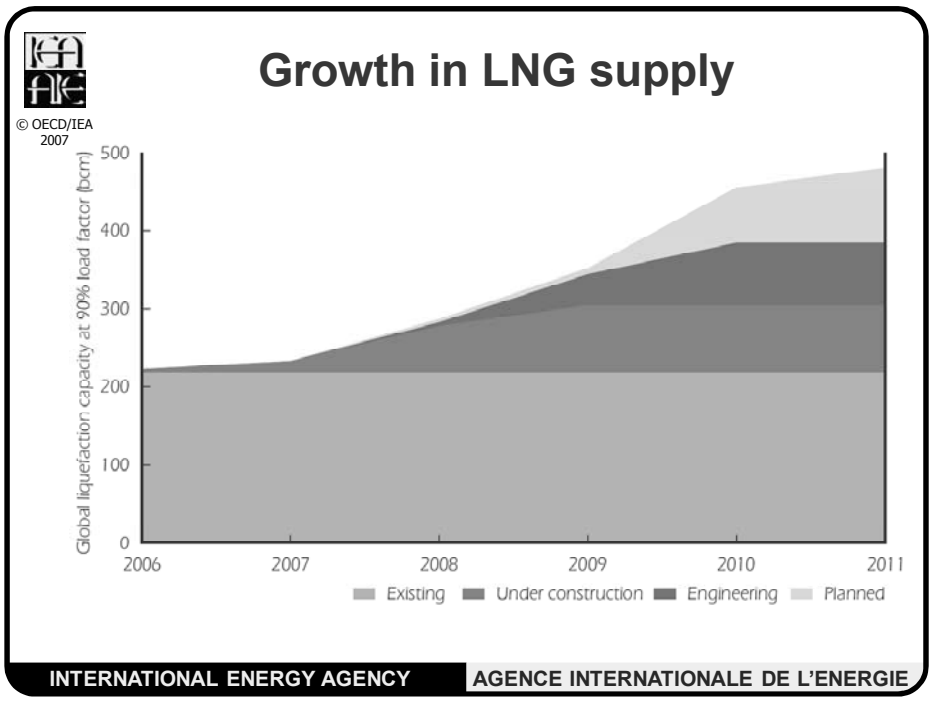
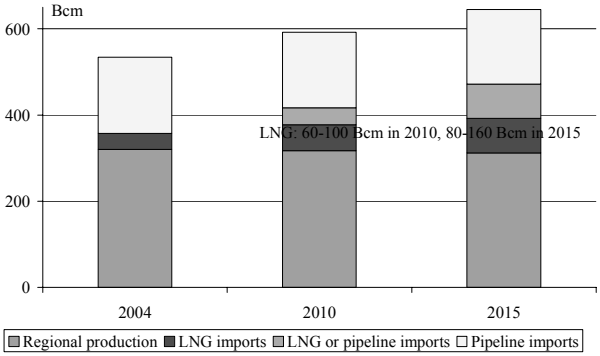

Dependence on imports from non-OECD countries grows fast
© OECD/IEA 2007
Dependency on gas imports from non-OECD countries (% of total gas consumption)
80
60
40
20
0
OECD North America
OECD Europe
OECD Pacific
OECD total
2004
2010
INTERNATIONAL ENERGY AGENCY
AGENCE INTERNATIONALE DE L'ENERGIE


Growth in LNG supply
© OECD/IEA 2007
Global liquefaction capacity at 90% load factor (bcm)
500
400
300
200
100
0
2006
2007
2008
2009
2010
2011
Existing
Under construction
Engineering
Planned
INTERNATIONAL ENERGY AGENCY
AGENCE INTERNATIONALE DE L'ENERGIE


Growth in LNG supply
© OECD/IEA 2007
Global liquefaction capacity at 90% load factor (bcm)
500
400
300
200
100
0
2006
2007
2008
2009
2010
2011
Existing
Under construction
Engineering
Planned
INTERNATIONAL ENERGY AGENCY
AGENCE INTERNATIONALE DE L'ENERGIE

OECD Europe's dependence on interregional imports will grow from 40% to 52% (from 214 Bcm to 333 Bcm). Its dependence on imported LNG will grow from 7% to 12-24% (from 37 Bcm to 80 - 160 Bcm).



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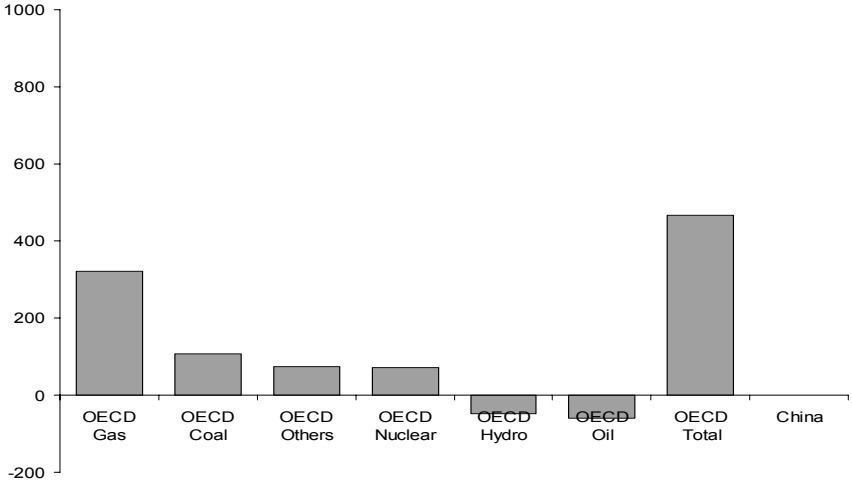
OECD Power Generation Growth (Twh) 2000-2004 focuses on Gas



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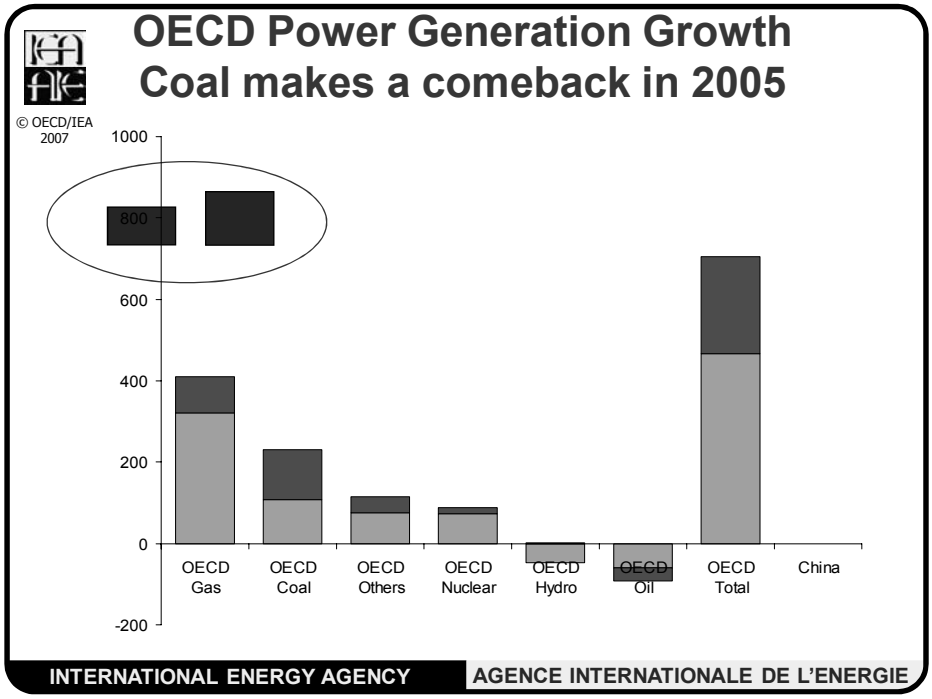
OECD Power Generation Growth
Coal makes a comeback in 2005
© OECD/IEA 2007
1000
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600
400
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0
-200
OECD Gas
OECD Coal
OECD Others
OECD Nuclear
OECD Hydro
OECD Oil
OECD Total
China
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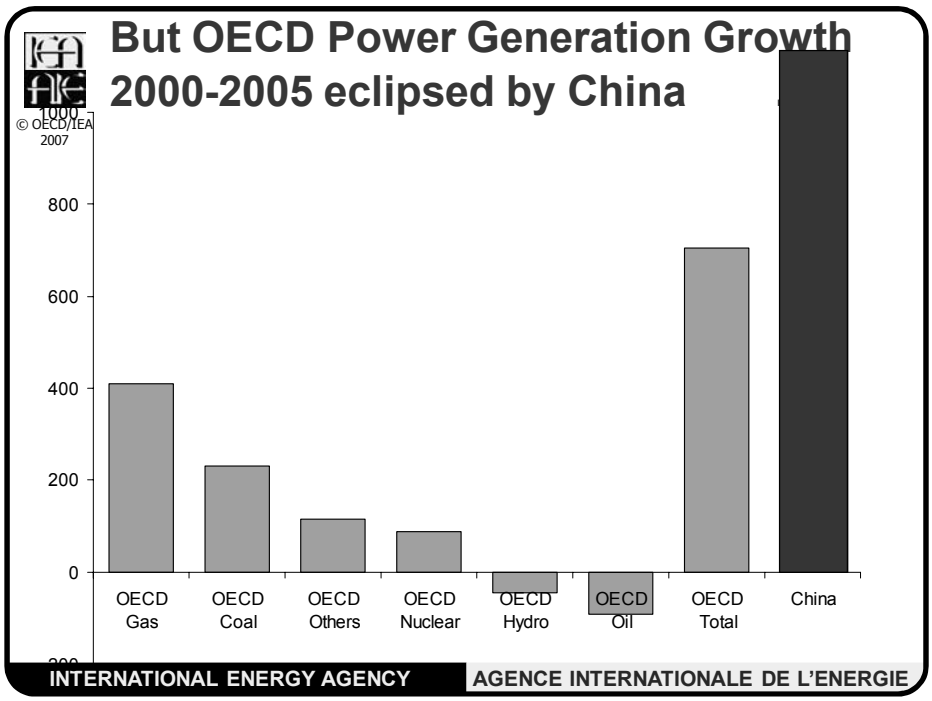
But OECD Power Generation Growth
2000-2005 eclipsed by China
© OECD/IEA 2007
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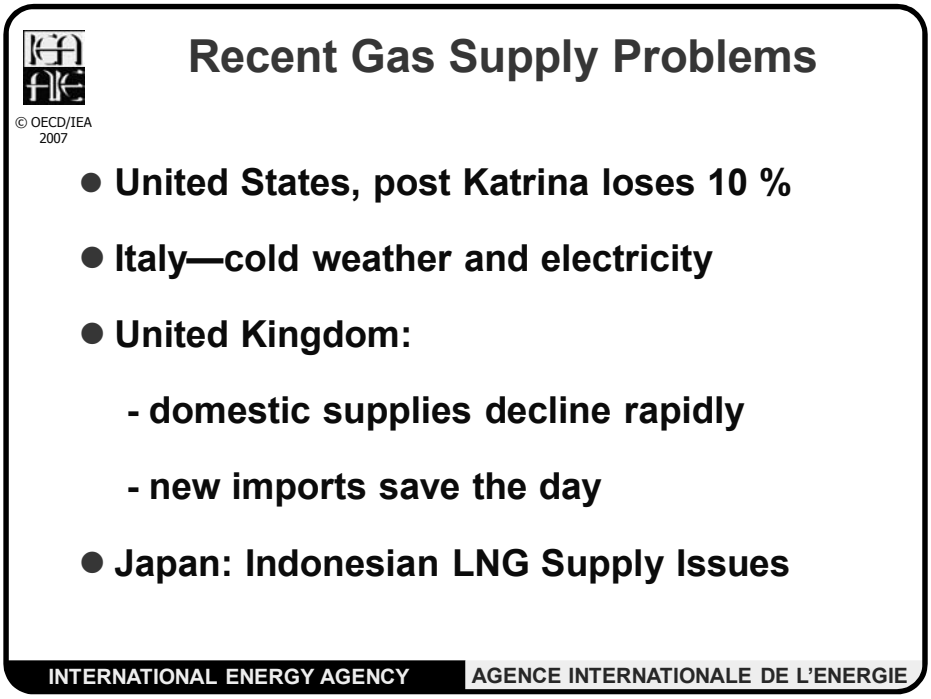
Recent Gas Supply Problems
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United States, post Katrina loses 10 %
Italy—cold weather and electricity
United Kingdom:
- domestic supplies decline rapidly
- new imports save the day
Japan: Indonesian LNG Supply Issues
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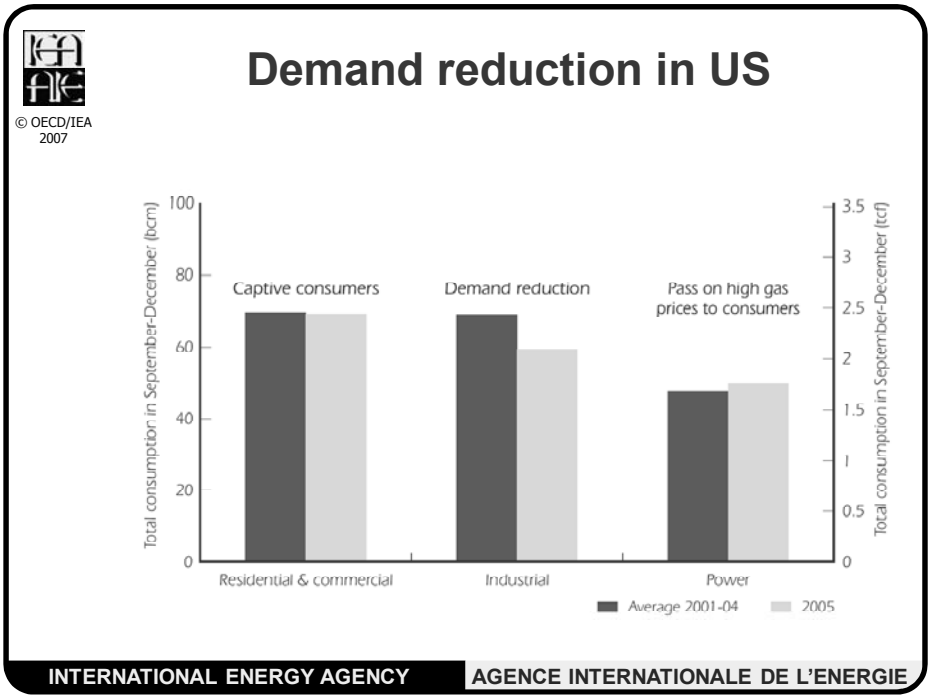
Demand reduction in US
© OECD/IEA 2007
Total consumption in September-December (bcm)
Total consumption in September-December (tcf)
100
80
60
40
20
0
3.5
3
2.5
2
1.5
1
0.5
0
Captive consumers
Demand reduction
Pass on high gas prices to consumers
Residential & commercial
Industrial
Power
Average 2001-04
2005
INTERNATIONAL ENERGY AGENCY
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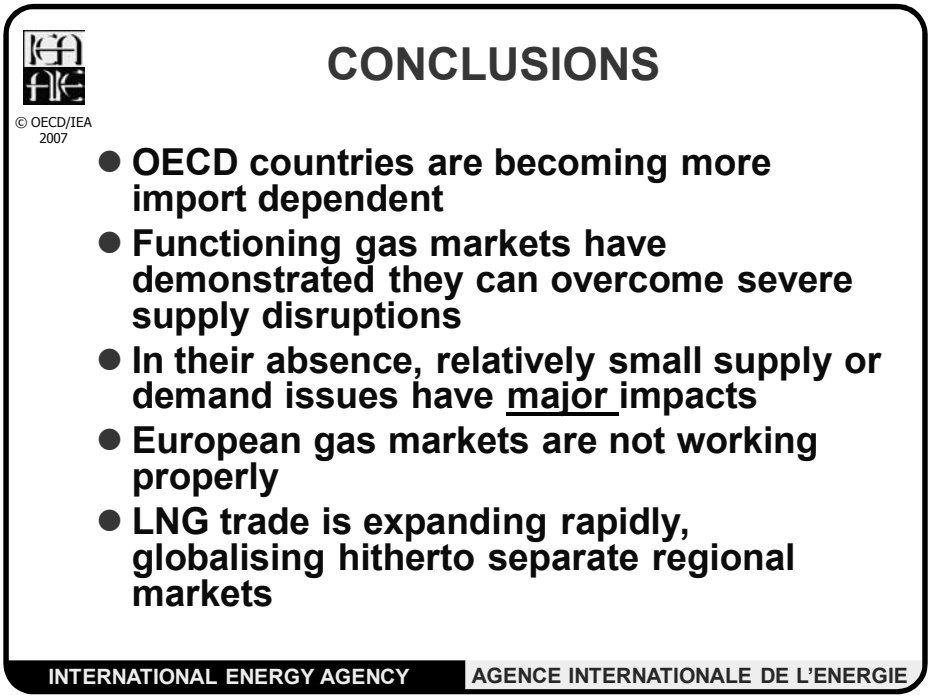
CONCLUSIONS
© OECD/IEA 2007
OECD countries are becoming more import dependent
Functioning gas markets have demonstrated they can overcome severe supply disruptions
In their absence, relatively small supply or demand issues have major impacts
European gas markets are not working properly
LNG trade is expanding rapidly, globalising hitherto separate regional markets
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NOTE BY PROFESSOR VON HIRSCHHAUSEN

Center for Energy and Environmental Policy Research

Infrastructure Investments and Resource Adequacy in the Restructured US Natural Gas Market – Is Supply Security atRisk?

by
Christian von Hirschhausen

06-018 December 2006

A Joint Center of the Department of Economics, Laboratory for Energy and the Environment, and Sloan School of Management

INFRASTRUCTURE INVESTMENTS AND RESOURCE ADEQUACY IN THE RESTRUCTURED US NATURAL GAS MARKET – IS SUPPLY SECURITY AT RISK? [1]

Christian von Hirschhausen[2]

December 2006

TABLE OF CONTENTS

Abstract

The objective of this paper is to analyse the development of US natural gas infrastructure over the lasttwo decades and to discuss its perspectives. In particular, we focus on the relationship between the regulatory framework for the natural gas sector and the development of investment in LNG terminals, interstate pipelines, and storage facilities. We also discuss some cross-sectional investment issues related to financing (cost of capital, financial markets) and regulation (price caps, siting). We conclude that while some improvements in the regulatory framework might enhance investments in the US natural gas sector, there is no reason to be overly concerned about infrastructure investments, resource adequacy, or supply security.

[1] This paper was prepared during a research visit at the MIT Center for Energy and Environmental Policy Research (CEEPR) in March/April 2006. Thanks to Paul Joskow, John Parsons, and Lauren Cox at CEEPR, Mark Hayes, Bill Hogan, Hill Huntington, Jim Jensen, Larry Kaufman, Jeff Makholm, Charlie Neill, and David Nissen for sharing their thoughts on the topic; to participants at the MIT-EPRG-Iberdrola conference in Madrid (June 2006) for discussion; and to Anne Neumann and Sophia Ruester for research assistance. Particular thanks go to John Parsons and the CEEPR staff for hospitality. The usual disclaimer applies.

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INFRASTRUCTURE INVESTMENTS AND RESOURCE ADEQUACY IN THE RESTRUCTURED US NATURAL GAS MARKET – IS SUPPLY SECURITY AT RISK?

"*There is no inherent conflict between the liberalisation of electricity and gas sectors that meet reasonable supply security goals as long as the appropriate market, industry structure, market design, and regulatory institutions are developed and implemented*."

Paul Joskow, Beesley Lecture, London, October 25, 2005, p. 2

1. Introduction

The issue of security of supply is back on the policy agenda in ways not seen since the 1970/80s. Since the first period of natural monopoly restructuring in the 1980s, policy-makers and economists havebeen seeking optimal incentives for infrastructure investment in the context of restructured markets (Helm and Thompson, 1991). In the last several years, however, this question has again risen high on the policy and research agenda due to the series of electricity blackouts in the summer of 2003, the intensified debates on cost-based vs. incentive-based regulation, and renewed supply security concerns.

The supply security discussion often focuses on electricity generation and transmission (Joskow, 2006), but there is also an emerging discussion on natural gas supply security on both sides of the Atlantic (see Joskow, 2005a, for the US, and Helm, 2005, for the UK and Europe). This debate is driven by the globalisation of natural gas markets and the increasing role of natural gas in the carbonconstrained energy world of the future. In fact, two different aspects of supply security need to be distinguished: i) the physical supply of energy resources to a country or a region, which may be threatened by supply disruption, cartelisation of upstream producers, and so on. Although this is an important issue, we will not deal with it here and refer to Linde and Stern (2004) and Stern (2006) for recent discussions of geopolitical issues in natural gas, and to Adelman, et al. (1986) for a similar analysis from two decades ago; ii) supply security with respect to adequacy of investments in (natural gas) infrastructure, such as terminals receiving liquefied natural gas (LNG), transmission pipelines and storage facilities. One can also distinguish between short-term operating reliability and longer-term resource adequacy of infrastructure (Joskow, 2005a). In the following, we focus on this latter issue. There is an ongoing policy debate about the relationship between industry restructuring (referred to as "liberalisation" in Europe) and investment incentives. Industry representatives generally claim that industry restructuring in an unstable institutional environment places infrastructure investments that ensure supply security at risk. Market proponents, on the other hand, argue that a laissez-faire approach is the best way of stimulating efficient investment. Economic theories of investment in infrastructure do not provide clear indications of the conditions under which "efficient" levels of investments can be achieved and what factors lead to over- and underinvestment. Institutional and transaction cost oriented approaches insist on the need for appropriate institutional settings to assure long-term investment, e.g. Joskow (1987) for the coal industry. The real-options approach suggests that under uncertainty, delaying investments may be beneficial even though these projects may well cover their capital costs (Dixit and Pindyck, 1994). Among the regulatory approaches, the Averch- Johnson (1960) approach of *over*investment in a rate-of-return regulated natural monopoly contrasts with theories of *under*investment due to the discretionary power of the regulators (Baumol and Klevorick, 1970) or because

the effect of sunk costs is not adequately taken into account in the rate setting (Hausman and Myers, 2002). Helm and Thompson (1991) have suggested that the social costs of underinvestment are higher than the social benefits of overinvestment. The literature also deals with externalities, issues of ownership and corporate governance, and investments in service quality. Hirschhausen, et al. (2004) provide an overview of the literature.

Some of the theoretical work has been helpful in identifying the effects of regulation on investment, and also in pointing out the need to take sector and technology-specific aspects into account. However, the models fail to provide unambiguous results, and a case-specific assessment is still needed to derive concrete policy conclusions.[3] This is particularly true for the US natural gas market, on which little research has been carried out in the last years.

The objective of this paper is to analyse the development of US natural gas infrastructure over the last two decades, and to discuss its perspectives, and to draw policy lessons. In particular, we focus on the relationship between the regulatory framework in the natural gas sector (vertical separation, open access, etc.) and the investment behavior of companies. Our working hypothesis is that a restructured and vertically unbundled natural gas market can provide the right investment signals to the market if it is accompanied by the appropriate regulatory framework. The paper is structured as follows: the next section briefly surveys the US natural gas market, its regulation and recent price trends. Stagnating or even declining domestic production and increasing consumption have led to a dramatic rise in imports, and this tendency is likely to continue in the future. Section 3 looks at the development and perspectives of LNG-receiving terminals: here, although the "boom" forecasted several years ago has not materialised, terminal expansions and newbuilds are proceeding steadily, supported by a favorable regulatory framework. We then turn to the relationship between regulation and investment in interstate pipeline transmission, an industry characterised by a peculiar regulatory setting but a strong investment record (Section 4). Section 5 looks at regulation and investment in natural gas storage. This sector is currently undergoing a structural change from being a "cost-plus" industry to being more market and finance-driven, and although investment requirements are substantial, we find no reason for concern about the resource adequacy. Section 6 discusses some cross-sectional investment issues related to financing (cost of capital, financial markets) and regulation (price caps, siting). We conclude that while some improvements in the regulatory framework might enhance investments in the US natural gas sector, there is no reason to be overly concerned about infrastructure investments, resource adequacy, or supply security.

2. The US Natural Gas Market

The US is the second-largest gas producer in the world (526 bcm in 2005), and the largest gas consumer (634 bcm). In 2005, gas accounted for 23% of total primary energy supply; about 84% of domestic consumption was covered by indigenous supply. Although only 3% of world total natural gas reserves are located in the United States, the country produced about 20% of world natural gas in 2005 (BP, 2006). Indigenous production is concentrated mainly in the lower forty-eight states, with Texas and Louisiana producing 34% of total dry gas output. There are 8,000 major natural gas wells representing 86% of total production with the rest coming from associated oil production. Currently, the largest undeveloped reserves are in Alaska, expected to come on-stream by the end of the next decade. At present, the reserves over production ratio is about 10 years. Imports are increasingly important. Imports from Canada contributed to 13% of consumption (102 bcm in 2005), and imports of liquefied natural gas (LNG)

[3] Take the controversial debate on the UK experience of energy market restructuring: whereas Helm (2005) suggests that the recipe for privatizing and regulating utilities since the early 1980s in the UK and other Anglo-Saxon countries favored a short-term perspective and may have put insufficient emphasis on longer-term aspects such as investment and quality, Pollitt (2002, 71) finds no evidence that privatization and restructuring have hurt investment, an assessment shared by Joskow (2005, 47)

tripled between 2002 (6.5 bcm) and 2005 (18.5 bcm, or 3%). By 2020, it is expected that LNG will increase further to about 20% of total consumption (of a total of 760 bcm).

About 27% of natural gas is used to generate electricity (utilities and IPPs), 22% in industry, 13% in transportation, and 23% and 15% by the residential and the commercial sectors respectively. Some power plants are equipped with dual-fuel equipment and are therefore able to switch back and forth from gas to other fuels relatively easily. Some of them have interruptible contracts and can be switched off in particular peak hours.

Regulation has a long tradition in the US natural gas sector: it began in the 1930s with an attempt to curb the abuse of market power in the interstate pipeline business (see IEA, 1998, and Makholm, 2006, for details). Today, the Federal Energy Regulatory Commission (FERC)[4] regulates interstate affairs, whereas intrastate business is regulated at the state level. Significant restructuring of the industry started with the removal of wellhead ceiling prices in 1978 (Natural Gas Policy Act). In 1984, Order 380 released local distribution companies (LDCs) from long-term take-or-pay contracts. Vertical unbundling was the objective of Order 436 (1985), which also suggested that interstate pipelines offer open access to their transportation infrastructure.

The "final restructuring rule" (FERC Order 636, 1992) was a milestone in moving from "simple" nondiscriminatory third-party access (TPA) towards a fundamental vertical unbundling of transportation and sales activities. It created competition among gas sellers and reduced the market power of the incumbents. Pipelines were obliged to publish "electronic bulletin boards" (EBB) to provide shippers with information about the availability of services. The rule also required pipeline companies to expand access to interstate storage capacity. FERC Order 637 (February 2000) introduced more flexibility for shippers in accessing pipelines, while FERC maintained its regulation of pipeline tariffs. The Energy Policy Act of 2005, considering the increased demand for natural gas, has made provisions to ease investment in infrastructure, e.g. in LNG receiving terminals.

There is a general consensus that the past three decades have transformed the largest natural gas industry of the world into the most competitive one as well (IEA, 2002). Restructuring has had a substantial impact on the industry. Production and marketing have been completely deregulated. The interstate pipelines are formally subject to cost-of-service regulation by FERC, whereas in practice most of the contracts are negotiated in a fairly competitive environment. Intrastate pipelines and the 1,400 local gas distribution companies (LDCs) distributors are regulated by state utility commissions. Storage is largely provided by regulated entities (often in combination with pipelines), but some unregulated merchant investments also exist, and increasingly do. Natural gas consumers can choose to buy directly from producers, or use marketers as intermediaries. Many industrial customers and power plants obtain their gas directly from interstate and intrastate pipelines, and only use distribution companies for transport services.

Gas prices were low for most of the 1990s, and during this time people became accustomed to $2-3/MBTU wellhead prices. However, prices have climbed since the beginning of the current decade, in particular during the last few winters. The reasons include weak domestic natural gas production (despite increased drilling), colder-than-normal temperatures for a number of consecutive weeks during each heating season, and record-high crude oil prices. Currently, prices are in the range of $4- 6/MBTU and futures prices confirm that "cheap gas" may be a thing of the past.

[4] FERC employs a staff of about 1,200 of whom 425 concentrate on oil and natural gas.

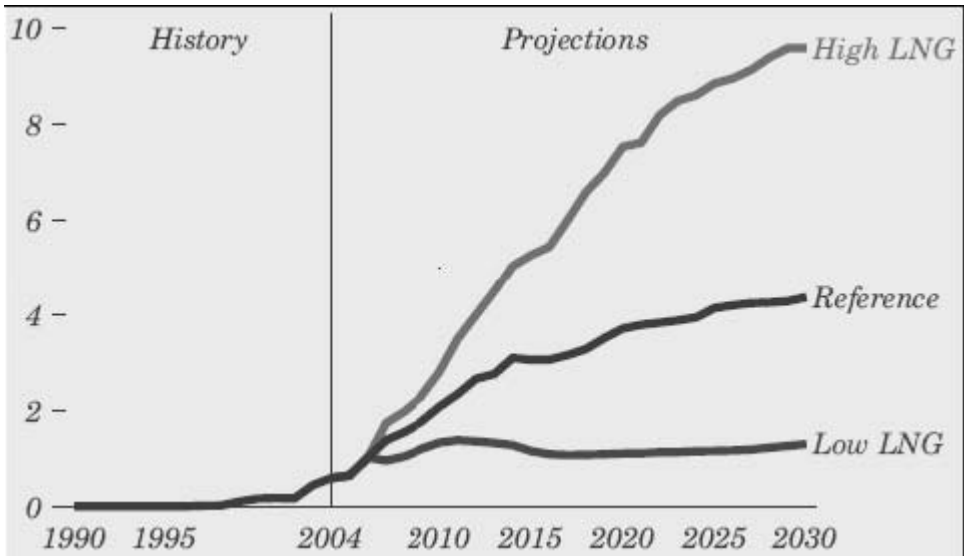
3. LNG Receiving Terminals

3.1 Market structure

Liquefied natural gas (LNG) has gone from being an expensive, "exotic" fuel traded only at the regional level to being a globally traded energy source. LNG is playing a more central role in the energy supply of all major coastal countries, including the US, South Korea, India, China, and Europe as well. This section focuses on the US LNG-receiving infrastructure[5]; a survey of the increasingly global LNG market and a discussion of LNG supply issues can be found in Jensen (2004).

Although in the past LNG was used mainly for peak-shaving purposes, the rising need for natural gas in electricity generation potentially makes it a less seasonal commodity. LNG imports have risen steadily, although capacity utilisation is still modest at less than 60%. There is a general consensus that LNG imports will increase as domestic production stagnates and imports from other sources (e.g., Canadian pipeline gas) decline. The EIA (2006) Annual Energy Outlook suggests an increasingly important role for LNG: the "high LNG" scenario sees LNG imports at 280 bcm in 2030 (EIA, 2006, 90), whereas the reference scenario predicts net imports of 110 bcm. Even the "low LNG" scenario (about 53 bcm) corresponds to almost a threefold increase with respect to 2004 imports. However, it is important to note that LNG imports are vulnerable to high energy prices. Thus, Ellerman (2003, 14) suggests that interfuel substitution, primarily switching from natural gas to coal, will determine the demand for natural gas and, thus, the role of LNG. He goes on to say that another "price threat to LNG is the world oil price level and the extent to which North American demand will/can shift to oil generation" (Ellerman, 2003, 14).

Figure 1: Net imports of liquefied natural gas in three supply scenarios, 1990-2030 (trillion cubic feet)



Source: EIA (2006, 90)

Traditionally, Algeria was the dominant supplier of LNG to the US, albeit at a low level. Since 1999, the mix of supply sources shifted to include facilities in Trinidad and Tobago, today accounting for over two-thirds of imported LNG; additional deliveries come from Nigeria, Qatar, Oman, and Malaysia. Negotiations with other suppliers are underway, some of which are greenfield operations.

5 There is also one liquefaction plant in Kenai, Alaska, delivering to Japan, which we do not deal with in this paper.

In the wake of high oil prices in the 1970s, four LNG-receiving terminals were built in the US: Everett (MA, currently 7.3 bcm/a sendoff capacity), Cove Point (MD, 12.2 bcm/a), Elba Island (GA, 4.5 bcm/a), and Lake Charles (LA, 10 bcm/a). Cove Point and Elba Island were mothballed in the 1980s; Lake Charles was also closed down for a significant period. However all three terminals have recently been reopened, and all four, including Everett, are currently undergoing substantial expansion. The first newly built terminal in the "new world" of global LNG was finished in 2005, with total investments of about $700 million. Excelerate's "Gulf Gateway Energy Bridge" is located about 116 miles off the Louisiana coast; the natural gas reaches the Louisiana shore near the Henry Hub.

3.2 Regulation

For many years, LNG terminals were considered to be part of the transportation chain and thus subject to open-access service under Section 7c of the Natural Gas Act. Three of the four terminals built two and a half decades ago are subject to open access regulation; only the Everett (MA) terminal was exempt from that regulation and has always operated as a dedicated terminal. Given increased demand for LNG imports and a supposedly unfavorable framework for investment, FERC decided to make a policy shift in 2002. In its "Hackberry Decision", FERC terminated open access requirements for LNG import terminals. LNG import facilities are now generally treated as "supply sources" rather than as part of the transportation chain and thus no longer fall under Section 7c but under Section 3 of the Natural Gas Act. FERC specifically stated that it hoped the new policy would encourage the construction of new LNG facilities by removing some of the economic and regulatory barriers to investment (EIA, 2005a).

Jensen (2004, 83) suggests that the Hackberry decision "has shifted the balance of power in terminal projects at the integrated majors and away from the merchants." Waiving open access restrictions may in fact have favored investments by integrated groups with a large share of capacity covered by upstream and downstream contracts or even physical control rights. However, as argued below, the Hackberry decision has not eliminated all merchants from the business. Nor is it evident that waiving open access was really necessary to induce investment, or clear whether or not this investment would have taken place in any event.

3.3 Investment

Recent investments and outlook

A case-by-case analysis of investment projects indicates that there is no need to be overly concerned about investment incentives in US LNG terminals. The five existing LNG regasification terminals today have a total nominal capacity of 48 bcm/a; with imports at 18 bcm in 2004. In addition to the new terminal built in 2005, significant expansions are underway in the four "traditional" terminals:

- Suez' Distrigas facility in Everett, MA, has been operating continually since 1971, supplying peak gas to the Boston area. Distrigas added a second unit to the Everett site, bringing its capacity to about 7.3 bcm/a. Plans have been announced to add another 3.6 bcm/a. The company relies on long-term contracted supplies from Trinidad, and in exceptional cases also from Algeria;

- Dominion's Cove Point terminal, located on the Chesapeake Bay, MD (50 miles south of Washington, D.C.), was reopened for LNG imports in 2003, and provides peak-shaving facilities. Cove Point has two unloading berths and can receive two tankers at a time; both terminals are run as open access. Dominion finished its first terminal expansion in 2005 and is adding another terminal in 2008, tripling its storage capacity and doubling its annual daily peak sendout capacity from 0.028 bcm to 0.06 bcm.

- El Paso's Southern LNG Terminal, located at Elba Island, GA, was reopened in 2001. The facility receives contracted gas as well as short-term loads. Southern LNG doubled its sendout capacity with the construction of a new terminal, from 6.1 bcm/a to 12.2 bcm/a. The recent contracting of the terminal to the BG Group is expected to increase the utilisation rates of the terminal, BG having plans to bring LNG in the coming years from Trinidad and Tobago.

- Last but not least, Southern Union's Lake Charles terminal on the Calcasieu River, reopened in the late 1980s, feeds its gas into the Henry Hub and its surrounding 16 pipelines. Most of the cargoes received are short-term or "spot". The facility not only withstood hurricanes Katrina and Rita, but also continued its two-step expansion from 0.17 bcm to 0.25 bcm storage capacity, and from 10 bcm/a to 21 bcm/a annual sendout capacity.

In addition to significant investments at existing sites, a large number of additional terminals are under construction and others are under consideration. Figure 2 shows all existing and proposed LNG terminals in North America, i.e. the US, Mexico, and Canada.[6] One peculiar pattern emerges: the advanced new-build projects are either located in the Gulf of Mexico (Louisiana, Texas, or offshore) or not on US territory, but feeding into the US pipeline system (Mexico, Bahamas, and Canada). The former projects rely on the fact that Texas and Louisiana are two major gas-producing states in the US, and that local governments are familiar with industrial projects, facilitating the approval process. The region is also attractive due to the proximity to the Henry Hub, a liquid market hub. FERC has recently granted permits to three facilities on the Gulf Coast.[7]

The latter projects (Mexico, Bahamas, Canada) are clearly driven by the NIMBY ("not in my backyard") attitude that still prevails in California and the Northeast. It is difficult to assess the probability of success for individual US projects outside the Gulf of Mexico (Jensen, 2004, Frisch, 2005). Environmental opposition facing the construction of new terminals is intense, and developers regularly have to delay or cancel projects. This leaves significant room for "outsiders", who have proven more than willing to occupy these market niches. Thus, Baja California, Mexico, has granted two licenses for LNG terminals.[8] Natural gas from the two Baja terminals will be shipped into Southern California, whereas the Gulf Coast terminal will reduce the shipments from Texas into Mexico, which remains a net importer of natural gas. Likewise, the Bahamas have two advanced terminal projects.[9] Last but not least, the Canadian government has given permit to the Canaport terminal in New Brunswick, which already is under construction.

Overall, another additional 30 terminals have been proposed. Based on own estimates, we have attached probabilities of success to each of the projects, and therefore report an expected capacity: Nominal LNG import capacity is likely to increase to about 125 mtpa in the US (173 bcm/a) by the year 2012, and to 144 mtpa (198 bcm/a) in North America including the East Coast of Mexico and Canada.

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6 This list should be considered with care, since it does not provide reliable information about whether these projects will be realized. We have obtained additional information on realization through expert interviews and field studies. For an extended list of "potential" North American terminals see http://www.ferc.gov/industries/lng/indus-act/terminals/horizon-lng.pdf .

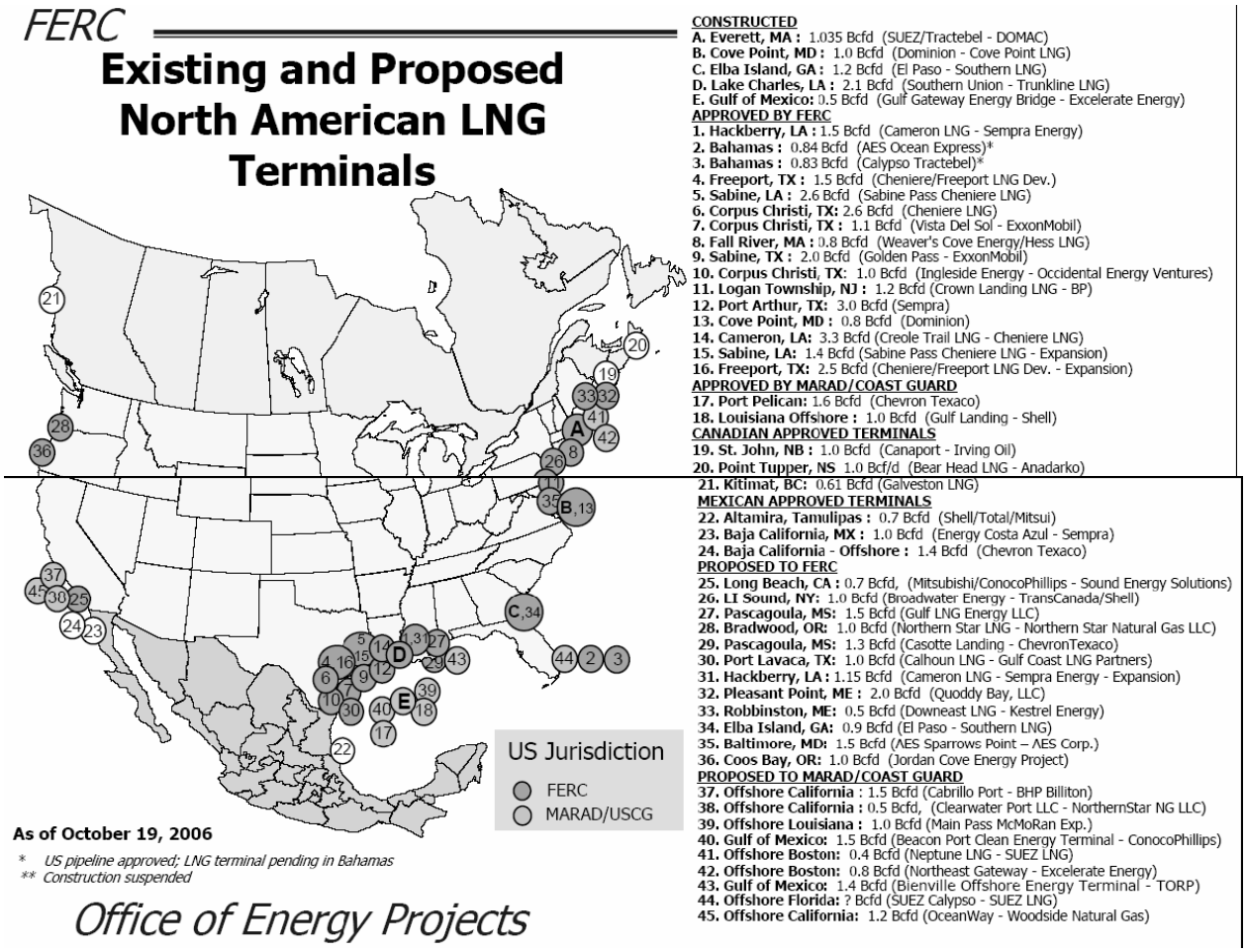
7 Sempra Energy's Cameron terminal near Hackberry, Louisiana, the Freeport LNG Development's terminal near Freeport, Texas, and Cheniere LNG's Sabine Pass terminal in Cameron Parish, Louisiana.

8 Sempra Energy at Costa Azul, 1 (10 bcm/a), and Chevron Texaco, offshore (14 bcm/a); one additional terminal is currently under construction at Altamira on the Gulf Coast of Mexico (Shell/Total/Mitsui (7 bcm/a)).

9 The Tractebel Calypso project (8 bcm/a) and AES' Ocean Express (8 bcm/a). A third terminal, El Paso's Seafarer (5 bcm/a), has been proposed to FERC; the gas is supposed to be shipped into Florida by pipeline.

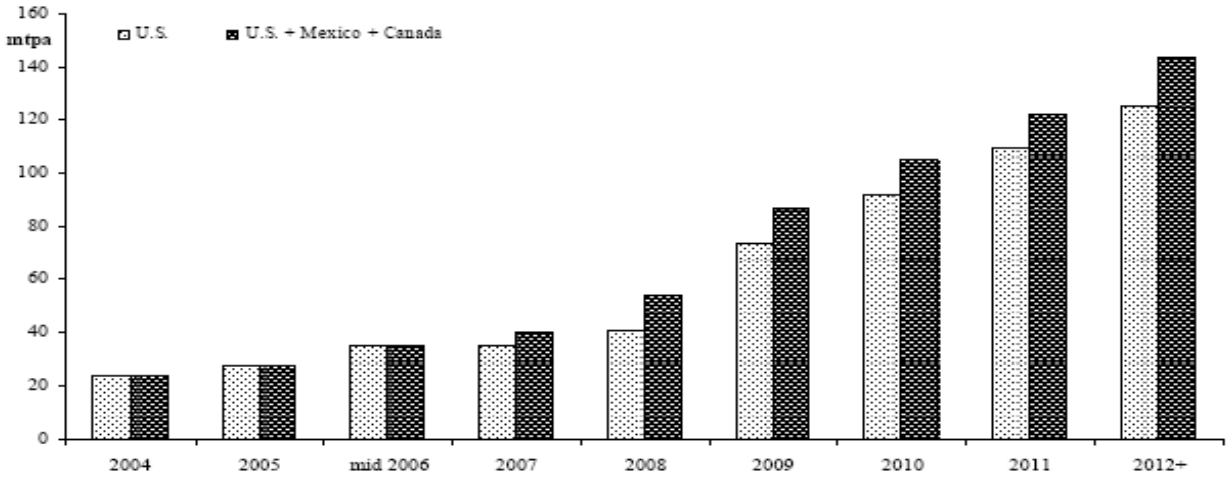
Figure 3 shows the increasing capacities, based on existing terminals and projects on the Atlantic coast that have already been approved.

Figure 2: Existing and proposed North American LNG terminals



Source: FERC (2006); download http://www.ferc.gov/industries/lng/indus-act/terminals/exist-prop-lng.pdf

Figure 3: Development of regasification capacities in North America



Source: Author's estimates

Corporate strategies: integrated companies, tollers, and hybrids

When looking at investment strategies at the corporate level, one observes a striking diversity; investment strategies vary between strong vertical integration and significantly less integrated structures. In fact, one can distinguish two stylised corporate strategies on the North American LNG market (see Nissen, 2004, 2006, for a more in-depth categorisation, and Ruester and Neumann, 2006, for a survey of strategies in the international LNG business):

- Players vertically integrated along the LNG value-added chain. This is the classic case of a company that owns upstream gas and/or liquefaction capacities, perhaps ships or chartered tankers, and downstream commercial marketing activities. The integrated LNG player treats the LNG terminal as part of its value added chain and does not have any incentive to rent out spare capacity to potential competitors. An example of an integrated LNG player is the SUEZ Group, owning upstream liquefaction capacity (Trinidad and Tobago), importing regasification capacity (Everett, MA), and downstream gas-consuming power plants;

- Private "merchant" entrants in the LNG terminal business, many of them newcomers to LNG markets. This strategy consists of developing LNG terminals as a service provided to industry. The merchant company may develop its own upstream and/or downstream facilities, but is ready to offer LNG-receiving capacity for rent to the market ("tolling"). An example is Cheniere Energy, which is currently developing four natural gas importing "tolling" facilities. The re-emergence of such quasi-open access regimes at several terminals suggests that exclusive rights for the upstream business of the investing party are not necessarily a condition for investment.

3.4 Conclusions

Given the current LNG terminal "rush" in North America, there seems to be no reason for concern about supply security with respect to LNG infrastructure. We have not detected any major market failure or state failure that would need to be rectified for more LNG terminals to be developed. The five existing terminals are expanding their capacities significantly and at least ten promising projects are underway that will further increase send-out capacity by 2010. Given the uncertainty surrounding the future of LNG in

the North American natural gas market—mainly due to high prices—there may even be too many projects for importing terminals.

While there do exist upstream constraints—that is, difficulties tapping LNG supplies in an increasingly tight world market—these problems are economic rather than institutional in nature. Global competition for LNG has indeed emerged, but the basic rules of supply and demand still hold, suggesting that LNG is available to North American importers at internationally competitive prices. Insufficient pipeline capacity to feed the regasified LNG into the interregional pipeline grid has not been a major constraint so far either.

The major remaining obstacles are siting issues that have delayed and even impeded LNG terminal developments in regions other than the Gulf Coast. While FERC generally approves LNG projects quite rapidly, state and local authorities are often hesitant if not outright opposed to these terminals.

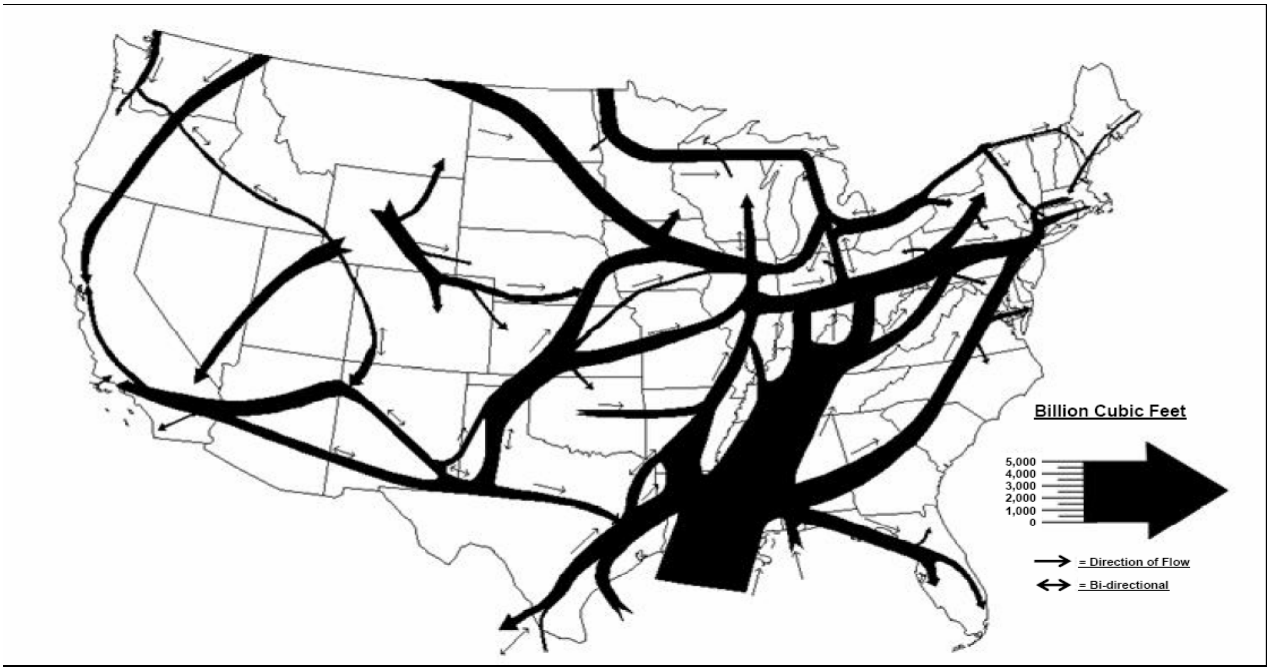
Some legal issues remain to be resolved, in particular the different roles of federal, state, and local regulators in siting (Wolak, 2005). Current public awareness campaigns and the series of "LNG conferences" mandated by the Energy Policy Act will help to promote public support, but intensified political efforts will be required for LNG to continue its growth in the US market.

4 Interstate Gas Transmission Pipelines

4.1 Market Structure

The US high-pressure interstate natural gas pipeline transmission network has evolved quite organically over the last few decades, and today corresponds fairly well to the structure of demand. The system carries gas from the main supply areas in the South and the Gulf of Mexico to the main consumption areas in the Northeast, the Midwest and California (Figure 4). The total network length is somewhere below 300,000 miles and there do not appear to be obvious bottlenecks.

Figure 4: Principal interstate natural gas flow summary, 2004



Source: EIA (2005), Natural Gas Annual 2004

Under current regulations, the pipeline business is structurally unbundled from the upstream producers and the downstream consumers (open access). Primary transportation services are formally subject to cost-of-service regulation, but free market-based trading exists for secondary capacity, i.e. resold primary capacity.[10] Local distribution companies (LDCs) rely mostly on primary service in direct bookings with pipeline companies because of state regulations obliging them to guarantee their customers a given supply. Likewise, large industrial users and electricity users generally also prefer to hold firm primary capacity, but they also rely on interruptible and released capacity because of the potential for short-term fuel switching (IEA, 1996, 87). Furthermore, marketers play an important role as intermediaries between the upstream producers and large downstream customers; thus they generally provide a diversified mix of services, of which interruptible and released capacity account for about two-thirds of their total capacity needs (IEA, 1996, 87).

4.2 Regulation

The interstate pipeline industry has gone through several waves of restructuring and re-regulation over the last century. Makholm (2006) provides a detailed account of the historical development of the US natural gas interstate pipeline system.[11] Structural regulation led to unbundling and gas-to-gas competition, whereas price regulation has remained virtually unchanged, based on a traditional costof-service approach to transportation fee setting. Order 636 (1992, "Restructuring Rule") has obliged interstate pipelines to unbundle their marketing activities, thus becoming mere transporters of natural gas. Pipelines now must offer all other market players equal access to their transportation infrastructure ("open access"). This allows marketers, producers, LDCs, and even end-users themselves to close contracts for transportation of their natural gas via interstate pipelines on an equal and unbiased basis. Since interstate pipelines serve only to transport natural gas, vertical coordination is assured by contracts and trading rather than by vertical integration.

Contrary to Europe, where pipeline companies have a high degree of market power, the pipeline business in the US is competitive in many of the regions. Most destination markets are served by several competing pipelines. Thus, pipelines compete for shippers, and rates are negotiated in a competitive environment. On the other hand, there remains a formal cost-of-service regulation of interstate pipelines. Transportation rates are set under the Natural Gas Act, 15 u. S. C. §717, similar to the setting of rates for local gas distribution and telephone exchange companies.[12] However, in a more competitive framework,

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10 Note that the FERC has done an attempt to cap the secondary market to the level of the regulated price of the primary auction; however, this turned out to be unsuccessful: "There is little hard empiric evidence on how extensive the delivered market is, but the existence of delivered gas transactions during peak periods suggests that, due to the price cap, capacity holders with available capacity will choose to use that capacity to make delivered transactions, where the profit opportunity is greater, rather than releasing the capacity, where the price is capped." (Docket No. RM98-10-000, p. 25)

11 In essence, he distinguishes three periods of development: i) pre-1935 with no federal regulation and a high degree of vertical integration; ii) post-1944, when all prices in the industry were federally regulated; and iii) post-1984, when—after a transition period—pipeline regulation was considerably decreased, leading to more competitive markets and investment decisions. See also MacAvoy (2000).

12 FERC allows pipelines to recover costs of prudent operation, depreciation, taxes, and a return on the capital invested, subject to an overall rate of return (Loeffler, 2004); companies can require rate cases when they feel that regulated rates do not cover their costs sufficiently. In an attempt to promote the expansion of existing pipeline capacity, FERC at some point in time had adopt the "rolled-in" rate-setting principle, whereby the additional cost incurred was included in the overall cost base for calculating minimum revenue needs and rates; thus, existing pipeline customers shared the costs of providing capacity to new customers (whereas in the incremental-rate principle, the costs of pipeline expansion are allocated solely to new customers). However, FERC has abandoned this approach and is now favoring incremental pricing; see Policy Statement on Determination of Need; 1902-AB86, FERC Docket No. PL-3-000.

these regulated tariffs are hardly applied. Thus, "special contracting" between pipeline and shippers is allowed using negotiated rates, and this is frequently employed (the customer can choose to return to cost-based rates).[13] Rate cases are often settled by the parties directly, so little public information is available about what formulas are applied.

There is a debate about the underlying reason for the low level of congestion on the natural gas pipeline network. On the other hand, the competitive character of the industry, coupled with a high growth of demand, has generated a significant amount of incremental pipeline capacity, independently of the regulatory regime. On the other hand, it has been argued that FERC uses the allowed rate of return as an instrument to attract investments in pipeline infrastructure.[14] In determining the appropriate rate base, the traditional "used and useful" approach is applied. The average weighted cost of capital is determined by estimating the appropriate rate of debt, the cost of equity and the capital structure ("gearing ratio"). Based on the representative sample of investment projects quoted by Loeffler (2004) and our own calculations, we estimated the weighted average cost of capital (WACC) for interstate pipeline projects (newbuilds and extensions) between 1996 and 2003 at 11.6%, which is higher than one would generally expect.[15]

Thus, the industry is characterised by an institutional setting that "works in practice, but not in theory."[16] Competition between pipeline operators and network extension go hand in hand, even though the prices necessary to attain the regulated rates of return may not be achieved. There is an interesting parallel to regulation of network expansion in other infrastructure sectors that operate under competitive conditions, such as railroads or telecommunication.[17] Thus, Hausman (1998) and Hausman and Myers (2002) suggest that traditional regulation trying to establish "competitive prices" may lead to adverse effects on innovation and new investment. The reason is that this approach may neglect the significant sunk costs by an incumbent, and the value of the "real option" offered to a new, merchant competitor that only has to pay the regulated "competitive" price.[18] There is an emerging discussion on these issues applied to natural gas, both in academic and in the FERC, but it is to early to draw any conclusions for regulatory policy.

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13 FERC has also started to test incentive regulation schemes such as performance-based ratemaking (PBR), in which pipeline companies have to share efficiency gains with customers via lower prices.

14 Thus, Joskow (2005a, 20) has suggested that the "high rates of return chosen by FERC were intended to stimulate investment, reduce congestion, and increase reliability (…) this is one reason why investment in natural gas pipeline capacity has preceded reasonably well in the liberalized US market and there is little congestion on the natural gas pipeline network."

15 Values range up to 12.64% for the Shell Gas Pipeline Co. (1996, 82% equity financed), with a lower bound of about 8.4% for the Questar Southern Trails Pipeline (1999, 70% debt financed).

16 Quote by Paul Joskow.

17 I am thankful to Paul Joskow for pointing out this issue and the recent literature.

18 Hausman (1998) analyses the „total service long-run incremental cost" rule (TSLRIC) for incumbent local exchange carries (ILEC) and concludes that "failure by regulators to recognize the sunk cost character of much network investment leads to the grant of a free option to the competitors of the incumbent"; "the adoption of TSLRIC as a cost basis to set the prices for unbundled elements has negative economic incentives effects for innovation and for new investment in telecommunication (p. 17). Along similar lines, Hausman and Myers (2002) analyze the regulation of US railroads and conclude that the "simulated competitive rate benchmark is too low because it fails to account for the sunk and irreversible nature of many investments in railroads…. We find that required return calculated from the STB model that ignores these factors is too low by between 30% and 84.4%" (p. 308).

4.3 Recent investments and outlook

Although the pipeline system has gone through periodical investment cycles ("boom and bust"), on average the system has grown at a considerable rate (Makholm, 2006). After the implementation of Order 636 (1992), the natural gas pipeline system went through another investment boom. The rather generous rates of return offered to pipeline companies have led to an expansion of the system throughout the period. Between 2002 and 2004, the average annual expenditure for natural gas pipeline development was $3.5 billion, corresponding to approx. 2,000 miles or 100 bcm/a of added capacity per year. The focus of recent investments was on expanding the import capacity from Canada. Within the US, priority is given to expanding capacities between the regions of increasing production (Gulf of Mexico, Central Region) and regions of increasing demand (Southwest, Northeast, Midwest, West). Thus, among the major projects undertaken was a new deepwater pipeline system in the Gulf of Mexico (18 bcm/a), the Cheyenne Plains Pipeline (5.6 bcm/a) extension of the Colorado Interstate Gas system, which provides shippers greater access to Midwestern markets, and several pipelines reaching from Texas to Arizona and California; also, the connections from the Rocky Mountains will be strengthened by the expansion of the Kern River Pipeline and the newly built Ruby and Coronado Pipelines. Pipeline expansions are likely to continue. Proposed investments for 2006 and 2007 are in the order of $2.7 billion and $3.2 billion, respectively. A list of pipeline projects contains more than 10,000 miles of new pipelines, or 500 bcm/a (Court, 2006). This suggests that significant bottlenecks in the US transmission pipeline system are not to be expected.

Another type of investment is currently taking place in what has sometimes been considered a bottleneck to LNG development: the construction or extension of pipelines needed for large-scale development of LNG import facilities and the interconnecting laterals. A significant amount of new pipeline capacity has been proposed on those portions of the interstate and non-interstate pipeline grid to which LNG developers plan to transport their supplies. LNG terminal builders themselves have proposed to build downstream pipeline capacities to connect the terminal to the grid (e.g. Cheniere). Alternatively, the incumbent pipeline operators should have sufficient incentives to invest in these potentially lucrative segments. As more LNG projects are announced, interstate pipelines have also started to sponsor open-season exercises, with LNG shippers as the main target group. Until now, no binding pipeline constraints seem to have hindered LNG terminal developments. Three interstate pipeline companies have announced plans to expand parts of their system to accommodate additional LNG sources, and six pipeline (lateral) projects in association with proposed new LNG import facilities along the Gulf Coast have been announced for 2007.

An investment project of this type is the Cheniere Sabine Pass Pipeline Company's construction of a natural gas pipeline connecting the proposed Sabine Pass LNG terminal in Louisiana with interstate and intrastate natural gas transmission pipelines in the southern part of the state. In 2003, the company filed a FERC application to construct and operate the pipeline (60 bcm/a, 16 miles long, 42 inch diameter, $90 million) and related facilities to transport natural gas on an open access basis. The whole project (LNG import terminal & pipeline) received FERC approval in December 2004. Both the beginning of construction and the start of operations are scheduled for 2007. Cheniere is also planning two other pipelines linked to LNG receiving terminals (Corpus Christi, TX and Creole Trail, TX).

4.4 Conclusions

Throughout the recent debate on supply security, concerns have been raised about potentially insufficient investments in the transmission pipeline infrastructure.[19] Our analysis of pipeline regulation

[19] See, i.e., the Commission's Conference on the State of Natural Gas Infrastructure on October 12, 2005. http://www.ferc.gov/EventCalendar/EventDetails.aspx?ID=2181&CalType=%20&Date=10%2f12%2f2005&CalendarID=11

and investments does not support this hypothesis. Given that the US natural gas market today is open and competitive, infrastructure investments have not been impeded. The current institutional and regulatory setting in the US poses no serious structural obstacles to natural gas pipeline developments and no particular cause for worry regarding medium-term resource adequacy. Fairly generous rate-of-return regulation has led to significant growth of the US natural gas pipeline infrastructure over the past two decades. Rising demand for natural gas and high prices are favorable to further pipeline expansions and newbuilds. Also, in the "competition" between LNG terminal expansion and pipeline expansion, pipelines have an advantage because they can rely on marginal expansions of existing routes for which administrative procedures (right of way, siting, etc.) have already been carried out to a large extent. Moreover, bottlenecks are unlikely even where the planned expansion is based on LNG import projects, or in regions where pipeline density is low (such as California).

To what extent the solid growth of investment in the pipeline infrastructure is due to the competitive nature of the industry, to cost-of-service regulation, or to "accident" is a question that can not be resolved here. The FERC is currently reviewing its policy in the wake of the upcoming discussion of supply security. This also includes a discussion whether the formal regulators process should include more incentive-based elements, or PBR (performance-based regulation).

5. Storage

5.1 Market structure

Natural gas storage connects the supply side and the demand side, and is therefore an important link in the supply security chain. Underground storage provides capacities to meet peak demand such as daily or winter peaks. In general, storage facilities are filled during the summer in times of "cheap" gas and released in the winter when prices are high. Storage can thus provide a supply and demand cushion when market participants react to price differences between forward prices and spot prices (which need not always be the case, see Simmons, 2000, 2). There are three different types of storage facilities: i) depleted reservoirs in oil and/or gas fields, (ii) aquifers, and (iii) salt cavern formations. These three types differ in their physical and economic characteristics but above all in their capacity to hold natural gas and send-out rates (or deliverability rates).[20] Salt dome storage is more expensive but offers considerably more flexibility in terms of higher withdrawal and injection rates relative to working gas capacity; base gas requirements are relatively low.[21] The majority of working gas is kept in depleted oil and gas reservoirs, which is less expensive but significantly less flexible than salt dome storage. The geology of aquifers is similar to depleted production fields, but the use for gas storage usually requires more base (cushion) gas and greater monitoring of withdrawal and injection performance.

In the US, there are about 430 storage sites (operated by about 120 companies), amounting to a working capacity of 120 Bcf. Eighty-seven percent of this capacity resides in depleted fields, 9% in aquifers, and only 4% in salt caverns. While large storage capacities exist in the gas-producing states of Texas and Louisiana, and—to a lesser degree—in the Midwest, the gas consuming Northeast and California have little storage capacity (Figure 5). The majority of salt cavern storage facilities have been developed in salt dome formations located in the Gulf Coast states. In some areas, most notably the Midwestern United States, natural aquifers have been converted to gas storage reservoirs. The East Coast is

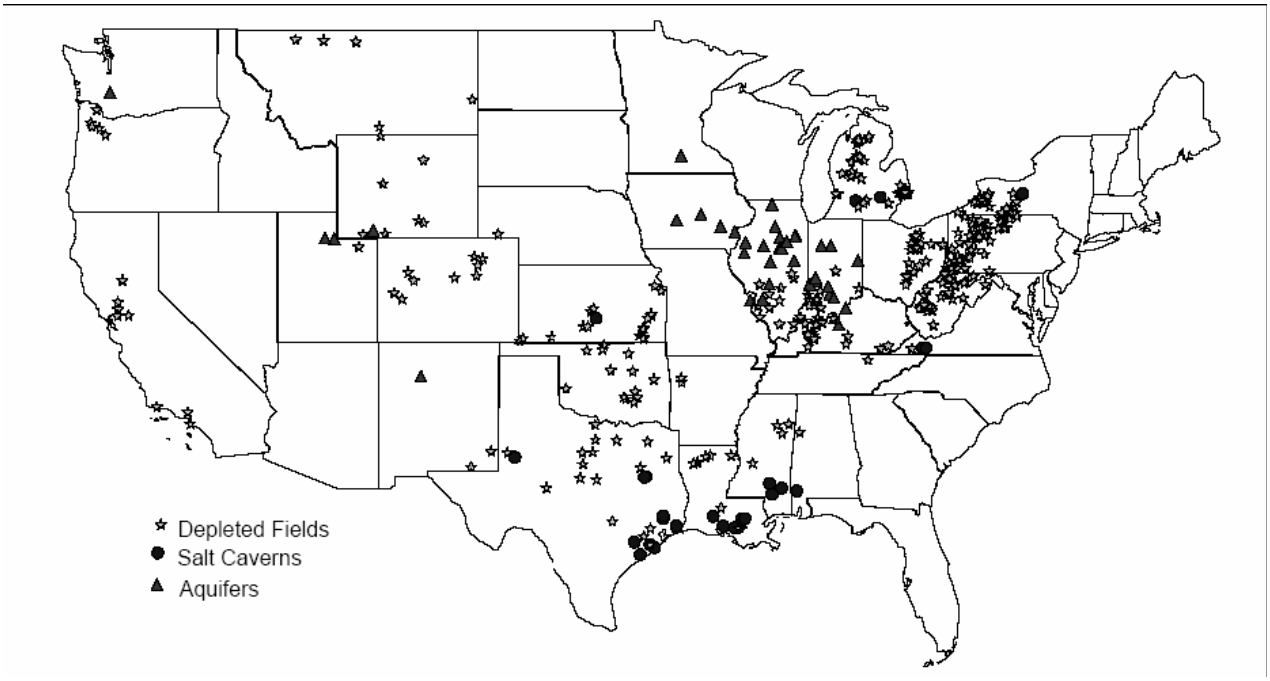
[20] See Simons (2000) for details, and for definitions of the technical terms used. LNG is also stored in above-ground tanks, but is generally not accounted for in the statistics on storage.

[21] The typical number of cycles per year is 4 to 5 for salt dome storage, but only 1 to 1.5 for reservoir storage. Salt dome storage also has the flexibility to withdraw during the day and inject at night in order to serve peaking power generation facilities that only run during the peak electricity demand hours of the day.

characterised by depleted reservoir and aquifer storage, and the West has primarily depleted reservoir storage.

The principal owners/operators of underground storage facilities are (1) interstate pipeline companies, (2) intrastate pipeline companies, (3) local distribution companies (LDCs), and (4) independent storage service providers. Owners/operators of storage facilities are not necessarily the owners of the gas held in storage. Indeed, most working gas held in storage facilities is under lease by shippers, LDCs, or the end users that own the gas. Energy marketers lease storage capacity both to increase the flexibility of products for customers and to enhance profitability (Simmons, 2000, 8).

Figure 5: **Locations of existing natural gas underground storage fields in the United States, 2004**



Source: EIA (2005), Natural Gas Annual, p.30

The very nature of storage has changed significantly over recent years with natural gas utilities changing the way they use storage to hedge summer injections and minimising storage refill costs. No longer a simple backup inventory or seasonal supply source, storage has become a carefully managed asset. Marketers have emerged that move gas into and out of storage as changes in price levels present arbitrage opportunities. This change of attitude goes hand in hand with changes in inventory management and storage utilisation. The deregulation of underground storage and the growth in the number of gas-fired electricity generating plants have lead to a premium on high-deliverability storage facilities. The independent storage service providers, often smaller and more focused companies started by entrepreneurs, are focusing on salt formations and other high deliverability sites. The merchant storage sites are almost exclusively used to serve third-party customers who can benefit most from the characteristics of these facilities, such as marketers and electricity generators. The intensification of LNG imports further increases the strategic role of storage and the magnitude of seasonal arbitrage spreads.

Storage can be used as a real hedge and/or as a financial instrument, and over the last few years, the NYMEX has developed a liquid futures and options market for natural gas storage inventories. The cost of storing should be less then the differential between cost of natural gas in the withdrawal period and the refill period. According to Simmons (2000), a seasonal contango between the summer and the winter

months of $0.50/MBTU or better allows companies to cover storage costs including a rate of return. Seasonal storage price spreads have widened in recent years. Whereas in the period 2001– 2003, monthly average premiums for the following January contracts ranged between $0.23 and $0.92/MBTU, prices have increased considerably since. The current NYMEX off-peak-to-winter (seasonal) storage price curve is in contango through 2010. These developments imply favorable conditions for new investment in natural gas storage, both regulated and merchant gas storage.

5.2 Regulation

If a storage facility serves interstate commerce, it is under the jurisdiction of the FERC; otherwise, it is state-regulated. Traditionally, interstate pipelines and storage facilities are subject to FERC cost-based regulation. There are currently 14 larger regulated storage companies (of which 12 are integrated with pipeline operators, and two are independent). FERC Order 636 required pipeline companies to operate their storage facilities on an open-access basis. This means that a large part of working gas capacity (beyond the quantity required for load balancing) at each site must be made available for lease to third parties on a non-discriminatory basis.

There have also been recent explicit attempts to make regulation more investment-friendly. Throughout the 1990s, investments in storage capacities were not considered a particularly important policy issue. However, with the California price spike of 2000/01, high gas prices since 2004 and general political concerns about supply security, public awareness of limited storage capacities increased. One obstacle to storage investment has been identified in FERC's narrow interpretation of market power, leading to storage operators being prevented from applying market-based rates. Complex administrative requirements and procedures have also been cited as entry barriers (FERC, 2004, 27). Reacting to these challenges, the Energy Policy Act of 2005 implemented provisions to favor storage investments. Companies are now allowed to set their own rates based on open season and market characteristics before handing them to FERC, which then either accepts or changes these rates accordingly. The Gas Storage Pricing Notice of Proposed Rulemaking (NOPR)[22] i) expands the definition of the relevant product market to include close substitutes for gas storage services for the authorisation of market-based rates;[23] and ii) implements the new Natural Gas Act Section 4(f), which permits the Commission to authorise market-based rates even where an applicant has market power. Current rate policies thus provide higher flexibility to design cost-based rates, negotiated rates and market-based rates. This move corresponds to a loosening of FERC's stand on market power issues.

5.3 Investment

Recent projects and outlook

Restructuring of the natural gas industry has also changed the fundamental understanding of the role of storage in the value-added chain and the corresponding investment patterns. Today, not only interstate storage sites but also state storage facilities owned and/or operated by large LDCs, intrastate pipelines, and independents operate on an open-access basis, especially those sites affiliated with natural gas trading hubs. Storage is used in conjunction with various financial instruments (e.g. futures and options contracts, swaps, etc.) in attempts to benefit from changing market conditions. In the "new" world of commercial storage, different investment strategies are pursued by different players. Independent storage operators are

22 Docket Number RM05-23-000, and AD04-11-000; Rate Regulation of Certain Underground Storage Facilities (December22, 2005) 74 FERC ¶ 61,076 (http://www.ferc.gov/whats-new/comm-meet/121505/C-1.pdf).

23 Close substitutes for storage, such as spare pipeline capacity and LNG imports, are recognized as being competitive.

more interested in high deliverability rates, and therefore invest mainly in salt caverns and high deliverability sites. The largest growth in daily withdrawal capability has been from high deliverability storage sites, which include salt cavern storage reservoirs as well as some depleted oil or gas reservoirs. The largest investment projects of recent years have been concentrated in the Southwest/Gulf Coast area (EIA, 2004a). This trend is favored by the existence of a large natural gas pipeline infrastructure and the presence of a rich salt formation geology on the Gulf Coast of East Texas, Southern Louisiana, Mississippi, and Alabama.[24] During the past years, average additions to withdrawal capacity have been about 20 bcm/a. At present, investment in storage is high. Since the beginning of 2000, FERC has approved 49 storage projects. There are 14 storage projects pending. Potential projects total about 107 Bcf of capacity and have a deliverability of 5.3 Bcf per day. The majority of these projects are located in the Gulf Coast region. Further development of storage will also depend on the amount of gas supplies from potential LNG terminals in that region.[25]

The changing nature of natural gas storage, which has gone from being a regulated, "boring" industry to a dynamic, market-oriented industry, in combination with increasing natural gas demand, has led to an upward revision of forecasts for future gas storage requirements. Official FERC projections assume new gas storage requirements in the range of 650 Bcf until 2020 (FERC, 2004, 15). 210 Bcf are required by 2008, and another 440 Bcf by 2020. Currently, the average size of the approved projects is "only" about $50 million.[26] This indicates that the barriers to entry are relatively low, and that merchant investment in storage has become a feasible alternative to traditional investment.

Corporate strategies between full integration and independents

Two different examples show the wide range of corporate strategies between traditional, integrated and cost-based investment, and the new approach to independent, more merchant-oriented investment:

- KeySpan, the largest distributor of natural gas in the Northeast United States, is an example of a vertically integrated utility operating and investing in storage on a traditional cost-of-service basis. The core of the company consists of regulated natural gas and electrical utilities and some unregulated subsidiary companies engaged, for example, in exploration and production of oil and gas, and investments. KeySpan Energy Development Corporation has investments in electricity generation, exploration and production of natural gas, natural gas pipelines and gas storage in the Northeast region of the United States and the United Kingdom. Upstream, the company is engaged in the exploration, development and production of domestic natural gas and oil properties (Appalachian Basin). KeySpan's wholly owned subsidiary, KLNG, owns and operates 600,000 barrels of LNG storage and receiving in Rhode Island. In a joint venture with BG LNG Service, KeySpan plans to upgrade this facility to accept marine deliveries and triple vaporisation capacity. Downstream, the company owns electricity generation facilities powered by natural gas. Within this portfolio, natural gas storage facilities are being expanded continuously.

- Situated at the other end of the scale, Falcon Gas Storage represents the "new generation" of gas storage owners and operators, both in its financing and in its technical approach to gas storage management. Falcon is a greenfield start-up, founded in 2000 with $5 million in investment fund capital (Energy Spectrum Partners). Within only six years, Falcon has become the largest

[24] In 2003, this area of the United States accounted for 26 percent of the new pipeline capacity, and 55 percent of the combined working gas storage capacity additions installed in the Southeast and Southwest regions.

[25] Updates can be found at FERC's website: http://www.ferc.gov/industries/gas/indus-act/storage.asp

[26] Source: FERC Office of Energy Projects.

independently owned developer and operator of high-deliverability multicycle (HDMC) natural gas storage capacity in the US, offering firm and interruptible services at market-based rates. Falcon started out with the purchase of the Worsham-Steed (TX) depleted oil and gas reservoir in 2000, which was turned into a storage facility capable of providing storage services from two to six inventory cycles. Additional equity investment was raised in 2001 to acquire the Hill-Lake (TX) storage facility (10 Bcf working gas storage, operating since 2002, and fully subscribed in the very first year). The third project, MoBay Storage Hub (AL), was acquired in 2002, and henceforth developed to become the largest, most southeasterly HDMC storage facility in the US, directly connected to the Gulfstream natural gas system.

5.4 Conclusion

The US storage market is well developed and there are no evident shortages that would endanger supply security. FERC Order 636 has provided a new structure for the storage market. "Interstate" storage capacities—those regulated by FERC due to their use for interstate trade—are subject to costof- service regulation. However, price caps as defined above are often not reached, as storage companies negotiate "market-based" rates. Prudent investors are assured of recovering capital costs at almost no risk. This setting, using regulation to provide a "safety valve", has worked well to spur storage investment.

Restructuring has also changed the perception of storage by the market actors, and led to the emergence of independent, merchant-oriented storage operators. Although the ownership of storage capacity remains largely with the interstate pipelines and gas utilities, natural gas marketers now control about one-fourth of underground storage capacity through contracts and gas supply asset management agreements. The market has become transparent, favoring further investments by independent companies.

Despite the sector's rapid growth, concerns have been expressed recently as to whether future requirements for natural gas storage will be met. FERC predicts that up to 2020, storage requirements will increase to approximately 650 Bcf. The issue is addressed by FERC's NOPR on rate regulation of certain underground storage facilities, easing price regulation and market power control. FERC assumes that the market has become more competitive and is now focusing more on investment than on market power issues.

6. Cross-Sectional Policy Issues

Our discussion on natural gas infrastructure has shown little concern about the adequacy of LNG terminals, interstate pipelines, or storage facilities. This does not imply, however, that there are no important policy issues to be considered in this area. The following section highlights some crosssectional policy issues that may play a role in the further reform process.

6.1 Appropriate cost of capital

One concern regards the cost of capital calculated by FERC to determine regulated rates—a key issue in any cost-of-service regulation. On several accounts it seems that the allowed rates of return in the US gas sector are high, some argue perhaps too high. From a theoretical perspective, a firm will undertake investments if the discounted present value of net revenues equals (or exceeds) its capital costs. The central question is how to estimate an appropriate, risk-adjusted cost of capital. While rate of- return regulation has sometimes been criticised for triggering overinvestment and an inefficient use of capital and labor, it has also been argued to secure long-term investment. FERC may have used the cost-of-capital estimations as an instrument to encourage companies to invest both in the pipeline and in the storage business. Joskow (2005a, 20) and Loeffler (2004) have suggested that investment in the natural gas pipeline system has proceeded fairly smoothly due to the FERC's generous interpretation of the real cost of capital. On the

other hand one has to acknowledge that pipelines and storage get built mainly because there is a functioning market for the construction of additional capacity (Makholm, 2006).

There is a recurring debate about the appropriate method to estimate capital costs. Since 1998, FERC has been using the discounted cash flow ("DCF") formula.[27] This is a forward-looking approach, as opposed to the backward-looking capital asset pricing model (CAPM), used dominantly in Europe. It has been argued that the discounted cash flow approach overestimates the cost of capital, since financial markets are generally (over-)optimistic about future dividend and growth rates. However, as Makholm (2003) argues, CAPM and DCF tend to yield similar capital costs; thanks to its solid, straightforward theoretical base and because it can capitalise on the depth of the US capital markets, it is "hard to foresee abandoning the discounted cash flow method" relied upon so heavily in the past (Makholm, 2003, 12).

6.2 A "missing money" problem?

Another issue is the structure of price regulation and its connection to infrastructure investments, in particular the regulation of peak prices in times of capacity shortages (congestion). The "resource adequacy" question, discussed at length in electricity generation and transmission has also been mentioned in the natural gas sector, although natural gas infrastructure is less subject to "pig cycles" than electricity generation. To some extent, the situation in natural gas pipelines and storage may resemble the "missing money" phenomenon currently enlivening the debate over the adequacy of resources for electricity generation.[28] The quest of pipeline and storage operators for "market-based" rates assumes that by applying prices that are based on utilisation rates and thus (very) high in times of shortages, the necessary financial conditions for investment are created. In recent years, FERC has indeed suggested a more intensive use of market-based rates in all three infrastructure sectors. It may be difficult to distinguish peak prices due to congestion from artificially increased prices due to abuse of market power. The obligation to convey real-time information about the physical state of the infrastructure (available capacity, utilisation, ratios, maintenance schedules, etc) is useful to increase transparency in this sector. However, due to the high level of competition prevailing already in the sector, the "missing money" problem may be less important in natural gas than it is in electricity.

6.3 Deepening and widening of financial markets

The success of industry restructuring is closely linked to the intensified use of financial instruments. These have, to a large extent, taken the place of traditional risk-hedging strategies such as vertical integration. Thus, financial market growth has helped to ensure supply security. The futures market now offers contract periods up to seven years and is liquid for at least a two to three-year period. Henry Hub is an ideal point for physical delivery, being situated at the crossroads of 16 natural gas pipelines and close to producing fields, LNG terminals, and storage facilities.

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27 Opinion No. 414-A, 84 FERC ¶61.084 (1998). The formula for the Discounted Cash Flow Method is K = d/p + g, where K = cost of equity (the expected return on equity investment); d = current dividends per share; p = current market price per share; and g = anticipated growth rate (the expected annual growth in dividend or market price of stock). For more details, see Loeffler (2004, Appendix B).

28 In essence, the "missing money" problem (Hogan, 2005) refers to the fact that capped prices for a partially congested infrastructure do not allow the investor to recover the fixed costs. As a solution, Hogan (2005) has argued for abandoning the price cap on wholesale markets, so that generators can obtain a (scarcity) rent to cover their fixed expenditure (the "missing money"). Opponents of this mechanism insist on the political infeasibility of skyrocketing prices, and suggest combining a price cap with a forward capacity market (Crampton and Stoft, 2006). It has also been argued that bankers would be unlikely to provide large sums of investment if they are to rely on scarcity rents for returns.

In recent years, new financial products (such as swaps) and more widely used clearing services have been introduced successfully (FERC, 2005). There are now more than 40 delivery points available for basis swaps, compared to 20 three years ago.[29] Likewise, index and swing swaps have been extended as hedges against daily price volatility.[30] The NYMEX also introduced a hedge against last-day changes in futures prices (the "penultimate" swap). Calendar spread options on the price spread between two specified months that are used to hedge the value of storage have been added between April and October, and between October and January. NYMEX has also extended the range of the financial products in the clear port-trading system, which is a purely financial market without physical delivery (FERC, 2004, 146). Further expansion of financial markets would stimulate gas markets, and there is evidence that the market would welcome new financial instruments.

6.4 Coordinating natural gas and electricity markets

Ultimately, a large part of the supply security debate and the interest in natural gas prices is driven by concerns of the electricity industry about secure and reasonably priced natural gas. The large majority of the 250 GW of electricity generation capacity added to the system since 1997 uses natural gas as fuel; however, many gas plants did not survive, and recently the trend has re-shifted towards coal.[31] Given the recent increases in gas prices, it is particularly important that the natural gas market be structured as competitively as possible.

Apart from the California energy crisis, there are no particular signs that the structure of the US natural gas market is not competitive. Market power abuse does not seem to have occurred at a significant level. The recent rise in electricity prices is largely due to demand-driven increases in fuel costs and (possibly) to limited generation capacities. Electricity generators have been able to hedge much of their natural gas price risk through financial risk management instruments.

A convincing example of an efficient interplay between natural gas and electricity markets could be studied in a situation of tight supply during "New England cold snap" of January 15-16, 2005, the coldest two-day period in the Northeast US since 1943. Although both the electric and the natural gas systems were under stress, the markets worked successfully, leading to (high) clearing prices without unscheduled curtailments of load (FERC, 2005, 140). Prices were driven to record highs by the high demand, as customers had a high willingness to pay in order to avoid the, even costlier, consequences of disruption of supply. However, prices decreased rapidly as soon as the cold snap came to an end, signaling the proper functioning of the markets.

One possible reform measure would be to improve the natural gas-electric interface timeline, so that the operations of natural gas-fired generation can be made consistent with both natural gas and electricity business timelines. In some cases, generators must purchase and schedule pipeline transportation before day-ahead power schedules are announced.[32] Also, the flexibility of pipeline transportation services could be increased to help match power and gas scheduling (e.g. hourly flexibility of pipeline services).

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29 "Basis swaps" allow market participants to hedge the risk of transportation costs between Henry Hub and their preferred point of physical delivery.

30 Index swaps let a market participant hedge exposure to daily price changes by locking in a monthly index at a given physical point; swing swaps let customers hedge against changes in daily price changes without being tied to a monthly index.

31 From 2009, future capacity additions will be from coal (additional capacity of about 15 GW in 2009) rather than from natural gas (~ 8.5 GW).

32 Thus, the gas operating day in New England starts at 10:00 a.m., while the power day commences at midnight, hence power operations straddle two natural gas days, and vice-versa.

6.5 Siting

The most severe obstacle to resource adequacy and supply security may not be economic but political: the issue of siting. At present, the greatest difficulty in establishing new natural gas infrastructure in the US is the problem of obtaining the necessary siting permission. This is most extreme for LNG receiving terminals, where siting problems are more severe than other technical, financial, and economic issues; but it is also a determining factor for pipeline expansion, and, to a lesser extent, for underground storage. Resistance against siting of infrastructure is partially driven by concerned individuals, but it is also used as a bargaining instrument by interest groups to obtain a larger share of the profits that the new infrastructure is likely to generate. Therefore, finding appropriate mechanisms for negotiating between stakeholders is key.

Siting issues are now being addressed more systematically by federal and local policymakers. The Energy Policy Act of 2005 explicitly addresses appropriate siting procedures as a major step towards developing an adequate, reliable, reasonably priced and diversified energy supply. The National Commission on Energy Policy has developed guidelines to address the barriers that currently hamper the siting of new, and the extension of existing infrastructure. The best practices that currently exist in state-level siting processes should be implemented across the country.[33] While this can help to ease the technical framework for siting, more determined political support at all levels will be required if natural gas infrastructure is to be expanded significantly.

7 Conclusions

Natural gas is a strategic element of the US energy supply. Although prices have risen significantly and may stay high in the years to come, the role of natural gas as a clean and flexible energy source is likely to increase further. Given current concerns about the security of resource and infrastructure supplies, the debate about the pros and the cons of restructuring is back on the agenda.

In this paper, we have looked at the market structure and the regulatory framework in the US natural gas sector and the resulting infrastructure investments. We have highlighted the main tendencies of infrastructure investment in the three market segments LNG terminals, interstate pipelines, and storage. We have found no significant obstacles to infrastructure investment that would constrain resource adequacy and/or put supply security at risk. One new LNG terminal has been finished recently and several new LNG-receiving terminals are expected to come on stream within the next few years; there may be too many investment projects rather than too few. Interstate pipeline development is dynamic and sustainable, and further expansions are expected to improve the connections between natural gas supplying regions (Texas, Louisiana, Alaska, LNG terminals) and the centers of consumption. Investment in natural gas storage has led to significant capacity additions; natural gas storage is turning from a “cost-plus” industry into a dynamic, market-oriented industry with ample investment opportunities. The regulatory framework has so far been conducive to investments in the sector. We have pointed out where further improvements could be made in the institutional framework that would enhance the efficiency of regulation. These concern the combination of cost-based regulation with elements of incentive regulation, the use of financial markets, the coordination between natural gas markets and electricity markets, and the streamlining of siting procedures.

[33] These include providing clear and accessible agency rules, requiring up-front, pre-filing efforts by developers, focusing the siting approval process on the question of whether a specific infrastructure proposal at a particular place is acceptable, and providing state and federal siting agencies with sufficient resources (NEPC, 2006, 11).

Over the last two decades, a competitive market for natural gas has emerged in the US without evidence of adverse effects on supply security. In the restructured market, natural gas could even increase its market share, in particular in electricity generation. There is also no evidence that the reforms undertaken in the 1980/90s were ill-founded. Could not the fact that so little academic research has been carried out on the US natural gas market — in contrast to vast amount devoted to electricity markets in the event of restructuring — be understood, in a sense, as further "proof" of this?

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SUMMARY OF DISCUSSION

Chairman Jenny opened the roundtable by introducing the panellists participating in the roundtable discussion: Mr. Donald Santa, formerly a member of the Federal Energy Regulatory Commission in the US and now President of the Interstate Natural Gas Association of America; Mr. de Ladoucette who is le Président de la Commission de Régulation de l'Energie de la France; Mr. Smith, member of OFGem in the UK; Professor Nambu from Japan's Nagakushu University; Professor von Hirschhausen, Chair of the Energy Economics and Public Sector Management Department at Dresden University in Germany; Professor Francois Lévêque from Ecole des Mines de Paris[1] ; Mr. Cronshaw, Head of the Energy Diversification Division in the Office of Long-term Cooperation and Policy Analysis of the International Energy Agency; and Mr. Khayat, manager of gas and power strategy at Total Company. The Chairman also thanked Sally Van Siclen for writing the background paper and John Hilke, Consultant to the OECD Secretariat, for helping to organise the scenario for the roundtable discussion.

The roundtable discussion was organised around three sessions: 1) The meaning, sources and price of energy security (ES) and the challenges of developing or maintaining an efficient distribution of natural gas from a supply not necessarily in the country of use, 2) Promoting large investments required for the natural gas supply chain (transportation and distribution) and 3) the role of competition policy and case examples as they relate to energy security.

Session I

Session 1 included two subtopics: the meaning of energy security and the determinants of energy security and how these relate to competition policy. The Chair invited the delegations from Brazil, Lithuania, Switzerland, and Czech Republic to define energy security in their contexts using examples.

Braz**il** defines energy security as "assuring an equilibrium between supply and demand at all times." Even though Brazil uses mostly hydro-generated electricity, natural gas is important to energy security, as it helps to avoid supply crises. To address the issue that 90% of Brazil's gas supply is dependent on Bolivia, , Brazil is building two re-gasification terminals to allow LNG imports. It has also signed a declaration with Venezuela to construct a pipeline connecting Venezuela, Brazil, Argentina, and Uruguay. Finally, to encourage private investment in the natural gas sector, a bill has been drafted to establish a new regulatory framework of the sector including pipeline access rules.

Lithuania defines energy security as "a reliable and diversified energy supply at reasonable or market prices", although no market prices exist presently. The EU's emphasis on interconnectivity as a means of enhancing energy security is Lithuania's top priority, in order both to mitigate the risks associated with a single provider (Russia) and to protect Lithuania from the risk of having energy being used as a political tool. Lithuania depends heavily on Russian gas since Gazprom, a state controlled, vertically-integrated gas monopoly, is the only supplier and owns the pipeline. On the other hand, the two companies that own the

[1] See : http://www.cerna.ensmp.fr/Documents/FL-ElectricityJournal-June06.pdf

Lithuanian gas company (Gazprom and Eon) are not interested in diversifying. Therefore, government intervention is needed to secure another gas source, in particular from Poland. Lithuania also calls on Europe to invest in renewable and nuclear energy sources, which will improve energy efficiency and access for all countries while reducing political risks associated with limited fossil fuel supplies.

The Chairman asked Switzerland to clarify two apparently conflicting statements in its contribution, as follows. On the one hand, the statement is made: "If conceived as a public good, the market will not normally fix a correct price for energy security"; and, on the other hand, it is also stated: "the Swiss delegation considers energy security as being primarily the responsibility of the market, whereby the government only intervenes if the market fails." So, if the market does not give the good price for energy security and if the government does not intervene, what are the ways to find the proper price for energy security?

Switzerland places its approach within a theoretical framework which distinguishes four classical market failures, which are the only circumstances in which the state must intervene: 1) Public goods or public services; 2) Natural Monopolies; 3) Externalities not being internalised through market mechanisms; and 4) Information asymmetry. If energy security is a public good, government intervention is appropriate. However, to limit State intervention to what is really necessary, definition of a "public good" is limited to non-rivalry and non-exclusivity. The "contradiction" mentioned by the Chairman stems from the fact that the State itself does not provide for security of supply, but leaves this task to specialised agencies which are encouraged to operate freely as far as possible. However, for gas, this system is not yet available, as it is for electricity and oil. Switzerland's security of supply philosophy holds that in the event of a market disruption, price changes should be passed on to consumers. Meaningful prices should follow market trends and have little volatility; there is no instrument with which to realise these two objectives. In case the government does not want to bear the cost of long-term subsidies as a result of governmental price stabilisation and inaccurate market forecasts.

Chairman Jenny next turned to Mr. Lévêque.

Francois Lévêque emphasised the importance of separating resource adequacy from the definition of security, and the role government should play in each. Security is a collective public good because it deals with the reliability of the distribution network. Resource adequacy deals with supply meeting future demand and the role investments play in maintaining sufficient capacity. He pointed out that this makes resource adequacy a private good and that it is important not to mix these two definitions. He then proceeded to inform the roundtable that market failures and the existence of a public good comprise a necessary condition for intervention, but not a sufficient condition, because both government and markets are imperfect. Thus the requirement for intervention should be based on which alternative is less imperfect: markets or government. Mr. Lévêque asserts that 'public good' does not mean that government intervention is always required.

Chairman Jenny then gave the floor to the Czech Republic.

Czech Republic began their presentation by describing some of the challenges of supply in natural gas in the Czech Republic with 70% coming from Russia and 30% from Norway. Supply from Norway has already been maximised and, therefore, their dependence on Russia is likely to increase. Czech Republic produces less than 1% of its own natural gas, hence security is a significant concern. One major problem in the CR results from the government's selling of its distribution system and storage capacity to one owner, just before the unbundling of the Czech energy markets in 1999, effectively creating little competition and contributing to greater security risks in the gas market. This single owner controls reserves, and it profits from arbitraging seasonal pricing fluctuations. This creates low summer reserves that are not in the interest of the state because the firm does not maintain any strategic reserves.

However, the CR is a transit state, with three times more gas passing through the state than is consumed. 98% of electricity is produced domestically (uranium or coal). The electricity market works very well, further contributing to the opening of the market and the increase of exports.

Drawing from the lessons of experience, the Czech delegate made some recommendations to prevent crisis: the main pipeline should not be sold to the company that owns the distribution system; the maximum level of independence must be kept and domestic energy sources should be used as much as possible; strategic reserves should be maintained in government hands.

Chairman Jenny moved onto the second sub-topic of whether competition facilitates energy security or is detrimental to it. The chairman identified two groups, one arguing that competition contributes to energy security, and the other that too much downstream competition dilutes buying power and increases insecurity of supply.

The UK first focused on short-term supply and the role demand-side response played in helping get through the 2005-2006 winter with lower than normal supplies due to an accident with one of its offshore storage facilities. UK gas demand roughly breaks down 1/3 each among power generation, industrial, and domestic load. In response to higher natural gas prices, electric power generators switched to coal or to back-up distillate fuels, thereby reducing gas consumption by 40 million cubic meters/day, or 10% of typical peak UK winter consumption. Industrial customers responded by reducing or shutting down production or by switching to back-up fuels, thereby releasing 16 million cubic meters/day or roughly 5% of typical peak winter consumption. Residential and small industrial sector consumption was down 8%, adjusted for year-on-year temperatures. The delegate speculated that this was due to increased sensitivity to market prices, causing users to lower thermostat settings.

In essence, all three demand sectors responded to constrained supplies as a result of the liquid, transparent, and competitive spot market. So the different players could see what was occurring and respond to the rising spot prices accordingly, compelling lower consumption through economic incentives. It was the very presence of that market that gave UK consumers the tools and understanding of the supply difficulties on particular days and provided them with the economic incentive to actually sell their gas back into the spot market. Real and immediate price signals encouraged rapid response on the demand side, and overall the market adjusted effectively.

Chairman Jenny asked the EU to state its position about whether competition can contribute to energy security and how it proposes to solve the paradox of more competition and less buying power, which leads, therefore, to more instability and insecurity of supply.

The EU began by stating that it is intuitively easy to understand the need for bigger firms with more buying power that can establish more favourable conditions in the face of big suppliers at the global level. However, two points challenge this argument.

- First, security of supply is about disruptions of supply to the end consumer. It is not enough to have a global demand in the EU being equal to the global supply of the big firms that buy gas on the international market, but it is, rather, essential to have such technical and economic conditions that gas or electricity is supplied to the end consumer efficiently and reliably. Long-term contracts for large gas purchases from big countries and suppliers at the global level cannot avoid blackouts in large geographical areas.

- Secondly, buying power does not depend entirely on size; indeed, one supplier can actually weaken the buying power of different players. Therefore, diversification of the sources is essential to assuring security. Creating big firms within national boundaries does not assure

secure supply to the end consumer, despite the possibility for higher margins. The potential for higher profits does not necessarily improve the security of supply and conditions to the final citizen. Increasing interconnection capacities creates an internal European market with greater access to more customers, instead of focusing within national boundaries. Downstream competition is conducive to better pricing and service to the final consumer

Chairman Jenny recognised Italy next.

Italy directed a two part question at the UK delegation regarding the liquidity of their gas markets in contrast to Lithuania's absence of market pricing. How was it possible to create the level of liquidity in the UK; and is the spot market relevant for identifying supply conditions in gas?

In response, the UK stated that the spot market is very relevant, but the conditions are partly a result of the large size of the gas market in the UK relative to the rest of Europe, roughly 20% of the combined demand of the EU The U.K's large natural gas market, historical developments, and the North Sea natural gas supply contribute to their liquidity, which could well be second only to that of the US The role of unbundling is also important to liquidity.

On Italy's follow-up questions --Would that liquidity be related to the fact that the UK is a producer of gas, like the US, for example? Also could a fully importing country like the Czech Republic or Lithuania create a spot market such as the one described by the UK?-- The UK briefly responded by referring to the size of their market and the trend that in 3 or 4 years they will become a net importer. Nonetheless, there are no signs that their liquidity will cease as they stop being a producer. The delegate recognised that smaller markets like the CR may need to combine their markets with neighbouring markets to create enough physical size to carry the cost of a spot market and encourage the requisite investment.

Chairman Jenny turned to Japan whose position is to monitor deregulation in order to strike a balance between encouraging a competitive environment and securing a stable supply.

Japan clarified that this interplay is not a trade-off; some conditions are necessary in order to strike a balance between encouraging a competitive environment and securing a stable supply. This is realised in securing energy sources at reasonable prices from reliable sources abroad, and in constructing in the domestic market a sufficient amount of spare capacity to supply sufficient amounts of gas energy for consumers. Japan must import more than 96% of its gas in the form of LNG since Japan is an island and no pipelines connect it to suppliers. This requires a large initial investment from suppliers in order to construct the necessary equipment, and in turn requires a long-term demand commitment from Japanese industry. A liberalised market will encourage demand accumulation and generate conditions conducive to persuading suppliers to invest. However, with its aging population, the estimation of energy demand decreasing and its geographical specificities, Japan must explore appropriate regulatory reform suitable for these condition.

Chairman Jenny turned to Norway to explain the relationship between its demand driven market response and security of supply.

Norway's hydro-based system experiences large price variations between seasons and years, due generally to supply fluctuations, since consumption is fairly stable. Lack of power stem from two main causes: 1) a problem with one or more of the hydro power plants and/or, 2) a problem in the transmission system that creates an imbalance. The balancing mechanism that encourage demand-side response in such situations is a real-time market that sets prices hour by hour, which is the main tool to secure power reserves during operating hours. Market participants on the demand side can make bids to balance the market through demand reductions on an hourly basis for the following day. With respect to lack of

energy, typically occurring because of hydro inflow reductions, price increases is the primary mechanism to rebalance consumption with supply. Most consumers have contracts where the energy price is dependent on the spot market price for electricity. Since most consumers use electricity for heating, they can use wood or oil as a substitute when electricity prices are high. In a situation with lack of energy, the market is split in price areas, resulting in higher prices and lower demand in the area where energy is scarce. Power-intensive industry provides additional demand-side flexibility, to the extent that even in really dry years it has not been necessary to use rationing as a balancing tool. There is also a reserves option market for energy, which secures additional energy reserves. Market participants may guarantee specific volumes of energy reserves in the form of demand reductions. These bids must have a minimum duration of one week.

Before the establishment of a reserves option market in 2000, the Norwegian Competition Authority was approached by industry representatives wishing to cooperate on providing reserves for the TSO (Transmission System Operator). They were advised that if cooperation was necessary for energy security reasons, they could apply for an exemption from the competition rules. Such an application never came, and reserves are provided according to market mechanisms.

The Norwegian delegation provided an example from the winter of 2002-2003 when prices rose to their highest levels to date. Using the tools aforementioned, this resulted in large reductions in consumption, and authorities did not have to intervene. In situations with lack of energy in a region, the TSO sets up a separate spot market area. Typically, the price in the constrained area will be higher than in neighbouring areas, reflecting the lack of energy generation the region is experiencing. This leads to reduced consumption of electricity. Last year, a new market for energy options on demand reductions was introduced. The TSO has entered into agreements with industrial customers that entail reductions in consumption for a number of weeks during the winter months in case of a critical supply situation. The TSO pays for the right to decide if and when demand reductions will be activated when buying an option, and has to pay an additional sum if an option is exercised. These options are only to be exercised in situations where there is a very high probability of rationing. Additional demand-side flexibility could be provided by introducing mandatory hourly metering of household and other house consumers. This has so far not been considered economically profitable in Norway.

Chairman Jenny looked to Sweden to provide an alternative viewpoint cantered on the assigning of responsibility for reserves to the grid operator during peak demand periods.

Sweden's delegate explained that after the 1996 deregulation, excess capacity was phased out to improve efficiency, but with less reserve during extreme peak demands. Subsequently, Sweden created a temporary (2003 to 2008), market-based solution to allow the TSO (Transmission System Operator) to procure peak load reserves of up to 2000 megawatts to be available during winter months. 75% of the peak load reserve is in standby capacity and some 25% is demand reduction among the large industrial consumers. Two problems arise from this:

- The reserve in itself means that the incentives for keeping certain types of capacity are being continually lowered, so this reserve may need to be increased over time, and the incentives to invest in certain types of capacity are taken away from the market.

- How to price this reserve in the market without distorting the market functionality?

Sweden looks to a market-based solution that places responsibility on the companies to maintain security of supply. All measures taken have been national in scope and recognise the importance of demand-side flexibility among smaller users. However, the delegate stated that because the energy system

is a Nordic-wide system, a more regional solution may provide the best alternative to state-managed emergency reserves.

At the invitation of Chairman Jenny, Professor Nambu described the Japanese gas industry with an emphasis on long-term contracts and the issue of security policy from a broader perspective. In Japan there are about twenty city gas providers, but the major companies, Tokyo gas, Osaka gas and Toho gas, account for 75% of the total production. Eight gas companies import LNG. There is no gas distribution network in Japan equivalent to the EU network. Further, about 50% of national gas supply is associated with liquid propane gas providers.

Professor Nambu highlighted some of Japan's characteristics, including the fact that it is a remote island; it has very little domestic energy production and its demand for energy is very large. As a result, liquefied gas is transported by ship, then it is put through a regasification process before it is supplied to gas and electric companies. Among LNG imports, electricity companies account for 66%, the city gas companies under 3%, and roughly 30% of the production is accounted for by other uses of LNG. Consequently, electricity and gas companies cooperate to import LNG from abroad and energy imports are diversified by country, including: Indonesia 30%, Malaysia 22%, and Australia 15%. The demand in Asian countries is high and Japan accounts for roughly 50% of imports by Asian countries.

The major concerns regarding security in Japan are price stability in emergency or normal periods, and the potential for import disruptions. As a result, Japan has been depending on long-term contracts and cooperation in developing new LNG sources.

Professor Nambu discussed the difference between oil prices and gas prices, stating that oil prices fluctuate day by day, year by year, but with LNG, Japan depends upon long-term contracts, so the import price of LNG is very stable. Tokyo Gas has a contract with Darwin to develop new LNG projects. Tokyo Gas is a buyer/investor in LNG projects. Several examples reveal how Japan's contract structure for gas procurement leads to stable prices and bolsters security of gas supply.

One future concern for Japan is the prospective linkage between oil and natural gas prices that may arise due to the speculation of hedge funds and other powerful organisations. Another concern is the pricing of fuel emission rights, which will fluctuate in the future and will affect LNG prices.

Central to Professor Nambu's discussion is the increased competition between gas and electricity companies since the deregulation in Japan began in 2000. Should a scenario of competition between the two industries compromise the buyer coordination they now practice, Japan's buying power could be adversely affected. This theory could be realised since electricity companies can purchase LNG for less than gas companies can, which would "raise the rival cost" of gas companies. For this reason. Professor Nambu does not share the view that that competition and security are compatible. According to Professor Nambu, an increase in the number of gas intermediaries or new comers in an LNG market does not assure security, because these companies will act opportunistically to avoid risks. Companies exiting a market could create serious supply security problems. Concerning the 30% reservation of LNG gasification terminals for new entrants, uncertainty due to technological innovation and international markets may cause some companies to exit. This means that reserving a portion of the market for new comers moving in and out of that market could be a waste of resources. Limits on diversification between gas and electric companies seemed arbitrary and unnecessary since the final product from either industry is the utility produced, making them homogenous products. So, in the end, there is the same level of services in the electricity and gas markets.

Chairman Jenny briefly discussed the issues raised by Professor Nambu, including how long-term contracts can contribute to security of supply, or at least to averaging of the price. He pointed to the

questions the Professor raised in regards to the contribution competition has on security, and hoped that delegates would address these. He then moved onto Spain's contribution as it pertains to long-term contracts in the procurement of LNG and to security of supply.

Spain began with a review of its LNG market in order to address the role long-term contracts play. Considering that LNG accounts for 2/3 of the gas imports, Spain has the highest rate in the EU. Due in part to the demand from electricity generators and more so to regasification plants, LNG has allowed for a liberalisation process within the Spanish gas market. In the late 1990s, liberalisation began, and two key liberalisation measures were introduced: i) the ownership unbundling of the transport system operators and ii) the release for the long-term contract of the incumbent operator, which allowed new comers to seek for new contracts.

Thanks to these measures, Spain's gas market expanded from a single pipeline and 3 LNG regasification plants to 5 LNG plants, two more under construction and another pipeline being constructed by a consortium of private companies. Spain's LNG infrastructure has been developed by a mixture of both private initiative and government intervention. Intervention is in the form of regulating when new LNG plants are needed based on the demand versus capacity gap in the basic system. However, the 5 or 7 existing plants were developed through private initiatives, although they are still included in the basic system. This has some consequences in terms of income they will receive. Though a mixture of tariffs and private prices apply, typically they might recover all their fixed costs through transit tariffs. But the more crucial question is that they are subject to third-party access rules, so they are subject to higher information or transparency requirements. 25% of the total capacity must be reserved for short-term contracts, and no company may hold more than 50% of this percentage. The rest is for long-term contracts. Under a 'first-come-first-served' rule (which might be changed to comply with EU directives), there are some other safeguards in order to guarantee fair access for third parties. There are some obligations in terms of guarantees, penalties and severe "use it or lose it" rules. To conclude, the delegate highlighted four points: i) Long-term contracts in this case are allowed, but they are subject to some rules so they contribute to energy security; ii) Regulation has created incentives because all LNG plants are owned either by the transport operator, which is totally independent from gas suppliers, or by new comers. The incumbent operator just accounts for 35% of the total import capacity of these plants, which makes or creates contestability in the market; iii) Regulation has also created incentives for LNG security by allowing a reasonable margin of excess capacity in the import system; iv) Competition policy has played its role. The competition authority imposed a sanction on the gas incumbent for reserving a large proportion of the gas import capacity, and this case also led to a change in regulation and new regulations are being prepared in order to create a capacity market.

Although the Spanish delegation is uncertain whether LNG will help form the long-term energy security perspective, it definitely has helped in liberalising the gas market in Spain.

Chairman Jenny acknowledged the importance of competition, but also recognised, through Spain's contribution, that intervention has a role as well, which complicates the concern that when intervention is used it may have adverse affects on competition policy or the free market. He remarked that UK may be able to provide a dissenting view. Before the roundtable moved on to the second session of issues, the Chairman asked if any of the delegates had questions on the first session of issues.

In response to Italy, Professor Nambu explained why Japan's import prices for LNG are so stable when Italy has experienced price fluctuations with oil prices. Japan's relationship with supplying countries is very strong due to their participation in the development of new LNG technologies with these countries. However, the separation of gas price from oil price in Japan is at risk in the future due to the development of the financial markets, and oil prices are becoming more closely linked to gas prices.

In response to Australia's question: what was done to promote the demand response of the energy market so that it can play a significant role in securing energy?, the **UK** explained that suppliers developed a whole range of new contract structures, designed to help industrial customer realise significant savings during peak load times. In addition, competition drove innovation in services and provided industrial consumers many new benefits, including information dissemination (i.e. notification of pricing when it reaches certain levels).

To the Australian's follow-up question: We have seen some success in actually targeting industry demand, but what about the actual residential consumers? The UK's response was that residential customers simply adjusted to prices. Nonetheless, there are examples of innovation here as well. One of the domestic suppliers has just introduced a new contract that links domestic prices to the wholesale prices.

Prof. von Hirschhausen explained the role of relative charges in gas prices and constructed this explanation using the Henry Hub spot price. The Henry Hub is a short-term price that has come down recently to $4 - 4.50. Conversely, Japan's LNG import price, pursuant to the Japanese crude cocktail, will rise to about $8 - $9 in the future. So there will be a price difference, the US at $4 and Japan at $9. In addition, the long-term prices imported into Japan are. on average. 1 dollar more expensive than those imported into Europe, which is the premium paid by Japan for this form of supply security. Mr. von Hirschhausen further explained that the future prices in the world market for gas will be determined at the Henry Hub; therefore, the price link between gas and oil should strengthen, even in the cases of Korea and Japan.

Germany asked Professor Nambu how CO2 emission certificate trading will affect LNG prices, because Germany has initiated abuse proceedings against companies regarding misuse of CO2 certificates.

Professor Nambu reasserted his position that developing financial markets connect CO2 emission rights and oil prices with LNG prices. He stated that some financial instruments treat these pricing structures equally, so pricing in the emission rights market could affect LNG pricing. He mentioned again that powerful organisations may be important in determining emission rights prices, resulting in a close relationship between LNG prices and those of other commodities.

The **US** emphasised the importance of two main points, better price signals during peak load periods and supply network flexibility in dealing with the physical security of assets themselves during natural or man-made catastrophes. On the first point, in order to achieve better price signals, the delegate explained that more advanced metering technology is important to inform end-users. and this would lead to greater usage sensitivity. As an example, the major electricity suppliers in California have roughly 5 to 6 billion dollars invested to handle the single hottest hour of the year, therefore with smarter metering technology customers can adjust their consumption behaviour accordingly. Regarding the second point, catastrophic events that might cause significant capacity reductions can be handled if the supply network has enough flexibility to adjust.

Session II.

Chairman Jenny began the second session by outlining the conditions that must be met in order to achieve efficient demand response and greater security of supply in a competitive environment:

- The viable existence of substitutes to natural gas and whether LNG or other sources can, in the short term, easily replace natural gas

- Whether demand response and market-oriented directions will lead to an adequate level of infrastructure investment, given the size and the importance of those investments.

- The structure of the industry, given a competitive market, and the issue realised through unbundling at various stages, specifically whether unbundling is helpful or results in efficiency losses.

- To what extent can storage capacities exist; primarily their influence on a working market, on buying power, and how they are generated by the system?

Chairman Jenny asked Portugal to elaborate on how a competitive supply of sources of energy contributes to security of supply, based on its experience.

Portugal's natural gas sector is relatively new, introduced in the mid 1990's. This large investment was facilitated through a contract between two major co-generation electrical plants and the gas company, insuring the investment would break even. The objective to diversify supplies and reduce pollution propelled the substitution of gas in some industrial firms, and with domestic consumers in the main metropolitan areas, covered a higher-than-anticipated amount of the demand. This is comparable to the coverage in other countries. However, these developments have raised two concerns i) the ways to decrease risk of investments, provide for excess capacity during peak load demand, and manage supply disruptions; ii) The spread of risk which can be unequal when government intervention results in shifting most of the risk to the consumer, causing 10 – 20% higher costs. Purchasing power agreements and state directed investments can reduce consumer welfare.

Portugal stated that a competitive market may be the single most important measure to improve security. Through competition, an interconnected national market, more liquidity in supply and demand, and more active spot and long-term markets, state-protected monopolies and their related problems could be largely overcome.

Chairman Jenny turned to Mr. Cronshaw for a presentation on the issue of substitution between natural gas and other energy sources. The IEA representative described how OECD gas production is decreasing while demand is increasing, diverging from the precedent that production has driven consumption. OECD gas production is dropping from one-half the global amount in the late 1990's to one-third by 2010. Complicating this scenario is the fact that consuming regions in the OECD are quickly increasing their import dependency. OECD Europe is moving from 38% dependency a few years ago to over 50% dependency as soon as 2010. The OECD Pacific, with the exception of Australia, is nearly 100% dependent on imported LNG, and the US will soon begin to import LNG with market forces creating LNG terminals to handle 160 bcm import capacity, nearly a quarter of its gas demand. As described in the Secretariat background paper, LNG supplies are projected to increase to 360 bcm by 2010. The heightened LNG activity is evident and LNG will be sold into the world market, effectively setting the price as a mainstream energy source. Mr. Cronshaw then referred to Professor Nambu's presentation and how the IEA is seeing LNG prices starting to correlate between geographic markets. For example, in the last 6 months of 2006, NBP (British price) and the Henry Hub showed some correlation that is apparently here to stay due in part to some major globalisation of the LNG industry. He used two examples to illustrate his point. Cargos in the Atlantic in 2005 and 2006 moved from one market where they had been earmarked to another market where the price was higher (i.e. North American markets consuming gas Europeans were depending on). In 2006, 40 cargos or more moved from the Atlantic basin to the Pacific basin to meet Japanese demand, which stemmed from rapid growth with LNG prices higher than oil prices and Indonesia unable to meet its long-term LNG supply commitments. He established the importance of understanding that the LNG market is no longer regional; it is global.

With exceptional demand growth and dropping supply levels within Europe, the gap between internal production and projected consumption only can be met in two ways – either by LNG or pipeline imports. Mr. Cronshaw postulated a scenario in which by 2015 Europe could be importing a quarter of its gas needs

from LNG. He stated that specific policy items could be used to mitigate Europe's dependency on certain suppliers.

OECD gas demand growth in Europe has been driven by the power sector. Out of the total growth in power generation, ¾ came from gas, and to a lesser extent, coal, wind, and nuclear. Nuclear generation increases have occurred without any new plant construction, and the situation is almost the same for coal. Wind is the 3rd largest growth source, but wind is not that competitive in price. Hydro generation and oil-fueled generation are in relative decline in OECD countries. OECD countries are experiencing widespread growth in consumption for generating electricity --- it's not confined just to the UK or the US. The Spanish delegate mentioned the growth in Spain. 80% of its incremental power demand growth. This growth has been rapid --- Spanish power has gone from 220 to 290 terawatt-hours in the last 5 years and in this same time period, 60 out of that 70 terawatt growth has been gas-fueled generation. In addition, Mr. Cronshaw made clear that Russia is highly dependent on gas-fired electric power. Nearly half of Russian power is generated with natural gas and a very cold winter could exacerbate supply issues.

In 2005 gas prices increased in most liberalised markets as a result of supply and demand forces. He re-asserted the point that natural gas prices in non- liberalised markets are linked to oil prices. The possibility for fuel switching, primarily in liberalised markets, mitigates price pressures from gas sources, as was the case with coal. Wind offers a minimal alternative, but overall, coal is the only option for short-term alternatives in the electric power sector.

China represents an important influence in the global energy market, as Chinese power growth last year exceeded that of the entire national grid of Germany. The majority growth in electricity generation is currently coal-fired; however, this produced well in excess of 1 giga tons of CO2. China could dramatically change the global LNG market should it become a player by generating more of its electric power from natural gas. However, there are only two LNG terminals in China and a third under construction, so China will remain a very small influence on global gas markets in the near term.

According to one of Mr. Cronshaw's slides, over a 4-month period after hurricane Katrina, the US lost 10% of its gas supply due to hurricanes. The market responded with higher prices, which rose from $6-$7 to about $15. This increase was rapidly adjusted for.

Italy and the UK provide two interesting and contrasting measures related to major supply disruptions and how their markets responded. The UK's liberalised market experienced significant price increases, initially to $20 and even up to $40 in March 2006. Consequently, consumption adjusted, and there was no disruption in supply to retail customers. Italy's experience was markedly different, as a result of Italy's retail price being fixed to about $8 in relation to oil. In the face of cold weather, the gas sector upgraded demand for electricity, and nearly ½ of Italy's electricity comes from gas. With rising demand, Italy experienced a shortage that illustrates how gas security can fail in a non-liberalised, non-integrated market. Mr. Cronshaw contrasted Italy's experience with that of France and Germany, who did not experience shortages as a result of their large reserves. This indicates starkly that the European market is not one market.

As an anecdote, Mr. Cronshaw celebrated the UK's increased import infrastructure, including the construction of a new LNG terminal in just 11 months. Using this example, he stated that the long-term infrastructure and contract models are not essential when one considers that LNG terminals are being built without these contracts and sometimes to service spot markets. Rapid and realistically costly infrastructure construction is occurring and should be considered in countries' energy security strategies. Long-term contracts don't imply security. For example, Japan, whose major supplier is Indonesia, is now 10% under contract in supply.

In the US, industrial consumers, as opposed to the power sector, comprise the greater portion of consumption. This provides a good source of potential consumption reductions, and, along with lower "high" prices during a supply crunch, this differentiates the demand response in the US compared to that of the UK However, due to the rising cost of gas, many of these industrial consumers are relocating to other countries, (e.g. methanol and other chemicals, moving to Trinidad and Tobago, Saudi Arabia and the Middle East). If prices are in the $6-$7 range, as expected, then these industrial companies are not competitive, and so these consumers are not going to remain in the US

Mr. Cronshaw summarises with these key messages:

- The OECD countries are becoming more dependent and they should get used to it.
- Functions in gas markets have demonstrated that they can overcome severe supply disruptions, not without cost to consumers, but they do it quickly and easily.
- In the absence of functioning gas markets, relatively small supplier demand issues can have major impacts. My example is Italy, but I could have given some other examples from Europe, Hungary as well.
- European gas markets aren't working properly, they can't provide the security of supply or competition as they are currently structured and the EU made this clear.
- LNG trade is expanding very rapidly. It's globalising to regional markets. It can and will be a particularly important supply source for OECD markets provided countries build the infrastructures to a) build the terminals and b) link those terminals into markets in a competitive way.

Before Chairman Jenny commenced discussion of the second sub-theme of the roundtable, he observed that Mr. Cronshaw's presentation provided important sources of concern. In promoting infrastructure investment, the Chairman emphasised the concern expressed in many of the contributions about adequate levels of investments at all levels in the chain of supply. Because the requisite investments are large and long-term, there is question as to the adequacy of market forces in financing these investments.

On the one side of the spectrum, there is a more traditional model of vertically integrated and regulated monopolies that secures supply-side investment through long-term demand-side purchasing agreements. On the other side of the spectrum, there is the model of unbundled competition, in which there are numerous players at different stages of production. Regulation is primarily focused on preventing discrimination or promoting competition, even when natural monopoly conditions arise at some levels of the chain of supply. In the latter model, long-term and short-term supply contracts exist side by side, and security of supply can vary according to customers' risk aversion, depending on the terms of contracts and other forms of hedging.

The Chairman asked two questions about the adequacy of investment. Are those two forms adequate to secure long-term investments that one requires or is one model better than the other? The EU contribution states, and the Chairman quoted: "when network and supply companies are integrated, there are too few incentives to invest in networks, the major obstacle to new entry and a threat to security of supply." What makes the EU's Competition Commission believe that unbundling is a pre-requisite to achieve a satisfactory level of investment in infrastructure?

The EU began by addressing the concern brought up by Mr. Cronshaw that the EU energy markets are not working properly. Barriers to investment exist primarily in the vertical integration of incumbents in the different national markets involving cross-sector ownership between areas such as production and transmission networks (most notably in the gas market). The EU described how vertical integration alters incentives in, at minimum, two important ways:

- It reduces incentives to give access to critical infrastructure in a non-discriminatory fashion to third parties that would be or are its competitors upstream or downstream.

- It reduces incentives to extend the network, to do the necessary investments to expand the network, in order to cater to the need of customers that are once again actual potential competitors upstream or downstream to this incumbent vertically integrated player.

The EU focused on the second point --- the incentive is for the vertically integrated player to maintain the status quo, minimising competition to keep up supply restrictions and thus obtain higher revenues. This higher revenue is also bolstered by limiting capacity available to competitors in the market. One can observe how all of the incentives go in one direction as higher income is realised both upstream and downstream due to the reduction in competition. This stifling of competition applies whether discussing transmission networks concerning tubes or infrastructure essential facilities including interconnection capacity, storage capacity, or regasification plants.

The EU stated that one must look to reality, not just at theoretical approaches, in addressing security of supply. Although the reason for vertical integration is to assure that revenues can finance infrastructure expansion, experience reveals that vertical unbundling of the transmission system induces expansion of investment in all of the various parts of the market, while still realising sufficient profitability to finance these investments.

Chairman Jenny pointed out the similarities between the EU's presentation and the contribution on this topic from the UK with the following quote: "provided barriers to entry are low, higher prices in energy markets will lead to investment in additional energy production facilities, leading to improved security of supply. Where arrangements are centrally planned, important information regarding customers' preferences, including willingness to pay for energy security, is not revealed; [and] investment decisions taken under such arrangements are therefore more likely to be inefficient."

The Chairman asked the UK to not only build on the long-term investment aspects of this topic, but also, contrary to earlier contributions, to qualify their position that low entry barriers keep investments strong.

The UK began by describing what has happened to overcome declining North Sea supplies. In short, the market has committed to investment of over 10 billion pounds in new infrastructure, which will provide 60 billion cubic meters of gas by 2010, accounting for about 50% of peak winter demand in 4 or 5 years. The market is responding in the following ways as well: a major new pipeline to Norway, doubled pipeline capacity from Belgium, the conversion of a LNG storage site to an import terminal, in under one year from conception to completion. LNG was delivered from the new terminal at Teesside, two LNG terminals are being built in South Wales, and there is further expansion of the Eastern terminal. The Norwegians are considering the option of a new natural gas pipeline to the UK

The storage concern has been overcome through construction of a new storage site, with three more currently being built, and seven more applying for planning permits. Overall, the UK asserted that regulatory restrictions in the form of uncertainty by planning regimes and connecting infrastructure are the

greatest challenges faced at this time. Nonetheless, the UK supply picture will be transformed by 2010 as is detailed above.

Markets provide for security in ways central planning has not, through diversity of both sources and pieces of infrastructure. With 7 or 8 different facilities, both supply and physical security are enhanced; and, due to the number of players, the range of supplying countries has expanded. Pipeline sources include the Netherlands, Norway, Qatar, Algeria, Trinidad, Tobago, Oman, Egypt and Russia. Clearly, the UK market is investing, and values diversity as a measure of security, which vertically integrated and centrally planned arrangements often do not do.

In summary, the UK asserted the position that, despite the challenges they have faced, the markets have invested readily and heavily in new supplies, to the extent that even risks associated with disruption and high winter demand are covered.

Chairman Jenny gave the floor to Italy.

Italy directed questions to the IEA concerning the reason why stored gas did not flow to the UK, since there was not a lack of price response, as was the case in Italy. He wanted to know why imports did not occur, if prices in the UK were high enough to generate a supply-side response from other countries. Did competition problems or antitrust concerns create barriers to such imports? He asked if the plausible explanation is that government-controlled strategic reserves are managed according to nationalistic concerns rather than market principles.

In response, the IEA stated that the current infrastructure for imports was not in existence when the UK experienced the supply disruption. Nonetheless, there was one interconnecting pipeline and one LNG terminal, but gas did not move to the UK as one would have anticipated. Despite the potential profits from the high UK prices, none of the continental suppliers was prepared to supply gas. After some interactions with the UK competition authority, the one LNG terminal increased production sharply, but this simply was not enough to cover the shortage. The market's ability to adjust to the disruption was caught slightly short by a year. Capacity has increased since this time by 50 or 60 billion cubic meters, so import capacity equivalent to ½ of market consumption is newly available. Storage weaknesses in Europe were illuminated by this example, in terms of how supplies might have been tied up and linked to the terminal issue. The delegate stated that government-controlled strategic stocks may have played a factor, but commercial stocks should have been much more responsive to rising prices, as was the case in the US after hurricane Katrina.

Chairman Jenny gave the floor to the US

The US sought clarification as to how the UK managed environmental policy in conjunction with competition policy, primarily in terms of how sites for the facilities were chosen in less than a year's time. In addition, the delegate wanted to know about the approaches taken to overcome individual consumer and residential community concerns about siting of LNG and other infrastructure.

The UK described the difficulty in accomplishing the major expansion of import capacity, and made it clear that the local and national planning components of the regime chose sites where LNG infrastructure previously existed, or where infrastructures associated with the oil and gas industries already existed. Many of these regions have had employment issues, and these communities were much more responsive. Storage sites represent the greater concern, as underground storage has been shown to be a cause for concern. The best storage sites and pipeline routes are often in high-end residential communities, or must pass through places of exceptional beauty, respectively. Planning regime uncertainties due to such environmental issues can cause a drawn-out process that can take years to resolve.

The IEA stated that there has been an escalation in local objections to siting energy infrastructure going from NIMBY "not in my backyard" to BANAANA "build absolutely nothing at all near anybody" to finally the California example of "not on planet Earth (NOPE)." These planning constraints create high costs and high risks to all OECD energy consumers and are an issue that needs attention. Nuclear and coal-fired plants are unpopular and expensive, requiring long lead times. With these facilities traditionally located away from inhabitants, as in the Gulf of Mexico for the US, other security threats arise. The delegate affirmed that UK represents one of the few best practice examples of effective planning to site energy investments within the OECD.

Chairman Jenny acknowledged that this discussion presents more difficult issues for future energy infrastructure investments. Next, he moved to the Russian Federation's concern with bottlenecks in their transportation system, and asked the Russian delegation to address how the current ownership structure, vertical integration and lack of investment incentives in their transportation system may be contributing to energy security problems. He also asked them to address potential solutions.

Russia confirms that they have a model of a fully vertically integrated company that is connected with consumers of gas by a system of long-term contracts both within Russia and internationally. Gazprom owns the unified transportation system and as a natural monopoly, technical and regulatory problems contribute to the bottlenecks. The Russian delegate explained that gas shortages are caused by several factors, including that it is technically impossible to deliver reasonable volumes of natural gas in part due to growing consumption, and that the competition authority is hampered by discrimination and refusals to sell or transport gas to some consumers and producers.

Proposed solutions include a long-term development program, as part of Russia's 2030 energy strategy for the transportation system, as approved by both Gazprom's board and the government. Furthermore, violations of the competition law have led to price and access regulation with enforcement provisions for the gas transportation system. The delegate informed the roundtable that transportation system is now separated from gas production and trade. The transportation system for natural gas maintains its own organisational structure as a subsidy of Gazprom.

The primary problem is anti-competitive discrimination by the owner of the pipelines, Gazprom, towards the other producers of gas. These independent sources of gas produce 10% of the total supply in Russia, but it can be difficult for customers to access this gas. The federal anti-monopoly authority has responsibility for enforcing non-discriminatory access to monopoly-owned essential facilities, including the unified transportation system. The competition authority has made progress enforcing these regulations against Gazprom, but the government faces a daunting economic reality of trying to change up to 60 years of gas industry development. Although there are problems with Gazprom, it is in the best position to guarantee energy security to dependent Eastern European countries and Gazprom is the only company that can accomplish this. Diversification of energy in Russia is costly, long-term and risky. A risk-sharing mechanism is being used that defrays supplier investment risks through mutual participation in assets of energy companies in countries that import from Russia. Diversification of supply markets for gas and other energy resources remains a possible alternative.

The Chairman stated that many in the room support Russia's efforts to eliminate discrimination and improve access to the transportation system. Moving forward, Mr. de Ladoucette was offered the floor on the premise that France exemplifies a country that moved from a vertically integrated model to one of greater competition and unbundling, and the methods for facilitating investment when moving from one model to another.

Mr. de Ladoucette began with some history about efforts to create a single energy market in Europe, as set in motion by the directives of 1998 and 2003 in order to address concerns of security of supply. It is

against this background that the question now arises as to whether the current opening of the market will help to ensure supply security. Mr. de Ladoucette stated his opinion that the gas and electricity markets are often viewed similarly. However, for two basic reasons, these two sectors can be approached in a different manner: gas can be stored, but not electricity; gas is a primary energy resource whose main sources are located outside the EU area, whereas electricity is a secondary energy resource produced within the borders of the EU from different sources.

What these characteristics show is that gas is supplied in a world, or at least a large regional, market on a price basis over which there is no control. Accordingly the two main necessary – perhaps not sufficient but at any rate necessary – conditions that must be met to guarantee supply security are transparent and non-discriminatory access to the network, and investment in infrastructure. There are three points that follow with regard to the latter:

- the need to step up investment in infrastructure;
- the need to adjust incentives to encourage investment;
- the importance of adopting a European approach to such investment, which must be based on a number of current policies and, in particular, regional initiatives.

Strengthening supply security by encouraging investment in infrastructure is regularly discussed by the European Commission, most recently in the Directive of 26 April 2004 on measures to safeguard the security of natural gas supply. Providing investment in transport infrastructure is a key link in energy security. This issue was also recalled in the summary document recently presented by the European Commission on 10 January 2007.

Opening up the natural gas market to competition has changed the context in which infrastructure managers operate. In particular, it has significantly changed their investment policy. On the one hand, in a monopolistic configuration, the gas transportation network manager attempts to match infrastructure capacity as closely as possible to the actual needs of the integrated group. Conversely, in a market configuration, in order to facilitate the arrival of as many suppliers as possible and to allow trade-offs between supply sources, network capacity must be over-sized, resulting in an infrastructure usage rate which in practice is lower. On the other hand, the decision-making apparatus is itself different in the two configurations, in that an integrated monopoly seeks to give priority to the interests of its gas supply unit, whereas an independent infrastructure manager bases his decisions on the overall interest of the market. Consequently, a competitive market should produce the necessary price signals for investment that will allow supply security to be ensured as efficiently as possible with regard to costs. Thus the creation of a competitive internal market should/will allow EU energy firms to pursue their activities in a larger market and to consider supply security at a more relevant scale than that of the domestic market. These changes in investment strategy must be encouraged through the adoption of new tools.

At the national level, the French Regulator has three main tools to permit the investment needed to ensure supply security. This is where Mr. de Ladoucette answered the Chairman's first question of how other countries can change from one model to another or how they can implement a French model in which firms are, in practice, vertically integrated. Firstly, France has an incentives system. The charge for network access takes account of payment for assets in order to encourage operators to invest. All new investments qualify for a 125 basic points bonus compared with the average weighted capital cost for transporting gas. Some investments, at the request of the operator and after a decision by the Energy Regulation Commission, may even qualify for an additional 300 basis points bonus for a period of 5 to 10 years. This decision is taken in cases where the investment makes a significant contribution to improving

market operation, notably through the creation of new points of entry to the national network or by reducing congestion in the network in response to a reasoned request by the operator.

The French Regulator has the right of inspection and is the only one of his kind in Europe, apart from France's UK neighbour, to have the power to approve the investment program of the natural gas transporter. This is a recent provision in France, and was only approved by Parliament at the end of last year. The regulator will be able to use this provision for the 2008 investment program.

The power to issue orders regarding facilities constitutes the third leveraging mechanism for market liberalisation. If an operator refuses access to a natural gas facility on the grounds either of insufficient capacity, or of problems relating to the connection between the installation belonging to the party seeking access and the network, the Energy Regulation Commission can ask, or (depending on circumstances) order, the operator to provide access. This might require the operator to make the necessary improvements if the latter are economically justified or if a potential customer indicates that he is willing to pay for them. At the national level, these tools are fairly positive and efficient. For example, the investment in the transportation network for the period 2005-2015 amounts to 400 million euros a year, which is higher than the previous historical average. Furthermore, as part of the strategy of increasing overcapacities, LNG has also attracted much investment since there are plans for new methane tanker terminals with an extension to the Montoir terminal already under study. Overall, these investments should result in a genuine improvement in energy security in that, if all of these projects are successfully completed, France's gas importing capacities should increase by 40 giga m^3/year by 2012, that is to say 3 times the forecast increase in consumption.

Mr. de Ladoucette also directed his presentation to Europe as a whole regarding the importance of strengthening interconnections through increased investment to achieve greater energy security. It was with this consideration in mind that the European Commission introduced a policy of regional initiatives directed at all regulators and infrastructure network operators within a given geographical area. There are three such areas for the gas sector. There are more for the electricity sector. At present, it is an initiative that is starting to have positive impacts and that will allow, through gradual improvements, all markets to be coupled through network interconnections. It is also based on transparency, the harmonisation of data published by transportation network operators, and the proper use and exploitation of hubs.

All of the progress on these initiatives can help to complete the single European market in energy. In its communication of 10 January 2007, the European Commission forcefully argued in favour of strengthening interconnections through a priority interconnection plan for natural gas and, in particular, the Nabuco gas pipeline, which will transport natural gas from the Caspian Sea to Central Europe, and the development of gas storage facilities. In both these areas, the European Commission proposes to grant greater powers to ERGEG (the European Regulators' Group for Electricity and Gas) which, if this proposal is accepted by European governments, will certainly improve the operation of the gas market through the power that Regulators will have to intervene to ensure that interconnections are properly made at borders and, thereby, successfully create a single EU energy market.

Chairman Jenny concurred with Mr. de Ladoucette's assessment by mentioning briefly the possibly Manichean approaches to earlier discussion in thinking about market freedom, or as in the UK's example, investment centralised by the regulator. While the integrated operator is largely responsible for initiating investment, the Regulator offers special incentives aimed specifically at boosting capacities. The Chairman then gave the floor to Prof. von Hirschhausen to finish this part of the discussion. The Professor presented on a study regarding the particular relation between competition policy regulation, investment, and security of supply.

Professor von Hirschhausen began by laying the groundwork from both an academic and practically-inspired assessment of competition policy regulation and investment. Specifically, his modelling research confirmed IEA's assessment that LNG will play a major role in promoting competition. Through an econometric analysis, it was confirmed that there is a developing global gas market, and so it is important to understand what this means for competition. He referred the delegates to a distributed paper and 20 others on the website.

The Professor stated the following, "In essence, I clearly support the point of view expressed by the UK and by the US that has been summarised very clearly in the background paper by Sally Van Siclen. That is: "improving the competitive environment improves energy security." He supported this statement by expounding on three theses regarding investment, unbundling, and storage through illustrations regarding regasification terminals, pipelines and storage facilities. He focused on the downstream side of supply since there is really not a problem upstream.

He explained that price volatility should not be a topic of the roundtable as they reflect supply and demand in a market and therefore should be excluded from the supply security debate. The 2004 Boston and the UK examples show that prices will come back down when demand abates. The three theses:

- vertical unbundling enhances competition;
- adequate regulation will induce infrastructure investments just as it induces investments in other regulated sectors;
- commercial storage can substantially contribute to energy security.

Thesis #1 built on the EU delegate's points that vertical unbundling between natural gas importers, traders, and network operators enhances competition. It limits the anti-competitive behaviour of vertically integrated incumbents. The US example is that following the FERC Order 636, a competitive market surfaced in particular between the Henry Hub and the northeast of the country. However, the pipeline which goes into California is clearly a natural monopoly. But, for the rest, the experience in the US is really encouraging. In the EU, a third directive may involve forced unbundling. The question is whether it should be ISO (independent system operator) or vertical ownership unbundling. In the Professor's opinion ownership unbundling is more efficient, but ISO may be more politically feasible. For example, Germany has 19 regional zones, but a single ISO would improve efficiency. The OECD Asian countries might also benefit from this model due to the potential for competition and thus lower prices, something desired by Asian consumers. In addition to the LNG TPA, Korea and Japan could benefit from this approach.

Thesis #2 on infrastructure investment: adequate regulation will prompt forward infrastructure investment. As Mr. Ladoucette mentioned, if the incentives are correct, then people will invest. Two incentive structures, merchant investment that is subject to competition, or regulated investment with a correct return on capital needs, comprise the main alternatives. In addition to the Russian example, 95% of the pipelines are natural monopolies, with the exception of multiple lines linking Chicago to the Henry Hub. Therefore, regulation is necessary to control prices.

Concerning regulation, Professor von Hirschhausen contested the practice of exempting LNG terminals from TPA obligations as a means to promote investment. Through the following examples, he supported his position in contrast to article 22 Gas Acceleration Directive and FERC decisions to possibly remove TPA obligations. Investment continues unabated, since investment volumes are relatively modest (e.g. regasification terminals) and the large arbitrage gains can be made. The UK, NIMBY regions like CA, the Bahamas, and Canada all have LNG investments. Chenier and Accelerate Energy represent non-integrated, vertically unbundled marketers that have lucrative investments and Europe has several LNG

terminals already. With the obvious financial benefits in LNG terminal investment, exempting companies from TPA obligations may potentially limit investments.

The Asian markets are different with Japanese demand levelling off. However, the Professor asserted that the decision to invest in new terminals should more or less be private; the more suppliers, the more income potential from leasing out related capacity.

When he explained Thesis #3 on commercial storage, the Professor differentiated commercial storage from traditional storage practices that are based on seasonal demands where reserves grow in the summer and in the winter they are used up. He referred to the new natural gas history that generally has 3 to 5 cycles, as exemplified in the US and their use of salt caverns, where commercial storage increases. For example, Falcon Storage and Eastern Gas Storage are merchant enterprises that invest in storage making a return on the arbitrage. Europe has some merchant investments as a large commercial storage project in Germany reveals. The Professor concluded this section by stating that Asia could likely benefit from these practices as well.

Professor Hirschhausen summarised as follows:

- competitive markets can and should support supply security;
- unbundling is a requirement to assure competitive markets, and the European history is proof that if you don't unbundle, it doesn't work;
- dequate regulation does secure investment;
- commercial storage is a key to supply security;
- and last, but not least, things that have worked in the US and the UK should also work in Europe and Asia.

Chairman Jenny moved the discussion forward on two points; whether or not unbundling is a prerequisite to promote competition, and the strategic importance of storage. He asked the UK to explain if unbundling is in fact a prerequisite and if it is efficient, based on their experience in liberalising their gas market. He offered the converse argument of Russia's experience where unbundling in the form of separation between transportation and other infrastructure has had little effect.

The UK referred to the Commission's recent sector enquiry document to explain the benefits of unbundling in overcoming the ineffective markets in Europe. In short, failure to unbundle prevents proper market function and creates an entry barrier for new gas suppliers. Incumbents with integrated supply and transportation interests practice information asymmetry, setting terms for access through pricing or by artificially restricting capacity to new entrants by claiming that the network is full or congested. Moreover, they restrict information flows to small businesses in regards to access requests for capacity and use of networks by competitors. The UK asserted that companies that have not unbundled will raise artificial barriers by imposing balancing regimes and other operational requirements on non-affiliated supplies that don't reflect costs. The lack of transparency through practices like withholding important information on supply and demand, and the system status in meeting demands, makes competitive entry difficult. Interconnection investments are withheld when it could mean supply competition and lower prices, which adversely affects the wider EU market. In the 1990's, British Gas exemplified these conditions, until shareholders, under regulator pressure, realised that it would be in their interest to break up the transportation and supply businesses.

To maintain a fair, competitive environment for suppliers, a network code covering capacity and balancing was developed. The transportation company, National Grid (NG), has also realised the incentives to invest in network infrastructure and operational efficiency, and focuses on providing as much capacity as the market needs. The company conducts auctions for existing and new network capacity. Suppliers can buy capacities on non-discriminatory terms, fixing their prices for up to 15 years in advance, or they can turn up and buy capacity either on a firm or interruptible basis on a daily basis. There are clear rules for managing congestion on the network --- the transportation company buys back capacity under a financial incentive scheme, again on non-discriminatory terms. Balancing and operational rules are clear and apply equally to all suppliers, and there has been a huge drive toward transparency. National Grid's Website, which is the company that runs the transportation network, currently has 150,000 hits a day, particularly during the winter period, with companies, industrial and commercial customers and others actually drawing down data from the website on what is going on in the market and on what's going on in the network. Through non-discriminatory and transparent, market driven practices, supplier confidence is strong, contributing to investments in the UK market.

Concerning the two unbundling models, the UK stated succinctly that full ownership unbundling is preferable to the independent system operator model. While the latter would be an improvement to what exists now, it would make little difference in countries with large dominant monopolies. The delegate concluded with the assertion that unbundling is a prerequisite to a liberalised and efficient gas market.

Chairman Jenny turned to Japan's contribution, with an emphasis on how, in over 10 years, new entrants hold an aggregated 8.1% market share, and whether or not this is considered success or failure by Japanese authorities in terms of competition. Dissecting the issue further, the Chairman sought clarity on whether this percentage represents modest, or significant, competition in the system. Specifically, the Chairman was concerned about the question of the level of unbundling in a market that has been deregulated since 1995.

Japan approached the topic on two fronts --- the current state of the Japanese gas market through competition, and the share of new entrants. Concerning the former, the delegate stated that when evaluating liberalisation's results, two new elements need to be considered: the reduction of industry costs to separate and distribute gas to consumers, and the decreasing effect on gas prices in the domestic market despite the upward phase of the LNG import price in the overall gas industry structure. Although there is no nationwide pipeline network, the new entrants share has increased gradually over the past 10 years. Furthermore, the absorption of smaller companies by larger ones will improve efficiency in the gas market. Over the last decade, there has been a decrease of more than 10%, from 244 to 214, in the number of distribution companies. Regarding the natural gas price in Japan relative to other OECD countries, it has been declining steadily, and the level is now much closer to the level in other OECD countries. Japan considered a 8% new entry level satisfying to a certain extent. As mentioned before, the variations of the results of this liberalisation will be discussed at the next government energy policy process to consider further liberalisation next year.

Japan further illustrated how some gas suppliers are pushing for pipeline interconnectivity without unbundling, in order to increase resilience in the face of competitive pressures in a liberalised market. It appears that electricity, gas, and oil companies that can purchase natural gas in sufficient amounts, are developing a degree of pipeline networking among them. Even vertically integrated suppliers are realising the incentives to connect networks without unbundling, so Japan may follow this movement to observe how far pipeline interconnectivity will go.

Chairman Jenny gave Prof. Lévêque and Prof. Nambu one minute each before breaking for lunch.

Prof. Lévêque brought up an additional benefit to full ownership unbundling, in that mergers would be more easily facilitated amongst grid and network companies. In addition, cross-border mergers may create efficiency advantages with respect to the size of some grids.

Prof. Nambu further explained that market share is a misleading index in Japan, due to geographical considerations. New entry investments are primarily in the large and concentrated cities (e.g. Tokyo, Osaka, Nagoya) where they are profitable. This is true for many industries (telecommunications 10%, electricity 2%, and gas 8%). The most meaningful aspect of market share is whether new comers compete with dominant firms in these concentrated areas. Usually market share would be 20% (nationwide), but in telecommunication (in the concentrated urban areas) it is 50%.

In regards to unbundling, Japan has consistently compared the discrimination problems against the economies of vertical integration between power generation and transmission. Consequently, Japan has not made a decision about whether to introduce wider-scale unbundling.

Chairman Jenny recognised the Korean delegation to discuss present and future limits on competition in downstream markets in order to securely obtain natural gas imports.

Korea responded that Korea's gas industry is gradually moving from monopoly to competition. At the beginning stage of the gas industry in Korea, a monopoly was more appropriate and effective. At that time, Korea needed to implement its natural gas supply system in order to give incentives to invest in necessary facilities; to secure service provisions; and to develop wholesale and retail suppliers. But as the gas industry has developed and become equipped with the necessary facilities, introducing competition to the gas industry is needed to enhance competitiveness of the gas industry. The Korean government has tried to restructure the gas industry. In the import sector, competition has already been introduced. Since 2001, companies can directly import gas for self-consumption. Regarding the wholesale sector, it is still a monopoly, but the Korean government is considering introducing competition by way of permitting new operators into the market. For the retail sector, the Korean government has a plan to consider introducing competition when competition in the wholesale sector is ensured. The bottom line is that Korea is in the process of moving to competition.

Chairman Jenny gave the floor to Mr. Santa to discuss US experience with long-term contracts and unbundling in the natural gas sector.

According to **Mr. Santa**: The laws and regulations that restructured the US natural gas industry really did not speak to the issue of whether long-term gas contracts were to be discouraged or encouraged. Nonetheless, the experience of the US gas industry market participants and US regulators at the state and federal level has very much affected the attitude towards long-term contracts. With this background, delegates will better understand how experience has affected the attitudes toward long-term gas purchase contracts in the US.

The conditions that created the impetus for restructuring the gas industry were really the direct result of the dislocations that resulted when unanticipated developments in the market undermined the assumptions upon which long-term gas purchase contracts were premised. The seeds of the US restructuring were sown in the 1970's, when federal price controls on wellhead sales of natural gas into the interstate market resulted in shortages of gas being dedicated to that market. Meanwhile, price controls were not imposed on gas sold in the state-regulated intrastate markets in producing states like Texas and Louisiana. As a result, gas supply was abundant in those markets and, not surprisingly, a lot of energy intensive industries relocated to those states. To remedy this situation, the US Congress in 1978 enacted a law that eliminated the legal distinction between the interstate and intrastate markets, and initiated a phased decontrol of wellhead prices. Also, to encourage gas production, the new law put in place incentive prices

for certain categories of gas that would apply until the date that category of gas was deregulated. At this time, prior to the restructuring, interstate pipelines were in the merchant function --- that is, they purchased gas from producers and resold that aggregated supply downstream to downstream customers who primarily were the local distribution companies (who are regulated by the individual state public commissions).

In response to the changes that were made by the US Congress, and to remedy the lack of supply dedicated to the interstate market, interstate pipelines entered into long-term contracts with producers to purchase natural gas. Also, in many cases, the contract prices were set at the new incentive prices authorised by the law passed by the Congress. Conditions in the US market changed shortly thereafter. The US economy entered into recession in the early 1980's, and this affected the demand for natural gas. At the very same time, the incentive for producers under the new law had the desired effect, and there was much more gas available to the market. The pipelines had contracted to purchase more gas than the market needed, and the prices ended up being far above prices in the small but growing spot market for natural gas.

During the mid-1980s, the federal regulator, the Federal Energy Regulatory Commission, initiated a restructuring of the pipeline market with a series of orders that, taken together, produced something of a grand bargain, in which the pipeline companies agreed to provide open access to transportation, and to permit their customers to shop for alternative gas supplies, in return for FERC providing the pipelines, with assurances that they could recover from their customers a certain portion of the costs incurred in renegotiating and exiting their long-term gas contracts. This was during a period of excess supply in the interstate market. The incentives put in place by the Congress worked. That over-supply situation lasted almost until the beginning of this decade. This access to deliverability greatly affected the willingness of market participants to enter into long-term supply arrangements. Given the excess supply and the low spot market prices, there was no incentive for local distribution companies and others to enter into long-term supply contracts. Furthermore, local distribution companies did not want to assume the risk that their purchasing decision would be second-guessed by the state regulators. Meanwhile, the producers had no great incentive to enter into long-term contracts that would be priced at the prevailing low spot market prices.

Finally, the restructuring of the electric power industry in the US affected the incentives for merchant power generators to enter into long-term gas supply contracts. In the bid-based wholesale power markets, gas-fired generators had no control over whether they would be dispatched. Consequently, they did not wish to assume the economic burden of gas supply contracts that would obligate them to take the gas even if they were not dispatched. The supply-demand balance for gas in the US has gotten much tighter in the past several years, and gas prices are much higher than they were in the 1980's and 1990's. Still, there is no great interest in returning to the long-term, fixed-price gas supply contracts that characterised the market prior to restructuring. Gas purchasers have confidence that if they have access to the infrastructure, supply can be had at the prevailing market price. Similarly, gas producers and gas marketers have confidence that the gas can get to the market through this infrastructure. And even in cases where producers or marketers are willing to enter into longer term contracts, it is with the price being left to the market. To the extent that purchasers wish to hedge their risks against market volatility, this is done using financial instruments and not the pricing terms in the gas purchase contract.

In summary, the laws and regulations that restructured the US gas market did not speak to the issue of whether or not a long-term gas supply contract is desirable. The practical reality is that there is much less emphasis on long-term gas supply contracts in the restructured US natural gas market. The combination of open access to infrastructure and a vibrant natural gas commodity market have created confidence that such contracts are not necessary in order for customers to have security of supply.

Chairman Jenny continued the discussion by recognising France.

France considers storage capacities to be an essential factor in the proper operation of the natural gas market in France, particularly because most of France's natural gas imports are based on long-term contracts and underground storage facilities are used to adjust the supply of gas. Gas is received at regular intervals throughout the year, but consumption is uneven and, in particular, peaks in winter. These storage facilities are currently owned by single operators. That is to say, there are two operators who have facilities at several locations in France, namely Gaz de France and a subsidiary of Total. At present, there is no lack of natural gas storage capacity in France. There is even a slight overcapacity of around 5%, which is used to provide room to adjust to short-term, unanticipated supply and demand shifts.

Third parties can access these storage facilities, due to the process of opening the gas market to competition. Such access is even regulated by a Decree of 21 August 2006, under which each gas operator is allocated a share of total storage capacity, according to its customer portfolio. This right of access can change according to changes in operators' customer portfolios. Use of these storage capacities is semi-regulated. That is to say, the charges for using storage capacity are set by the two existing operators. However, the Energy Regulation Commission has the power to settle disputes between operators over such access to storage infrastructure. In particular, it has access to the contracts between storage operators and other gas suppliers.

While the two existing operators have several projects to build new gas storage facilities, including underground facilities, there are also a number of projects being developed by private operators who want to pursue this activity. Probably these investments are occurring because the market signals are favourable to development of this type of storage and, therefore, to the development of natural gas usage in France and the continuing integration of the European market that opens the possibility of using such capacity to sell gas to customers in neighbouring countries.

In summary, France is in a position mid-way between two extremes. Until now storage capacities have been centrally regulated, but we are now in a situation where the market can intervene, and where there is scope for private operators to develop this activity.

Chairman Jenny next recognised Mr. Santa to discuss gas storage in the US.

Mr. Santa indicated that he would provide some background regarding how much storage there is in the US, its historic uses, and the recent decision by the US Federal Energy Regulatory Commission (FERC) to provide some additional incentive for storage investment.

There are approximately 400 underground gas storage facilities in the US It's estimated that the maximum working capacity in these fields is about 3.6 trillion cubic feet. To put that number into perspective, the US consumes approximately 23 trillion cubic feet of gas per year. The location of these storage fields depends very much on geology; therefore, the contribution of storage to meeting peak demand varies between regions depending upon the availability of gas storage. The principal owners and operators of storage in the US are interstate pipeline companies, intrastate pipeline companies, local distribution companies and independent storage service providers. Also, the performance and costs associated with storage vary based on the type of facility. The three main types of underground storage fields are depleted oil and natural gas reservoirs, aquifers and salt cavern formations. Salt cavern storage, and the ability to recycle it several times during a season, is very popular and very attractive in the current market.

Gas storage performs several functions in the US market. The primary and historic function of storage is as a seasonal source of supply and as a backup for meeting peak day demands. Also, transmission pipelines use storage for balancing the flow on their systems, maintaining pipeline pressures within designed parameters, and to support "no notice" service to their shippers. Pipeline shippers use

storage in order to maintain the contractual balance between receipts and deliveries of gas into and out of a pipeline in order to avoid tariff penalties for imbalance. Producers use storage in order to level their production over periods of fluctuating contract demand. Marketers use storage for arbitrage purposes in order to purchase gas when the price is low and re-sell it when prices are higher. Storage is likely to play an even more prominent role in the US market with the increase in LNG imports and the ability to use storage to purchase natural gas during off- peak months when there may be spot cargoes of LNG available.

Interstate storage is an unbundled service that must be offered on an open-access basis at rates approved by FERC. Traditional, cost-based rates often don't provide a storage developer with the ability to recover its project costs fully, because the cost-based rates don't fully reflect the value of storage to the market.

By way of explanation, Mr. Santa observed that often customers are unwilling to enter the long-term contracts at cost-based rates that would be necessary to recover the cost of the facilities. So the cost-based rates are something of a deterrent for a storage developer when they look at developing a project. Therefore, FERC often provides authorisation to charge what are called "market-based rates," that is, if the Commission makes a finding that there is sufficient competition in the market for storage, FERC will authorise a market-based rate or what, de facto, is a deregulated rate. Typically, it's been easy to get market-based rate authority for storage projects which are located in the production area. It's been more difficult to get market-based rates in the market areas where there are fewer alternative storage facilities and, therefore, it's that much harder for an applicant to demonstrate that a competitive market will discipline prices. In order to address this situation, and hopefully encourage greater investments in new storage projects, FERC last year issued new regulations that are intended to make it easier for storage developers to qualify for market-based rates.

Acting pursuant to a new grant of authority from the US Congress, FERC articulated the rules for when it would grant market-based rates for storage even if an applicant had not demonstrated that it lacked market power. The Congress said that the Commission could permit this if it found that the storage capacity was needed, and if there were sufficient safeguards in place to mitigate against storage operators exercising market power.

FERC updated its market power test to allow applicants to attempt to demonstrate that products other than natural gas storage were good substitutes for natural gas storage, and effective substitutes should be included as part of the product market when the Commission is calculating market concentration statistics. The Commission suggested that it may be possible to demonstrate that local gas production and LNG terminals, or even certain kinds of pipeline transportation services, qualify as substitutes for storage. This would result in a less concentrated market, and make it easier for storage developers to qualify for market-based rates.

Chairman Jenny noted a contrast between the French situation and the US situation, in which storage capacity is used to arbitrage between time periods when prices differ. He asked Mr. Santa is a 5% excess of storage over consumption would be sufficient to support this type of arbitrage.

Mr. Santa replied that the key factor is that any US storage capacity can be used for such arbitrage activities if someone believes that this is the most valuable use for the capacity and invests in it.

Chairman Jenny opened the discussion of the determinants of entry into the gas business. He noted that this topic is particularly important in Germany. He invited the German delegation to discuss studies of foreclosure of entry in the merchant natural gas industry due to long-term contracts between gas transmission companies and gas distributors --- and subsequent litigation.

Germany stated its belief that an open, downstream market for gas is very important for competition and consumers, and that a long-term gas supply contract can foreclose this downstream market. Past gas supply contracts lasted 20 years and sometimes even longer. Because of this concern, the competition agency issued a prohibition decision against E.ON-Ruhrgas, the largest distributor. Under this ruling, a gas supply contract is only allowed to run for a maximum of two years if it covers 82% or more of the demand of the regional gas supplier. This might be a tough approach compared with the Swiss approach, which says that five years is OK, or what we heard from Japan, where they have those long-term gas supply contracts that last 25 years.

The question is, does this ruling conflict with the goal of energy security? First, the ruling doesn't deal with the existing import contracts between E.ON-Ruhrgas, Russia and Norway, which really do last for 25 years, so it's only at the downstream level. The argument in Germany was that the downstream market needs to mirror the long-term import contracts on the purchasing side. However, there is also a risk for traders, and that is the risk they have to take --- so there is no need to mirror those things. The demand in Germany is growing, so it's good to have gas liquidity, and this liquidity opens the possibility of downstream entry.

Another issue was: do long-term contracts lead to higher price levels? Advocates of long-term contracts say that long-term gas supply contracts are really good for the price level in the downstream market, but economic theories suggest that if you have more competition in the downstream market, then the prices will go down --- that is good for competition and consumers.

One final issue: What about liquidity in the market? The German delegation believes that the liquidity in the downstream market will improve, and that there is enough liquidity in the market because of the physical size of the German market, which is, together with the UK, the biggest market in Europe.

The German delegation concluded that the opening of the market and the shortening of the long-term gas supply contracts don't conflict with energy security. This view has been confirmed by Germany's Appeals Court in an interim decision --- but the issue is still pending before the Federal Supreme Court. The competition agency has already received six commitments from other gas importers who will stick to a maximum of two years for gas supply contracts. This means that the downstream market for gas in Germany is open for the moment, and the competition agency will look for competition to develop.

Chairman Jenny next recognised Mr. Santa to discuss long-term contracts for natural gas before and after restructuring in the US.

Mr. Santa contrasted the conditions, including the barriers to entry, pre-restructuring and post-restructuring in the US gas market. Much of the contrast has to do with the incentives or disincentives to expand natural gas infrastructure. Under US law, the primary legal authority that FERC uses to regulate the natural gas industry is a statute called the Natural Gas Act, which is a product of the New Deal era. Under that law, in order to authorise a new pipeline to be constructed or an existing pipeline to be expanded, FERC is asked to make a finding that that facility is "in the public convenience and necessity." In other words, it's a determination by regulators that there is a public need for that facility. Prior to the restructuring, Mr. Santa suggested that there were two factors that limited entry and competition in the construction of gas infrastructure. At that point in time, interstate pipelines were gas merchants; that is, they purchased gas from producers, aggregated the supply and resold it to downstream customers. Therefore, unless a facility was necessary to attach new gas supply that the pipeline would be purchasing, or to maintain or expand service to an existing sales customer, there was no particular reason to build new pipeline infrastructure.

Prior to the restructuring, FERC – and before that its predecessor the Federal Power Commission – engaged in a very fact-intensive examination of the need for a new pipeline. They would look at whether there was sufficient supply on the upstream that could justify the expansion and whether there was enough growth downstream and whether there was sufficient justification for the investment. In other words, in order to fulfil what it believed to be its job in protecting the public interest, the regulator substituted its judgment for the judgment of the marketplace with respect to pipeline investment.

Restructuring changed all of this. Once the pipelines were no longer merchants, the driver of their business was transportation throughput and not whether they were selling the gas that they transported. Also, with the emergence of natural gas marketers and other intermediaries, the parties willing to sign up for natural gas transportation expanded beyond the pipeline historical distribution company customers, and that caused the pipeline to look for new opportunities to grow the business. Also, FERC abandoned its fact-intensive examination of need and substituted a market-driven test. A pipeline could establish need by demonstrating that it contracted for a significant portion of its capacity, and FERC would not second-guess the judgment of the shippers who would sign the contracts. FERC also increasingly moved to incremental pricing for pipeline expansion projects. This negated the opposition that would come from existing customers, who would complain that the rates had increased when they derived no commensurate benefit from the new pipeline capacity.

As a result of these reforms, the most labour- and time-intensive part of getting the regulator's authorisation to construct a new pipeline is the environmental review done by FERC, and obtaining various other state and federal permits. Economic regulation is no longer an impediment to market entry in the natural gas pipeline industry. From the regulator's point of view, the process is disciplined by the fact that pipeline companies still must charge regulated cost-of-service rates established on the basis of a long depreciation schedule, typically 20 to 30 years. Therefore, a pipeline company's management and investors in the pipeline will not make the capital investment in a new project unless they have a high degree of confidence that their investment and the required return can be recovered, subject to these limitations on the rates that a pipeline can charge its shippers. This creates a level of conservatism that provides safeguards against over building of the pipeline network.

Finally, one other thing that likely added to the ability to enter the gas market in the US is the fact that pipelines must offer their service not only on a firm, long-term contract basis, but also on an interruptible basis, and there is also a very vibrant *secondary* market for pipeline capacity. So, for example, a natural gas marketer could get on to the pipeline system without having to sign on a long-term contract as a shipper, or, for example, an electric generator that didn't want to make that commitment because it didn't know whether it was going to get dispatched, could access the secondary market for pipeline capacity and get its capacity that way.

In summary, there has been a turnabout in terms of the barriers to entry. And what has resulted is a pretty competitive situation on the interstate pipeline side --- that often, if there is a market opportunity, you'll have multiple pipelines competing for the ability to build that project. In the end, probably one project will get built, but it will be the project that has been validated by the market.

Chairman Jenny observed that the discussion had featured two different stories. One of them is that if you have a functioning market, then long-term contracts aren't a problem anymore, because the reality of the market has moved away from those long-term contracts. In contrast, long-term contracts take on much more importance, as they do in Germany, if the market is not well developed.

Session III.

Chairman Jenny opened the third session dealing with the activities of competition authorities in the natural gas industry. He pointed out that the written contributions fall into two groups: (1) merger cases where the merger is going to increase market power and there is concern from the competition authority about this increase in market power and (2) another set of cases where the issue is the compatibility between competition and security of supply. An example of the latter is raised in some cases where a minister overrules the competition authority on public interest grounds. The Chairman first recognised Mr. Lévêque.

Mr. Lévêque started with two basic statements:

- First, energy liberalisation has drastically changed the framework for investment, and obviously private initiative within this new framework plays a more important role. And as a result of competition, we may expect less overcapacity in comparison with the past --- that is in absence of competition or less competition --- and we also can expect a lower cost to achieve a given level of security of supply.

- Second, the specific features of the electricity and gas industries are very well known, particularly the low elasticity of demand with respect to price, and also the difficulties involved in getting evidence on the exercise of market power or the high potential for market power in these industries. Those specific features call, to some extent, for a specific treatment. Such special treatments were addressed in a recent paper issued in the Electricity Journal and authored by Mr. Lévêque. For example, competition authorities should be more stringent with reviewing respect to mergers in the gas and electricity sectors. The reason is very simple: the cost of type I error is very high because of the damage to consumers' surplus that occurs because the inelasticity is very high. The list of recommendations includes the setting up of market surveillance committees. The interesting point for the roundtable is that security of supply isn't on the list of elements that are unique or specialised in the electricity sector. There is no need to adopt a specific treatment for security of supply in the electricity and gas industries. In fact, the problem may be said to be the reverse. The challenge might be to limit government intervention that interferes with competition law enforcement by using a smoke screen of security-of-supply arguments in order to achieve its energy policy goals. The right challenge is not to adjust competition laws to foster the security of supply, but rather to impede or reduce government interventions using security-of-supply and energy security arguments that can reduce, or adversely alter, competition law enforcement.

There are two examples. One example is very obvious. It is the situation in which some governments bypass their competition authority's prohibition against mergers. We have good examples, unfortunately, in Europe of this situation. Another example is the case where a competition authority may be encouraged to use competition law to speed up the liberalisation process. There is a kind of over-deterrence in the EU and this may also raise a problem.

The other question is about long-term contracts. Is it true that a kind of per se approach would be relevant? Mr. Lévêque is very cautious about saying that long-term purchasing contracts are usually anti-competitive because the pro-competitive effects of long-term contracts can counterbalance the anti-competitive effects.

Mr. Lévêque also raised a question about whether there might have to be some specific treatment with respect to competition law enforcement in nuclear generation markets because of special features of the nuclear industry.

Chairman Jenny gave the floor to Mr. Khayat, next.

Mr. Khayat focused on the EU Commission proposal for a full ownership unbundling, of vertically integrated companies --- that is, no longer allowing common ownership between logistic and merchant parts of those vertically integrated companies. This would be in addition to the accounting unbundling and legal unbundling that already are in place. Mr. Khayat's presentation discussed the consequences of this step in terms of security of supply.

According to the World Energy Outlook, which was issued in 2006 by the International Energy Agency, EU gas demand should increase between 2004 and 2030 by 145 bcm in the alternative scenario and 1 bcm more in the referent scenario. To meet this increase in consumption, Europe will have to undertake significant investments in the near future for three types of activity:

- Invest to increase delivery capacity to the end users.
- Invest to connect Europe to new sources of supply, mainly because, unfortunately, domestic resources are progressively being depleted.
- Invest to increase transit capacity within hubs, because activity at wholesale hubs in Europe will increase.

Total believes that such investments will improve security of supply mainly because they will connect Europe with new sources, and they will increase the supply diversification – investments and increasing the diversification of supply are positive elements for security of supply. Total has experience in the Southwest of France, where an interconnection between Spain and France, called Euskadour, was created. And Total is presently building a South to North trunkline in France to accommodate flow that will come from an LNG receiving terminal close to Marseille. This terminal itself will accommodate gas coming from Egypt and the Middle East, and so we participate as a bundled TSO in these projects that improve security of supply.

If it is agreed that investments are good for the security of supply, there are two ways for looking at the investment decision-making process: either reactivity or pro-activity. A completely independent TSO --- that is, full ownership unbundling --- would be neutral when it comes to grid access, because it has no reason to favour a sister merchant company when it comes to access to its grid. But, unfortunately, when it comes to investment, a TSO will have the following feature: it will be reactive. It will wait for a market signal to decide on investments, which means that those market signals have to exist. Market signals are prices, which means that we need to have prices which exist over a sufficiently long period and that the message sent by those prices is stable over time. It is really a difficulty today in Europe because we have no wholesale prices on the continent, and even in the UK, the time horizon for the prices is too short. It is basically three years. If the message does not come through prices, it'll come through requests from potential shippers. But this means that shippers must be capable of expressing firm requests, and expressing them sufficiently in advance so that the TSO can build the necessary facilities. That's also a difficulty if you don't have wholesale prices existing over a long period. If the TSO is reactive, and if it hasn't got the proper signal, it will become shortsighted. It won't know what to do in terms of investment.

Total has noted that the EU Commission has suggested creating the Office of Energy Observation. Apparently, this office is to undertake core functions regarding European energy demand and supply. This task is formidable without notable increases in transparency regarding the future investment needs in the EU for electricity and gas infrastructure. The proposed office effectively acknowledges that fully independent TSOs are shortsighted. They have to be helped by a third party who has a long-term vision on what should be the investment. Total has concerns about this new institution because, although it will have

to predict the market, it will have limited ability to do so because it is neither organising nor participating in the market.

The last point which concerns a fully independent TSO is that it will be costly. It has been mentioned for the US that when somebody invests in transmission facility, this investor wants to have an assured income stream --- meaning that this investor will ask for long-term commitments from shippers that will require a TPA exemption. But, if projects are developed with a TPA exemption, what is the advantage of full ownership unbundling? Total does not believe that there is an advantage. Further, the whole community of shippers will have to bear the investment risk.

In contrast, there is the 'pro-active way' that any company should be able to invest in transmission facilities without any type of bundling requirements. Total believes that vertically integrated companies have some advantage in this area because they have the long-term vision. What it means is that if you're a producer, you want to bring your gas to the market. You have your vision of what the midstream facility should be able to do to accomplish this vision. If you're a supplier, you want to connect your market area to the source. You have your own vision of the midstream facilities which are needed. If you're an independent TSO, you don't have those incentives.

The second point where Total thinks that vertically integrated companies bring some advantage is that they are ready to take on the investment risk because they look at this risk in synergy with their upstream or downstream activities. It's true that vertically integrated companies can cause problems in terms of access to the transmission grid. We agree on that. But Total thinks that full ownership unbundling is not the right solution --- you can implement transparency requirement in terms of information and also competition rules and that those companies can follow those rules. This scenario has been mentioned for France this morning, where the regulator is quite powerful when it comes to access to the grid. What Total also believes is that if there are mandatory investments, which have to be done, for example, to connect grids as we've done between Spain and France, then the TSO can be depended upon to do this investment only if it is provided with stable and clear investment rules.

In conclusion, Total believes that investments are key elements for security of supply; this is unavoidable. Total is afraid that if full ownership unbundling is mandatory, it may result in low reactivity and poor decision-making processes. Total strongly favours an approach that allows any company to undertake as much investment as possible, but these companies have to be controlled both in terms of transparency and in terms of following competition rules.

Chairman Jenny noted that on the one hand there is willingness on the part of the industry to just have a good enforcement of competition law, but also a plea for integrated companies, which is a bit at odds with some of the early presentations at the roundtable. On the other hand, some presentations have expressed the view that competition law enforcement should not be overly concerned with security of supply, because competition will assist in developing security of supply.

France commented on the point raised by Professor Lévêque that electricity-intensive industries argue that because of their distinctive characteristics – they consume very large amounts of electricity continually and over long periods of time ranging from 10 to 20 years – they should be charged less than the market price. This attracts the attention of the competition authorities, and particularly the French authority, in that these below-market prices run the risk of creating price discrimination either in the domestic market or in the European market as soon as they are not offered to all consumers.

The French competition authority views these requests for discounted prices as a good example which illustrates the potential conflicts between energy security and the demand for competition. National and European competition authorities have a duty and the power to re-establish healthy competition. When

confronted with this situation in France, the competition agency submitted an opinion to the French government to see how this problem could best be solved. The opinion was based on three main lines of reasoning: (1) that these long-term contracts to supply electricity to electricity-intensive industries were not intrinsically anti-competitive and that, in particular, they qualified for an exemption under Article 81, paragraph 3 of the European Treaty; (2) the amounts covered by these contracts should not be such that they restrict the market; (3) competition "for the market" may be feasible even if competition "in the market" is not feasible. The French delegate expressed the view that these three points can be used to resolve potential conflicts between competition and energy security, as the competition agency did in a recent case where the share of capacity covered in a proposed contract was large relative to the market.

Chairman Jenny shifted the discussion toward individual cases and asked the US to begin this portion of the roundtable by discussing a merger case involving natural gas storage facilities in a local area.

The US described the case as one involving remarkable salt dome natural gas storage facilities along the US Golf coast, but the analysis itself was conventional. There were four firms with storage facilities in the area. This was a four-to-three merger with the two merging parties having approximately 70% of the relevant capacity. In the competition agency's view, the proposed merger was a very clear unilateral-effects case, simply based on the combination of the two firms. The interest in doing this and focusing on this carefully is directly linked to the interest in preserving a flexible and robust natural gas storage sector. Interest in ensuring that there is a competitive supply sector for these services is directly related to the competition agency's view that maintaining a competitive market for storage is important to preserving flexibility in the supply market.

To put the case in context, the US drew attention of the delegates to a study footnoted in the written presentation. This sector study was conducted by the US Federal Trade Commission in the wake of the hurricane damage in the Gulf Coast. It provides a detailed glimpse of the interdependence of both the electric power sector and the oil and gas production and processing sector. It highlights how damage to the electric power industry was critical in the time path for resuming production at refineries, pipelines, and natural gas processing facilities. One also sees, in a very detailed way, the exact supply response which a relatively flexible interconnected delivery system can provide. This was one of Mr. Crenshaw's points before. One sees how, from the moment of the destruction, the phone calls went out globally to ship product into the US Now, there was necessarily a lag getting tankers to bring petroleum products from Rotterdam to the east coast of the US, but one may see in great detail the adaptability and the great responsiveness of the supply sector. The study underscores, in a very vivid way, how the fact of an interconnected flexible supply network – including this dimension of storage – can facilitate a response to crisis.

Chairman Jenny asked for clarification about the localised geographic market definition used in challenging the merger.

The US responded that there are a variety of overlapping storage regions and production facilities. Some are far more proximate to key production centres and processing centres than others, so that the cost associated with availing oneself of the most geographically practical facility is considerably less than relying on the interconnection to transport, in this case, natural gas liquid, to another facility. In many ways it's a standard geographic market definition, where transportation cost would be the key consideration.

Chairman Jenny asked Korea to describe the Dopco case, particularly the remedy.

Korea described the matters as a vertical merger between oil refining firm SK and the pipeline corporation Dopco. The KFTC had concerns because there can be anticompetitive practices, such as the denial of requests for oil transportation, imposition of limitations on the transportation volume that can be

requested, discrimination in the order of transportation, and so on. To address this problem, the KFTC issued a behaviour corrective order as following: the SK Corporation must exercise its voting rights at Dopco's shareholders meeting to implement the following corrective measures. Dopco Pipeline Company must take the necessary measures for the implementation. The first one is: SK Corporation must vote to place prohibitions against anti-competitive practices in Dopco's articles of incorporation (such as denial of requests for oil transportation by pipeline operators; imposition of limitations on the transportation volume that can be requested; discrimination in the order of transportation in terms of contracts including transportation costs; and inclusion of business information; and insist that Dopco abide by them. The second one is with regard to the prohibition of anti-competitive practices. SK Corporation must establish and run a consultative meeting where those who represent Dopco oil refining companies and the public can discuss and decide matters related to the use of pipelines, and issue and stipulate the grants for the establishment of the meeting and the management of it. This approach is to be included in the articles of incorporation of Dopco.

Chairman Jenny asked Korea if compliance was being monitored and Korea answered in the affirmative. He then asked the Czech Republic to describe the RWE Transgas case.

The Czech Republic first sought to put the case in historic perspective. The Czech gas market started to be opened in the beginning of 2005. For the whole of 2005, the market was open only for the biggest customers, about 35 companies including all big gas distributor companies. There are 10 gas distributors in the CR and eight of them are members of RWE group and two are private and independent.

The competition agency started the investigation of RWE in the late summer of 2005, because RWE is not only the owner of the distribution company, but also the owner of the pipeline network. And there is only one importer of gas to the CR. The investigation found two big problems in the portfolio of contracts between RWE on one side, or companies importing on one side, and customers on the other side. The first is that RWE applied disadvantageous conditions to the two distribution companies which are independent and that distribute the gas to the south part of Bohemia and to the capital. The two independent distributors are pretty big companies with a lot of customers. The conditions were so bad that it was practically impossible to compete with the distribution companies affiliated with RWE. The second and biggest problem was that RWE in CR applied destination clauses in the contract with all distributors, not only within the RWE group, but with all of them, and with practically all customers. So the market was totally closed, because it was impossible to sell the gas to another part of the country. The explanation given by the RWE people was that these conditions are the same conditions as the ones RWE has with Gazprom.

The first step in CR's two-step process resulted in sanctions of about 12 million euros in August of last year (2006). Because RWE, since the initial sanctions, changed all the contracts according to the recommendations of the competition agency and the recommendations of the energy regulatory authority, the sanctions will be somewhat less, about 9 M euros.

Chairman Jenny recognised Spain to describe the Viesgo Generacion case.

Spain has quite a concentrated electricity market with two large players, two medium players, two small players and a fringe of new-entrant competitors. Typically, renewable energy producers and some new entrants have just one or two production units. This case refers to a small producer. But the competition authority has been pushing some investigations with respect to the rest of the players, not just to Viesgo Generacion.

A relevant feature of the Spanish electricity market is the predominance of the wholesale purchases on the spot market. At the time, the majority of the electricity, more than 90%, was sold/bought on a daily basis in this spot market. Now, long-term contracts have been encouraged but, at that time, that was the

fact. That made price manipulation in the spot market have a lot of consequences for the cost of power, both in the regulated segment and in the liberalised segment.

Another feature is that there is no market splitting when there is some regional imbalance between local demand and supply. These regional restrictions (transmission congestion), when they occur, are solved under a system whereby the regulator pays the needed production unit its previous bidding price. So the basic assumption, under the system, is that the plant should make a competitive offer, and if it is not dispatched, then it makes sense to pay its cost, because, if it is not dispatched, it is because the market price doesn't cover its cost. One could say that it is an innocent or naïve approach from a regulatory point of view, but the other alternatives are: to introduce market splitting; to increase inter-grid capacity within the territory; or to introduce regulated prices for these units (and these can be slow and expensive to do).

What we discovered at the competition authority is that some companies recognised their indispensability in those regional areas and adopted a strategy whereby they voluntarily retire (withhold) their capacity by only offering it at substantial abnormally high prices. This has two effects: (1) the capacity retirements increase the price of the pool, thereby increasing electricity cost for all consumers; and (2) the company obtains supernormal profits on the withheld production units. Of course, it's a case of excessive prices, abuse of dominance, which are always very difficult. The agency had to undertake several test benchmarks to analyse the past prices of those units and took into consideration the importance of allowing supernormal prices in order to give the market signals about where to invest and where to put new capacity. But we found that these units had abused the regulatory system. The competition authority imposed sanctions.

Chairman Jenny honoured Australia's request for the floor.

Australia posed a question related to merger rules. Prof. Lévêque stated in his presentation that he felt, certainly for mergers in this area, the government should be actually more stringent to some extent. Does that actually mean that perhaps because the market in this area is so different from other product markets that it may almost warrant different merger rules, or did he just mean "more stringent" in terms of enforcement? Australia also expressed in interest in finding out whether other countries have different approaches to mergers when it comes to the energy market, or whether they just rely on their generic merger law?

Prof. Lévêque replied that he recommends that competition authorities in charge of merger control be more stringent because the cost of type 1 error is higher than in other sectors --- firstly, because of the inelasticity of demand with respect to price, and, secondly, because, in case of type 1 error, the merger is authorised --- although it's anti-competitive. In many markets, entry and competition from other suppliers can be expected to constrain anti-competitive behaviour, but in the case of electricity and gas, it will be more difficult to achieve, and the abuse of dominant position is more difficult to be proved. So this is why we can make this recommendation for this sector.

Chairman Jenny recognised Prof. Nambu for a comment.

Prof. Nambu referred to the discussion from the German delegate and Prof. Lévêque on the long-term contract problem. The relationship between "long-term contracts and competition" problem is more complicated than has been discussed, Prof. Nambu maintained. Japanese LNG imports, whether from Malaysia, Indonesia, or Australia, necessarily involve contracts that must be struck between two parties, the selling and buying parties. If the term of the contract were shortened from 15 to, for example, 2 years, what would the selling party say? They must say that because the term of the contract is shortened, we must raise the price of LNG. For example – and that is an extreme case – if the contract term is shortened from 15 to 2 years, the selling party may say that the price would be doubled, or more than that, because in

that short period of time they must recoup the investment. So the first direct effect is the increase of LNG imported price to the buying side. In the case of Japan, we import LNG at a higher price. Of course, the objection of antitrust competition policy is that the long-term contract might be a kind of barrier to entry, so by shortening the long-term contract, competition might be invited. But, in that case, we must think how much the retail price will be reduced? How many percent will the price be decreased due to the introduction of competition? We must compare the increase of the import price and the decrease of the retail price. If the import price goes up 50%, at least the retail price must go down more than 50% if competition is the most important policy objective. Such things can happen in Japan or other countries because the price elasticity of supply is not so big. So it is not likely that the import price increase can be easily cancelled out by the decrease in retail prices. Professor Nambu thinks that policy makers should be more cautious --- especially in the case of Japan --- about applying competition policy to long-term contracts.

Chairman Jenny then recognised the Swiss delegation to present a case.

Switzerland divided its presentation into three sections. The first is the issue. The second concerns the reaction of the canton legislature. The third is the effect that the competition agency decision had.

The issue: it goes back to the early years of this decade and it concerns the refusal to transport energy. In Switzerland, we have about 900 owners of electricity networks and most of them do produce a small quantity of energy. That goes back to the late 19th century when the communes used the rivers nearby to produce electricity and distribute it. Now, of course, things have changed, but the structure is still basically the same. They needed, of course, a public authorisation to build the grid. And once they had it, they just simply used it --- there was no regulation on the use of it. The competition commission said that since public authorisation was used, the users must follow the principles of competition law; and they were told that, since they had a monopoly, they could not use that monopoly in order to prohibit transportation of energy of competitors through the grid. That was the reasoning --- it would be an abuse of a dominant position. Now they argued that since they obtained an authorisation to build the grid, they had a kind of legal right to use it as they wished. This was the issue that had to be decided by the Federal Tribunal. Eventually the Federal Tribunal upheld our point of view saying that the users do not have legal protection to use the grid as they wish --- they are subject to competition law in this respect.

The controversial reaction was from the canton legislators, not canton courts. The legislators said that since there is not a legal monopoly (but only a monopoly in fact), we will change our laws and say that we now regulate the use of the grid. We not only authorise its building but also authorise how it is used. That was done by some. It was truly unconstitutional, and the Federal Tribunal hinted at that already in its decision. More importantly, it didn't really work out as these canton legislatures wished, because the market pressure was too important. Although Switzerland does have some cantons which did regulate it, they cannot really use it this way as a matter of fact. So this is something more of an anecdote than of a real reaction.

Now what is the effect of all that? Now grids are open as a matter of principle and energy must be transported and indeed is transported, but, of course, the question now is: at what price? The price of transport is quite high compared to the end-price. In Switzerland about 2/3 of the entire price is for transportation/transmission, so it's a very important part of it. The market works more or less. We're observing it. It doesn't really work satisfactorily, but it works more or less. In this respect, we had to decide on two or three cases about long-term or short-term contracts. Our position was to say: long-term contracting is acceptable --- but when we talk about long term --- it was 5 years and under two conditions: First, the buyer must have had a real choice between a long-term and a short-term contract; and second, there must really be liquidity in the market. We should not have a situation in which an entire series of contracts blocked the market for a long period of time. Now these conditions in the cases we had to deal

with were fulfilled. We're expecting federal legislation regarding regulation of the electricity sector and then we'll regulate the prices in some way or the other. If this is not done very soon, then we'll have to deal with this price issue for transportation in some other fashion.

What are the implications for the gas sector? The basic principles that were applied by the competition agency here would also apply to the gas sector, which is less important in Switzerland than in other countries. There have not been complaints until now, but the agency would start out with applying probably the same principles with one difference: storage. Gas can be stored, whereas electricity cannot be stored. All arguments that are found in electricity linking security to long-term supply contracts, are also found in the gas sector with the exception that storage is technically feasible in the gas sector.

Chairman Jenny recognised Mr. Smith before turning to Germany for a tale of conflict between competition and energy security.

Mr. Smith reacted to the previous discussion and the relationship between the features of energy markets merger policy and competition law. This is something that was grappled with in the UK and Mr. Smith maintained that Prof. Lévêque is absolutely right --- there are specific features in the electric power industry and, particularly, the highly inelastic demand, particularly in electricity over a short period, that gives rise to some different economics. It does not necessarily lead to the idea that one should have a different set of merger tests, because the inelasticities can be so extreme that it would actually lead one to conclude that one should worry about even tiny market shares. If such a stringent approach were used, it would potentially block mergers where one could see genuine efficiency benefits of companies getting together. But, this approach does lead to a rationale for being much more vigilant, ex-post, and to the kind of ideas that have been suggested by Prof. Lévêque in terms of the needs for market surveillance --- and unfortunately that probably leads to some of the difficult cases that the Spanish delegation mentioned, which are exploitative abuse cases associated with locational market power. So, one probably does not go so far down the merger prohibition route as to block efficiency enhancing mergers, but it doesn't necessarily make life easier for competition authorities or regulators.

Germany's delegation prefaced its remarks by stating that they would state the E.ON-Ruhrgas as neutrally as possible. In 2001-2002, E.ON acquired 100% of the shares in Ruhrgas AG. To give an idea of the dimension of that merger, in 2003, the E.ON- Ruhrgas merged entity accounted for around 65% of the domestic natural gas output. The Bundeskartellamt had blocked that merger for a couple of reasons that have been presented at OECD meetings several times. One argument of the Bundeskartellamt is that the merger would cement Ruhrgas' dominant position in the gas distribution market and that it would diminish the position of other gas transmission companies in Germany.

After the Kartellamt had blocked that merger, the parties went to a federal ministry for a ministerial allowance. It's important to know that in Germany there are two possibilities if the Bundeskartellamt blocks a merger. One is to go to the Court of Appeal by saying that the Kartellamt applied the law inaccurately. Another way is to go to the ministry to get a ministerial allowance for the merger. The Ministry can overrule the decision of the Bundeskartellamt if it believes that the restraint of competition is outweighed by advantages to the economy as a whole. So if there is an override in the public interest, it's a very political decision and it's always discussed broadly in public whenever it's made. The parties, in the end, received that ministerial allowance for their merger and the Ministry followed the following arguments. The Ministry said there was an increase in demand of natural gas; that there was an increase in dependency on gas imports in Germany; that gas from Russia in the future would be the most economic alternative gas supply. But, the Ministry also said that the pre-condition for reliable supply of gas from Russia was huge investment in the gas sector. This investment could be secured only if there was a serious commitment of the consumer countries – one of these is Germany – and this merger should help to give the

financial power to the merged entity to cover their part of the investment requirements in Russia. It is obvious, from the complexity of the arguments, that it is not very clear if this argument is at all valid.

To come back to the question that Prof. Lévêque has asked: is the German gas supply more secure after this merger? The competition authorities have never evaluated the results of the merger in these terms. One thing is certain --- a lot of the problems that are faced nowadays in the gas sector in Germany are the direct result of this merger. Whether it has helped to make gas supply more secure in Germany, nobody knows. What is known is that when it came to the development, for example, of a big gas field, it was not E.ON- Ruhrgas that was working on the project together with Russian partners. Rather it was Vingas, a much smaller entity, which undertook the investment. So it would be worthwhile to make an evaluation of this, which is, of course, very complicated and maybe not a task for the competition authority.

Chairman Jenny recognised Italy to present its natural gas investment case.

Italy began by presenting background information to put the case in the context of the Italian gas market. The consumption of natural gas in Italy is around 85 billion cubic meters/year and Italy relies heavily on imports. 86% of domestic demand is covered by imports. LNG accounts for a very marginal share of total natural gas consumption --- less than 5% --- and all the rest is natural gas coming mainly from Algeria by pipeline. In fact, Algeria is the most important source of natural gas for Italy. It accounts for 37% of imports. Other significant imports come from Russia and from Northern European countries. It comes through international pipelines that are controlled by Eni. Eni is the dominant firm in the Italian gas market. It has very dominant market shares at all of the levels of the gas sector. It owns all the international pipelines and the national network. It supplies more than 50% of imports. It controls storage facilities, as well as regasification terminals. And it has a very important market share at the retail level.

The case relates to the importation of gas from Algeria. The gas from Algeria comes to Italy through two pipelines: the Trans Tunisia pipeline, that goes from Algeria through Tunisia through the Mediterranean Sea; and then it connects to the Trans Mediterranean pipeline, that goes under the sea and reaches Italy. Both pipelines are under some form of control by Eni.

In 2002, TTPC, the company that owns transport rights on the Trans Tunisian pipeline until 2019, decided to expand capacity by 6.5 billion cubic meters, so a significant additional quantity of gas would have reached Italy by 2007. At that time, TTPC started a competitive procedure to allocate transport rights to shippers. By the beginning of 2003, it signed provisional contracts with four shippers. These were provisional because, for these contracts to come into force, some conditions had to be fulfilled --- in particular, shippers had to obtain an authorisation from the Tunisian state to transport gas through its territory and that had to sign a contract with the Trans Mediterranean company to transport gas through that pipeline. Some months were given to shippers to comply with these provisions.

In the meantime, Eni revised its Italian gas market scenario reaching the conclusion that, due to the development of another regasification terminal, the Italian market was going to be characterised by a serious oversupply condition. Eni revised its strategic plan, and the objectives of the new plans were: to maintain domestic volume of gas; to take any action necessary to comply with take-or-pay provisions in international contracts; and to adjust the investment plan to the new market scenario. This led to TTPC's revision of its investment plan, and TTPC notified Sonatrach, the Algerian supplier, that they had decided to postpone the investment from 2007 to 2013. TTPC did so a few days before the deadline assigned to shippers to comply with the conditions. So, it was obvious, that TTPC did not intend to sign a definitive contract with the shippers. In the meantime, of course, the shippers had all tried their best to comply with these provisions, but, of course, this had not been possible since they needed TMP company cooperation to

sign the contract to transport gas under the sea. TMP, partly owned by Eni, never replied to shippers' request to sign a contract.

This set of behaviours, taken as a whole, was considered by the Italian antitrust authority to be abusive. The infringement of Article 82 was thought to consist, on one hand, of exploiting, in an artificial manner, the existence of a contract provision, in order to impede shippers from finalising their contract, and, on the other hand, not pursuing the original investment plan.

In the view of the Italian competition agency, this case highlights two important points. The first one is the importance of vertical integration. Of course, the case would not have existed if Eni had not controlled TTPC. And it shows how incentives can be distorted by vertical integration. The second point is the importance of antitrust enforcement in an important energy security situation. The presentation by Italy concluded that the case would be difficult to generalise because the antitrust competition authority decision relies on specific conditions of the situation, in particular proving the artificial exploitation of contractual provisions.

Chairman Jenny recognised the BIAC delegation for a presentation of the views of the business community.

BIAC began by observing that ensuring predictable and competitive supply of natural gas is essential for a competitive economy. However, obtaining adequate supplies of gas is a prerequisite for competition. In particular, almost 75% of hydrocarbon resources are under state ownership or control, and that is something that the OECD needs to take into account when considering the interrelationship between competition policy and security of supply.

Industry has some concern about the application of competition law without due recognition of the fact that major resource holders are often sovereign nations to whom competition law does not apply. It means that there is a risk of, firstly, creating an unlevelled playing field between the private companies who are subject to competition law and the sovereign major resource holders; and, secondly, it could raise security-of-supply issues for nations that are largely dependent on natural gas from a single energy supplier. Some major resource holders, for example, could decide to sell LNG in particular into countries where they perceive the regulatory regime as more favourable to them. An example of this is the EC approach to profit-splitting mechanisms in gas contracts and specifically in LNG contracts. These state-owned companies are major resource holders, for example, in the Middle East, and don't necessarily understand, and don't necessarily agree with, the Commission's condemnation of profit-splitting mechanisms. It could result in a strong preference to sell the gas to markets like Japan, Korea, or the US, markets that don't take the same approach. In fact, the same effect may be true if different agencies around the world take a different approach, for example, to long-term contracts.

In relation to infrastructure, BIAC urges the OECD nations to ensure that competition policy doesn't deter investment, and BIAC is concerned that compulsory third-party access to infrastructure may not be the best method of ensuring that companies do take the risk and make investments.

Finally, BIAC obviously welcomes the application of competition law in natural gas markets, and applauds the approach of the US BIAC questions, however, whether new measures are needed, or whether the existing competition laws and regulations, if effectively applied, would suffice to ensure a competitive gas market.

Chairman Jenny asked the EU Commission to react to the UK submission. The UK submission states: "there is no requirement to limit the application of competition law in energy markets on security supply grounds. Energy suppliers owned by the public sector are likely to count as undertaking subject to EC and

UK competition law. Foreign owned undertakings active in the UK market are subject to EC and UK competition law." This seems to be a very clear statement that there is nothing different about the gas market or any other energy market and that the full scope of competition law should apply to this sector. The E. U. was asked by the Chairman what kind of response --- based on this comment --- first of all what was its reaction to this comment --- and what response it might make to the possible creation of an international gas cartel between gas suppliers.

Before asking this question, the Chairman recognised UK delegation.

UK reiterated its view that there is no requirement to limit the application of competition rules on security-of-supply grounds. This conclusion is a natural corollary of the fact that a functioning market will deliver security of supply. But, there may be a distinction between those markets that have been liberalised for some time --- because the UK market has been liberalised since the 1980's --- and those markets that have been more recently liberalised, and perhaps fear that market forces will not deliver investment to provide security of supply. The example of Norway's electricity system shows how developed markets help in adjusting to disruptions. The UK's experience shows both short-term reactions and also long-term investments. The UK has seen planned investment, as was said, of about 10 billion pounds.

But the second related point, for all competition authorities, was touched on by the American delegation and a number of others --- which is whether the markets can function properly when there are certain types of national government restrictions relating to planning or sometimes called land use. In the US, there are many plans to create new LNG facilities which are bogged down in very long-term and problematic environmental and land use cases. The UK delegation believes that both in this area, and in a number of other areas, the whole question of the operation of the planning regime is actually quite a serious issue in terms of looking at the proper functioning of the markets.

The UK also drew attention to two points in its written submission involving competition cases involving energy storage and the application of competition rules in a supply crisis situation.

The EU delegation took the floor to respond to the Chairman's earlier question about a potential gas OPEC. At this point, little is known about this plan for a Gas OPEC apart from some public statements. The EU delegation hopes that it doesn't move from there; so it's just a theoretical exercise for the time being. The truth is that Gazprom, Sonatrach and other players are already quite powerful vis-à-vis the demand side and in particular EU members. So, in principle, there doesn't seem to be any need for them to coordinate among themselves to gain market power. But it's also true that things are changing in these markets, and one of the outstanding features is one that has been discussed today, and that is the rise of LNG and the appearance of new players in these markets --- new supply players that can introduce some change in the market. Also, there is the fact that the (net) consuming countries are becoming more aware of the need to diversify supply sources and to gain buyer market power in that regard. This can maybe explain why this call for a cartel-like structure at the international level appears now.

Clearly such a supply-side cartel would not be welcomed by the EC Commission, and most people at the roundtable are likely to share this approach. Do we have instruments to tackle this sort of competition law infringement? If the structure were to be based on agreements among sovereign states outside the EU, it's doubtful that the EU competition authorities would have the jurisdiction. If it's amongst companies, whether they are public or privately owned, the EU would have jurisdiction, but it is a different issue whether the competition agencies would have the means to gain access to the information required to pursue this sort of infringement. So it would be one of the examples where international coordination among competition agencies is needed; otherwise, it is rather difficult to tackle this sort of behaviour for the time being.

The EU delegation offered additional comment on long-term contracts. The EU competition agency undertook a very wide sector enquiry which has been subject to public comments throughout the whole process, and there has been wide support for this exercise, except for the vertically integrated incumbents who don't see it as a good way to move forward. One of the issues that has been brought to our attention through this exercise is precisely the potential foreclosure created by long-term contracts. Despite this finding, the EU competition agency is not opposed to long-term contracts per se. These are very complex issues, as it's been highlighted by several delegations, because these long-term contracts can have pro-competitive effects that can be the only means for some new comers to enter the market. And such contracts can give the good signals that prompt additional investment in infrastructure. The main concern is when long-term contracts foreclose a big part of the market; when they are in the upstream and downstream market; when they are signed with incumbents. It is not fair to say that the EU competition agency has a general policy against these sorts of contracts per se.

Chairman Jenny concluded the roundtable with the following summary observations:

- The first discussion, security of supply: very clearly two components for countries that worry about security of supply: a physical security of supply and also a concern about the price at which the supplies can be obtained.

- Second, we've had fairly spectacular examples - thanks to our British colleagues, but also to the US, Mr. Santa and also Norway – fairly convincing cases that markets can indeed, maybe not completely, meet the concern regarding security of supply, but markets certainly help by creating a demand response which is going to be sensitive to prices and, therefore, alleviate a lot of the problems that we have had. What was most striking was that it was not only possible in the short-term, but also in the case of long-run investments, that the market response is adequate.

- There was some discussion about whether regulation was still needed and incentive regulation was maybe not quite as bad as one could think, in particularly in what Mr. de Ladoucette mentioned.

- In order to get competitive markets, of course, a lot of structural conditions have to be met, or legal or regulatory conditions.

- Long discussions on unbundling occurred, and deep unbundling was seen by most of the speakers, as being a pre-requisite to having a competitive market. A certain amount of skepticism about this conclusion was expressed by the Japanese and Korean delegations. They doubt that deep unbundling is such a good idea based on the view that buyer power is important in obtaining security and better prices from energy supplying countries.

- The existence of storage facilities is potentially attractive in order to be able to hedge your bets and to provide possibility of having security against short-term supply disruptions. There is also the possibility of gaining security of supply by using long-term contracts, with the proviso that there is a sufficient number of suppliers competing in offering long-term contracts.

- Competition law enforcement in this context raises interesting questions because most of the problems are problems which are complicated for competition authorities.

- There are abuse of dominance cases, including exploitative abuse cases, and we know we are not completely at ease with such cases.

- Vertical mergers are clearly an issue of efficiency versus competition and the possibility of foreclosure.

- Long-term contracts can be of concern, but there are many qualifications about when and if such contracts are pro-competitive or anticompetitive.

- In the end, it's quite clear, interesting and maybe absolutely obvious that the countries that worry the most about security of supply are resistant to the full development of markets and are countries which are very dependent on foreign supplies. And countries like the US or UK, where there is much less concern, because there is no need to be concerned with foreign supplies, are much more at ease and much more willing to experiment with the markets and to develop them.

COMPTE RENDU DE LA DISCUSSION

Le Président, M. Jenny**,** a ouvert la table ronde et présenté les experts participants : M. Donald Santa, ancien membre de la Federal Energy Regulatory Commission aux États-Unis et maintenant Président de l'Interstate Natural Gas Association of America, M. de Ladoucette, Président de la Commission de régulation de l'énergie en France, M. Smith, membre d'OFGem au Royaume-Uni, le Professeur Nambu, de l'Université Nagakushu au Japon, le Professeur von Hirschhausen, Président du Département d'économie de l'énergie et de gestion du secteur public à l'Université de Dresde en Allemagne, le Professeur François Lévêque de l'École des Mines de Paris, M. Cronshaw, Responsable de la Division de la diversification énergétique du Bureau de la coopération à long terme et de l'analyse des politiques de l'Agence Internationale de l'Energie et M. Khayat, directeur logistique de Total Gas & Power. Le Président remercie également Mme Sally van Siclen pour sa note de référence et M. John Hilke pour sa contribution à l'organisation du déroulement de la table ronde.

Les débats de la table ronde se sont articulés autour de trois sessions : 1) la signification, les sources et le prix de la sécurité énergétique et les problèmes liés à la mise en place ou au maintien d'une répartition efficace des approvisionnements en gaz naturel qui ne proviennent pas nécessairement du pays utilisateur, 2) la promotion des investissements importants requis par la chaîne de l'offre du gaz naturel (transport et distribution) et 3) le rôle de la politique de la concurrence et des exemples d'affaires concernant la sécurité énergétique.

Session I

La session 1 comprenait deux sous-thèmes : la signification de la sécurité énergétique, et les déterminants de la sécurité énergétique et en quoi ceux-ci se rattachent à la politique de la concurrence. Le Président a invité les délégations du Brésil, de la Lituanie, de la Suisse et de la République tchèque à définir la sécurité énergétique dans leur contexte en donnant des exemples.

Le Brésil définit la sécurité énergétique comme « le fait d'assurer un équilibre entre l'offre et la demande à tout moment. » Le Brésil utilise principalement l'hydroélectricité, mais le gaz naturel joue un rôle important dans la sécurité énergétique puisqu'il contribue à éviter les crises d'approvisionnement. Face au problème de sa dépendance par rapport à la Bolivie, qui représente 90 % de son approvisionnement en gaz, le Brésil construit actuellement deux terminaux de regazéification pour permettre les importations de gaz naturel liquéfié. Il a signé également une déclaration avec le Venezuela concernant la construction d'un gazoduc reliant le Venezuela, le Brésil, l'Argentine et l'Uruguay. Enfin, pour encourager les investissements privés dans le secteur du gaz naturel, un projet de loi a été préparé pour créer un nouveau cadre réglementaire du secteur incluant des règles d'accès aux pipelines.

La Lituanie définit la sécurité énergétique comme un « approvisionnement en énergie fiable et diversifié à des prix raisonnables ou de marché » bien qu'elle ne dispose actuellement d'aucun prix de marché. L'importance qu'accorde l'UE à l'interconnectivité comme moyen d'accroître la sécurité énergétique constitue la priorité essentielle de la Lituanie pour limiter les risques vis-à-vis d'un fournisseur unique (la Russie) et se protéger du risque lié à une utilisation de l'énergie comme instrument politique. La Lituanie est fortement tributaire du gaz russe puisque Gazprom, monopole gazier d'État intégré verticalement, est son unique fournisseur et le propriétaire du gazoduc. D'un autre côté, les deux sociétés qui détiennent la société gazière lituanienne (Gazprom et Eon) ne sont pas intéressées par une

diversification. C'est pour cette raison qu'une intervention de l'État est nécessaire pour s'assurer une autre source d'approvisionnement en gaz, notamment en provenance de la Pologne. La Lituanie fait appel à l'Europe pour réaliser des investissements dans le domaine des énergies renouvelables et de l'énergie nucléaire, qui amélioreront l'efficacité énergétique et l'accès au secteur énergétique pour tous les pays, tout en réduisant les risques politiques liés à l'existence de réserves limitées de combustibles fossiles.

Le Président a demandé à la Suisse de préciser les deux affirmations suivantes, apparemment contradictoires, que contient sa contribution. D'une part, elle affirme : « Normalement le marché ne définira pas le juste prix de la sécurité énergétique si elle est considérée comme un bien public. » et d'autre part elle indique : « La délégation suisse considère que la sécurité énergétique relève principalement de la responsabilité du marché, le gouvernement n'intervenant qu'en cas de défaillance du marché. » Par conséquent, si le marché ne donne pas le bon prix de la sécurité énergétique et si le gouvernement n'intervient pas, quelles sont les possibilités de trouver le vrai prix de la sécurité énergétique ?

La Suisse situe son approche dans un cadre théorique distinguant quatre défaillances classiques du marché qui sont les seules situations où l'État devrait intervenir : 1) les biens publics ou les services publics, 2) les monopoles naturels, 3) les externalités qui ne sont pas internalisées par les mécanismes de marché, et 4) l'asymétrie d'information. Si la sécurité énergétique est un bien public, l'intervention de l'État est justifiée. Toutefois, pour limiter l'intervention de l'État au strict nécessaire, on restreint la définition d'un « bien public » à la non-rivalité et la non-exclusivité. La « contradiction » mentionnée par le Président réside dans le fait que l'État n'assure pas lui-même la sécurité d'approvisionnement, mais qu'il laisse le soin de remplir cette fonction à des agences spécialisées qui sont encouragées à opérer librement dans toute la mesure du possible. Toutefois, en ce qui concerne le gaz, ce système n'est pas encore en place alors qu'il s'applique aux secteurs de l'électricité et du pétrole. D'après la philosophie de la sécurité d'approvisionnement de la Suisse, il conviendrait, en cas de perturbations du marché, de répercuter les variations de prix sur les consommateurs. Les prix significatifs sont ceux qui suivent les tendances du marché et ont une faible volatilité ; aucun instrument ne permet d'atteindre ces deux objectifs. Dans ce cas, le gouvernement n'est pas disposé à supporter le coût d'un subventionnement à long terme lié à une stabilisation des prix par l'État et à l'inexactitude des prévisions de marché.

Le Président, M. Jenny, s'est tourné ensuite vers M. Lévêque.

M. François Lévêque a souligné, d'une part, l'importance de dissocier l'adéquation des ressources de la définition de la sécurité et, d'autre part, le rôle que doit jouer le gouvernement dans chacun de ces domaines. La sécurité est un bien public collectif parce qu'elle concerne la fiabilité du réseau de distribution. L'adéquation des ressources concerne la satisfaction par l'offre de la demande future et le rôle joué par les investissements pour maintenir des capacités suffisantes. Toutefois, a-t-il souligné, l'adéquation des ressources est par là-même un bien privé et il est important de ne pas confondre les deux définitions. Il a poursuivi en indiquant que les défaillances du marché et l'existence d'un bien public sont une condition nécessaire pour justifier une intervention, mais pas suffisante, parce que l'action des pouvoirs publics et les marchés sont imparfaits. La nécessité d'intervenir devrait reposer sur la solution la moins imparfaite : les marchés ou l'action publique. M. Lévêque indique que l'existence d'un "bien public" ne signifie pas que l'intervention publique soit toujours indispensable.

Le Président, M. Jenny, a donné ensuite la parole à la République tchèque.

La République tchèque a commencé son exposé en évoquant certaines difficultés liées à l'approvisionnement en gaz naturel de la République tchèque, 70 % provenant de Russie et 30 % de Norvège. L'approvisionnement en provenance de la Norvège a déjà été augmenté au maximum, ce qui implique que la dépendance vis-à-vis de la Russie pourrait s'accroître. La République tchèque produit moins de 1 % du gaz naturel qu'elle consomme ; la sécurité est par conséquent une préoccupation majeure.

Le problème essentiel de la République tchèque tient à ce que l'État a vendu son réseau de distribution et sa capacité de stockage au même propriétaire juste avant le découplage des marchés tchèques de l'énergie en 1999, ce qui a créé en fait peu de concurrence et contribué à aggraver les risques liés à la sécurité sur le marché du gaz. Cet unique propriétaire maîtrise les réserves et profite de l'arbitrage des fluctuations de prix saisonnières. Cela implique de faibles réserves en été, ce qui n'est pas dans l'intérêt national car la société en cause ne constitue pas de réserves stratégiques.

Ceci étant, la République tchèque est un État de transit qui achemine trois fois plus de gaz que le pays en consomme. En ce qui concerne l'électricité, la production nationale (uranium et charbon) couvre 98 % de la consommation. Le marché de l'électricité fonctionne très bien et contribue à l'ouverture du marché et à l'augmentation des exportations.

Tirant les enseignements de son expérience, le délégué tchèque a formulé plusieurs recommandations destinées à éviter les crises : il ne faut pas vendre le principal gazoduc à la société qui est propriétaire du réseau de distribution, il faut conserver une indépendance maximale et utiliser les sources d'énergie nationales dans toute la mesure du possible, il faut maintenir des réserves stratégiques entre les mains de l'État.

Le Président, M. Jenny, a passé au deuxième sous-thème qui était de savoir si la concurrence favorise la sécurité énergétique ou si elle lui est préjudiciable. Le Président a distingué deux groupes, l'un défendant la thèse que la concurrence contribue à la sécurité énergétique et l'autre que trop de concurrence en aval dilue la puissance d'achat et accroît l'insécurité de l'offre.

Le Royaume-Uni a mis tout d'abord l'accent sur l'offre à court terme et au rôle qu'a joué la réactivité de la demande qui a contribué à passer l'hiver 2005-2006 avec des stocks plus faibles qu'à la normale à cause d'un accident intervenu dans une installation de stockage offshore. Globalement, la demande de gaz du Royaume-Uni se répartit à parts égales entre la production d'électricité, le secteur industriel et le secteur des ménages. En réponse à la hausse des prix du gaz naturel, les producteurs d'électricité ont privilégié le charbon et les distillats utilisés comme combustibles de substitution, ce qui a permis de réduire la consommation de gaz de 40 millions de m3/jour, soit 10 % de la consommation de pointe habituelle en hiver au Royaume-Uni. La réaction des industries consommatrices a été de réduire ou d'arrêter la production ou d'opter pour des combustibles de substitution, ce qui a libéré 16 millions de m3/jour, soit 5 % environ de la consommation de pointe habituelle en hiver. La consommation du secteur résidentiel et du secteur des petites entreprises a diminué de 8 %, chiffre corrigé des variations de températures d'une année à l'autre. Selon le délégué, la baisse de consommation est liée à une sensibilité accrue aux prix de marché, conduisant les utilisateurs à baisser leurs thermostats.

En d'autres termes, les trois secteurs qui composent la demande ont réagi aux contraintes de l'offre grâce à un marché spot liquide, transparent et concurrentiel. De cette façon, il a été possible aux différents acteurs de se rendre compte de ce qui se passait et de réagir en conséquence à l'augmentation des prix spot, ce qui a imposé une baisse de la consommation via les incitations économiques. C'est l'existence même de ce marché qui a donné aux consommateurs britanniques les moyens nécessaires pour comprendre les difficultés qui existaient du côté de l'offre durant cette période particulière et qui leur a donné une incitation économique pour revendre leur gaz, en fait, sur le marché spot. De véritables signaux de prix immédiats ont encouragé une réaction rapide du côté de la demande et globalement le marché s'est adapté de manière efficace.

Le Président, M. Jenny, a demandé à l'Union européenne de donner son avis sur la question de savoir si la concurrence peut contribuer à la sécurité énergétique et d'indiquer comment elle envisage d'élucider le paradoxe du plus de concurrence et moins de puissance d'achat, ce qui a pour effet dans ces conditions d'augmenter l'instabilité et l'insécurité de l'offre.

L'UE a noté tout d'abord qu'il n'est pas difficile de comprendre de manière intuitive qu'il faut des grandes entreprises dotées d'une forte puissance d'achat pour créer des conditions plus favorables face aux grands fournisseurs internationaux. Toutefois, deux éléments mettent en question ce raisonnement.

- Premièrement, la sécurité de l'offre concerne les perturbations dans l'approvisionnement du consommateur final. Il ne suffit pas d'avoir une demande globale dans l'Union européenne qui corresponde à l'offre globale des grandes entreprises qui achètent du gaz sur le marché international, mais, en revanche, il est primordial que les conditions techniques et économiques permettent d'assurer l'approvisionnement en gaz et en électricité du consommateur final de manière efficace et fiable. Les contrats à long terme concernant des achats importants de gaz à de grands pays ou des fournisseurs importants sur le plan international ne permettent pas d'éviter les ruptures d'approvisionnement dans de vastes zones.

- Deuxièmement, la puissance d'achat ne dépend pas entièrement du volume ; il est clair qu'un fournisseur unique peut effectivement affaiblir la puissance d'achat de différents acteurs. C'est pourquoi la diversification des sources est essentielle pour assurer la sécurité. Créer de grandes entreprises à l'intérieur des frontières nationales n'assure pas une sécurité d'approvisionnement au consommateur final malgré la possibilité de réaliser des marges plus élevées. La possibilité de dégager des bénéfices plus importants n'améliore pas nécessairement la sécurité d'approvisionnement ni les conditions pour le consommateur final. Accroître les capacités d'interconnexion permet de créer un marché interne européen offrant un accès élargi à un plus grand nombre de consommateurs, au lieu de concentrer les efforts à l'intérieur des frontières nationales. La concurrence en aval est propice à une meilleure tarification et à un meilleur service, dont bénéficiera le consommateur final.

Le Président, M. Jenny, a donné ensuite la parole à l'Italie.

L'Italie a posé une question en deux volets à la délégation du Royaume-Uni concernant la liquidité de ses marchés dans le secteur du gaz, par opposition à l'absence de prix de marché en Lituanie. Comment est-on parvenu à créer ce niveau de liquidité au Royaume-Uni, et le marché spot joue-t-il un rôle important pour les conditions de l'offre dans le secteur du gaz ?

Le Royaume-Uni a répondu que le marché spot est très important, mais que les conditions sont en partie liées à la taille du marché du gaz au Royaume-Uni comparé au reste de l'Europe ; il représente 20 % environ de la demande globale de l'UE. L'importance du marché du gaz naturel au Royaume-Uni, son développement dans le passé et la production de gaz naturel en Mer du Nord sont des éléments qui ont contribué à sa liquidité, qui n'est peut-être surpassée que par celle du marché du gaz aux États-Unis. Le découplage est également un élément important pour la liquidité.

L'Italie a posé deux questions complémentaires : cette liquidité est-elle liée au fait que le Royaume-Uni est un producteur de gaz comme les États-Unis, par exemple ? Un pays exclusivement importateur comme la République tchèque ou la Lituanie pourrait-il lui aussi créer un marché spot comparable à celui décrit par le Royaume-Uni ? Le délégué du Royaume-Uni répond brièvement en évoquant la taille du marché britannique et la tendance qui laisse entrevoir que dans trois ou quatre ans il sera importateur net. Il a reconnu que les marchés plus petits comme la République tchèque devront sans doute se regrouper avec les marchés voisins pour atteindre une dimension suffisante leur permettant de supporter les coûts d'un marché spot et d'encourager la réalisation des investissements indispensables.

Le Président, M. Jenny, s'est tourné vers le Japon dont la position est de superviser la déréglementation pour trouver le juste équilibre entre l'encouragement d'un environnement concurrentiel et la garantie d'une offre stable.

Le Japon a précisé que la conjonction de ces éléments ne résulte pas d'un arbitrage ; certaines conditions sont nécessaires pour trouver un juste équilibre entre l'encouragement d'un environnement concurrentiel et l'assurance d'une offre stable. Cet équilibre est réalisé en se procurant l'énergie à des prix raisonnables auprès de sources fiables à l'étranger et en créant sur le marché national une quantité suffisante de capacités inutilisées afin de fournir du gaz en quantité suffisante aux consommateurs. Le Japon doit importer plus de 96 % de sa consommation de gaz sous forme de gaz naturel liquéfié puisque le Japon est une île et qu'aucun gazoduc ne le relie à ses fournisseurs. La construction des installations nécessaires exige un investissement initial important de la part des fournisseurs et suppose par conséquent du côté de la demande un engagement à long terme de la part de l'industrie japonaise. La libéralisation des marchés favorise l'augmentation de la demande et crée des conditions propices incitant les fournisseurs à investir. Toutefois, en raison du vieillissement de la population, de l'estimation d'une demande d'énergie en baisse et de ses particularités géographiques, le Japon doit rechercher une réforme de la réglementation adaptée à ces conditions.

Le Président, M. Jenny a invité la Norvège à commenter la relation entre la réactivité de ses marchés déterminée par la demande et la sécurité de l'offre.

Le délégué norvégien a fait valoir que le système délégué norvégien, basé sur l'hydroélectricité, connaît de fortes variations de prix d'une saison ou d'une année à l'autre, liées généralement à des variations de l'offre puisque la demande est relativement stable. Les pénuries d'électricité peuvent avoir deux causes majeures : 1) un problème concernant une ou plusieurs centrales hydrauliques ou 2) un problème lié au réseau de transport créant un déséquilibre. Le mécanisme d'équilibre qui encourage une réaction du côté de la demande dans ces situations est un marché en temps réel qui fixe les prix heure par heure, ce qui constitue le principal instrument permettant de garantir des réserves d'électricité durant les heures de service. Les acteurs du marché du côté de la demande ont la possibilité de faire des offres pour équilibrer le marché par des réductions de la demande sur une base horaire pour le lendemain. Concernant les pénuries d'énergie résultant en général d'une diminution des quantités d'hydroélectricité produites, les augmentations de prix constituent le principal mécanisme permettant de rétablir l'équilibre entre la consommation et l'offre. Les consommateurs ont le plus souvent des contrats dans lesquels le prix de l'énergie varie en fonction du prix de l'électricité sur le marché spot. Étant donné que dans leur majorité les consommateurs utilisent l'électricité pour le chauffage, ils peuvent utiliser le bois ou du fioul comme combustibles de substitution en cas de hausse du prix de l'électricité. Lorsqu'il y a pénurie d'énergie, le marché est divisé en segments de prix impliquant des hausses de prix et une diminution de la demande sur le segment où l'énergie est peu abondante. L'industrie grosse consommatrice d'électricité offre une souplesse supplémentaire car même durant les années de vraie sécheresse il n'a pas été nécessaire d'utiliser le rationnement comme instrument d'équilibrage. Il existe également un marché d'options de réserves d'énergie qui garantit des réserves d'électricité supplémentaires. Les acteurs du marché peuvent garantir des quantités déterminées de réserves d'énergie qui prendront la forme de réductions de la demande. Ces offres doivent avoir une durée minimale d'une semaine. Avant la création du marché d'options de réserves en 2000, l'autorité de la concurrence norvégienne avait été contactée par les représentants de l'industrie qui voulaient coopérer à la fourniture de réserves au gestionnaire du réseau de transport. On leur a fait savoir que si leur collaboration, dans un but de sécurité énergétique, était nécessaire, ils pourraient demander une exemption des règles de la concurrence. Une telle demande n'a jamais été présentée et les réserves sont assurées conformément aux mécanismes de marché.

La délégation norvégienne a cité l'exemple de l'hiver 2003-2004, au cours duquel les prix ont grimpé à leur niveau le plus élevé à ce jour. Le recours aux instruments décrits ci-dessus a permis d'importantes réductions de la consommation et les autorités n'ont pas été obligées d'intervenir. En cas de pénurie d'énergie dans une région, le gestionnaire du réseau de transport crée une zone séparée sur le marché spot. En général, le prix dans la région où l'offre est limitée est plus élevé que dans les régions voisines, reflétant l'insuffisance de la production d'électricité que connaît la région en question. Il en résulte une réduction de

la consommation d'électricité. L'année passée, un nouveau marché d'options de réduction de la demande d'énergie a été mis en place. Le gestionnaire du réseau de transport a conclu avec les consommateurs industriels des contrats qui prévoient des réductions de consommation durant plusieurs semaines pendant les mois d'hiver en cas de situation difficile du côté de l'offre. Le gestionnaire du système de transport paie, en achetant une option, le droit de décider si et quand des réductions de la demande doivent être appliquées et il doit payer une somme supplémentaire dans le cas où l'option est exercée. Ces options ne doivent être exercées qu'en cas de très forte probabilité de rationnement. Il serait possible d'obtenir une souplesse supplémentaire du côté de la demande si on introduisait une mesure horaire obligatoire de la consommation des ménages et autres utilisateurs du secteur résidentiel. Cette possibilité n'a pas été considérée comme économiquement rentable jusqu'ici.

Le Président, M. Jenny, s'est adressé à la Suède pour qu'elle présente un autre point de vue s'appuyant sur l'attribution au gestionnaire du réseau de la responsabilité de constituer des réserves durant les périodes de pointe de la demande.

Le délégué de la Suède a expliqué qu'après la déréglementation de 1996 on avait supprimé des capacités excédentaires en vue d'améliorer l'efficience, mais qu'on disposait de réserves moins importantes durant les périodes où la demande est la plus forte. Ultérieurement, la Suède a adopté une solution temporaire basée sur le marché (de 2003 à 2008) pour permettre au gestionnaire du réseau de transport d'acquérir des réserves allant jusqu'à 2000 mégawatts qui seraient disponibles pour les périodes de pointe durant les mois d'hiver. 75 % des réserves pour les périodes de pointe correspondent à des capacités d'appoint et 25 % à une réduction de la demande des grands consommateurs industriels. Deux problèmes se posent à ce niveau :

- La réserve implique en soi que les incitations visant à conserver certains types de capacités ne cessent de s'affaiblir, de sorte que cette réserve risque de devoir être augmentée à un moment donné, et les incitations à investir dans certains types de capacités disparaissent du marché.

- Comment définir le prix de cette réserve sur le marché sans fausser la fonction du marché ?

La Suède envisage une solution basée sur le marché qui attribue aux entreprises la responsabilité d'assurer la sécurité d'approvisionnement. Toutes les mesures prises ont été de portée nationale et reconnaissent l'importance de la flexibilité de la demande parmi les petits usagers. Toutefois, le délégué indique que, puisqu'il existe un système énergétique pour les pays nordiques, une solution régionale pourrait constituer la meilleure alternative à une gestion des réserves d'urgence par l'État.

À l'invitation du Président, M. Jenny, le professeur Nambu a présenté le secteur gazier japonais en mettant l'accent sur les contrats à long terme et la question de la politique de sécurité dans une perspective plus large. Au Japon, il existe une vingtaine de fournisseurs de gaz urbain, mais les grandes entreprises, Gaz de Tokyo, Gaz d'Osaka et Gaz de Toho, représentent 75 % de la production totale. Huit sociétés gazières importent du gaz naturel liquéfié. Il n'existe pas de réseau de distribution de gaz au Japon qui corresponde au réseau de l'Union européenne. En outre, 50 % environ de l'offre de gaz à l'échelle nationale émanent de fournisseurs de gaz propane liquide.

Le professeur Nambu a appelé l'attention sur certaines particularités du Japon, à savoir le fait que c'est une île excentrée, qu'il a une production d'énergie nationale très faible et que la demande d'énergie est très importante. En conséquence, le gaz liquéfié est transporté par navire, puis regazéifié avant d'être livré aux sociétés de gaz et d'électricité. La part que représentent les sociétés d'électricité dans les importations de gaz liquéfié est de 66 % et celle des sociétés de gaz urbain de moins de 3 %, et 30 % environ de la production correspondent à d'autres utilisations du gaz naturel liquéfié. Par conséquent, les sociétés d'électricité et de gaz coopèrent à l'importation de gaz naturel liquéfié de l'étranger et les

importations d'énergie sont géographiquement diversifiées, 30% provenant de l'Indonésie, 22% de la Malaisie et 15% de l'Australie. La demande dans les pays asiatiques est forte et le Japon représente 50 % environ des importations des pays asiatiques.

Au Japon, les problèmes majeurs liés à la sécurité concernent la stabilité des prix dans les périodes normales ou d'urgence et les éventuelles interruptions des importations. La conséquence est que le Japon est dépendant des contrats à long terme et de la coopération en vue de développer de nouvelles sources d'approvisionnement en gaz naturel liquéfié.

Le professeur Nambu a examiné la différence qui existe entre les prix du pétrole et les prix du gaz et indique que les prix du pétrole fluctuent quotidiennement et d'une année à l'autre ; en revanche pour ce qui est du gaz naturel liquéfié, le Japon dépend de contrats à long terme, d'où un prix très stable des importations. Gaz de Tokyo a conclu un contrat avec Darwin concernant le développement de nouveaux projets d'exploitation de gaz naturel liquéfié. Gaz de Tokyo est à la fois acheteur et investisseur dans des projets. Plusieurs exemples montrent de quelle façon la structure des contrats japonais d'approvisionnement en gaz conduit à une stabilité des prix et renforce la sécurité de l'approvisionnement en gaz.

Il existe pour le Japon une préoccupation future qui concerne le lien qu'on pourrait voir apparaître entre les prix du pétrole et du gaz naturel en raison des opérations des fonds spéculatifs et d'autres organisations puissantes. Un autre problème concerne la tarification des droits d'émission pour les combustibles, qui variera dans le futur et influera sur les prix du gaz naturel liquéfié.

La concurrence accrue entre les sociétés de gaz et d'électricité depuis la déréglementation au Japon qui a commencé en 2000 est au centre de l'analyse du professeur Nambu. Si le scénario d'une concurrence entre ces deux secteurs d'activité devait remettre en cause la coordination qui existe aujourd'hui entre les acheteurs, cela pourrait avoir une influence défavorable sur la puissance d'achat du Japon. Cette thèse pourrait se matérialiser puisque les sociétés d'électricité peuvent acheter du gaz naturel liquéfié à un prix inférieur à celui que peuvent obtenir les sociétés de gaz, ce qui augmenterait le « coût concurrentiel » des sociétés de gaz. Pour cette raison, le professeur Nambu ne partage pas l'opinion selon laquelle la concurrence et la sécurité sont compatibles. Selon lui, l'augmentation du nombre d'intermédiaires gaziers ou de nouveaux entrants sur le marché du gaz naturel liquéfié n'assure pas la sécurité, parce que ces sociétés auront un comportement opportuniste pour éviter les risques. Les sociétés sortant de ce marché seraient susceptibles de créer de sérieux problèmes de sécurité d'approvisionnement. En ce qui concerne l'attribution de 30 % des terminaux de gazéification du gaz naturel liquéfié aux nouveaux entrants, il est possible que les incertitudes liées à l'innovation technologique et aux marchés internationaux provoquent la sortie de différentes sociétés. Cela veut dire que réserver une partie du marché aux nouveaux entrants qui entrent et sortent du marché pourrait être un gaspillage de ressources. Les limites de la diversification entre les sociétés de gaz et d'électricité semblent arbitraires et inutiles étant donné que le produit final pour chacun des deux secteurs est le service d'utilité publique qui est produit, ce qui rend les produits homogènes. Au bout du compte, il existe le même niveau de service sur les marchés de l'électricité et du gaz.

Le Président, M. Jenny, a rapidement analysé les points évoqués par le professeur Nambu, en particulier la façon dont les contrats à long terme peuvent contribuer à la sécurité d'approvisionnement ou au moins au lissage des prix. Il a attiré l'attention sur les questions que le professeur a soulevées concernant la contribution que la concurrence apporterait à la sécurité en invitant les délégués à aborder ces questions. Il s'est ensuite tourné vers l'Espagne, dont la contribution porte sur les contrats à long terme d'achat de gaz naturel liquéfié et sur la sécurité d'approvisionnement.

L'Espagne a en premier lieu présenté son marché du gaz naturel liquéfié et le rôle des contrats à long terme. Le gaz naturel liquéfié représentant les 2/3 de ses importations de gaz, l'Espagne affiche la proportion la plus forte dans l'UE. En partie du fait de la demande provenant des centrales électriques et plus encore des installations de regazéification, le gaz naturel liquéfié a permis de libéraliser le marché du gaz espagnol. À la fin des années 90, la libéralisation a débuté et deux mesures essentielles ont été adoptées : 1) le démembrement de la propriété pour les gestionnaires des réseaux de transport et 2) l'abandon du contrat à long terme de l'opérateur historique, ce qui a permis à de nouveaux entrants de rechercher de nouveaux contrats.

Grâce à ces mesures, le marché du gaz espagnol, qui comprenait un seul gazoduc et trois installations de regazéification, compte désormais cinq installations pour le gaz naturel liquéfié, plus deux en construction et un autre gazoduc qui est actuellement réalisé par un consortium de sociétés privées. Les infrastructures espagnoles pour le gaz naturel liquéfié sont développées en associant l'initiative privée et l'intervention de l'État. Cette dernière prend la forme d'une réglementation lorsque de nouvelles installations de gaz naturel liquéfié sont nécessaires en cas d'insuffisance de capacité du système de base. Ceci étant, les cinq ou sept installations qui existent actuellement ont été conçues dans le cadre d'initiatives privées même si elles font encore partie du système de base. Cela a certaines conséquences sur le plan des recettes qu'elles perçoivent. Bien que différents tarifs réglementés et prix privés soient appliqués, elles devraient en général couvrir l'ensemble de leurs coûts fixes grâce aux tarifs de transit. Cependant l'aspect le plus important est qu'elles sont soumises aux règles d'accès des tiers et par là-même à des obligations plus importantes en termes d'information et de transparence. 25 % des capacités totales doivent être réservées aux contrats à court terme et aucune société ne peut détenir plus de 50 % de ces capacités. Le reste est destiné aux contrats à long terme. Conformément à la règle du « premier entré, premier servi » (qui risque d'être modifiée pour être harmonisée avec les directives de l'UE), d'autres mesures de sauvegarde garantissent un accès équitable aux tiers. Il existe certaines obligations en termes de garanties, de pénalités et de règles strictes de péremption des droits inutilisés. Pour conclure, le délégué souligne quatre points : i) les contrats à long terme dans ce cas sont autorisés, mais sont soumis à certaines règles de façon qu'ils contribuent à la sécurité énergétique ; ii) la réglementation a créé des incitations parce que toutes les installations de gaz naturel liquéfié appartiennent au gestionnaire du transport, qui est totalement indépendant des fournisseurs de gaz, ou à de nouveaux entrants. L'opérateur historique ne représente que 35 % de la capacité totale d'importation de ces installations, ce qui implique ou crée un degré de contestabilité du marché ; iii) la réglementation a également créé des incitations favorisant la sécurité pour le gaz naturel liquéfié en ménageant une marge raisonnable de capacités excédentaires dans le système d'importation ; iv) la politique de la concurrence joue son rôle. L'autorité de la concurrence a sanctionné l'opérateur historique du secteur gazier au motif qu'il se réservait une part importante des capacités d'importation de gaz et l'affaire a conduit par ailleurs à une modification de la réglementation et une nouvelle réglementation est actuellement en préparation en vue de créer un marché de capacités.

Selon la délégation espagnole, il n'est pas certain que le gaz naturel liquéfié contribue à créer une perspective à long terme pour la sécurité énergétique, mais il a manifestement contribué à libéraliser le marché du gaz en Espagne.

Le Président, M. Jenny, tout en reconnaissant l'importance de la concurrence a reconnu aussi, avec l'Espagne, que l'intervention a également un rôle à jouer, ce qui complique le problème, le recours à l'intervention étant susceptible d'avoir des effets défavorables sur la politique de la concurrence ou sur le marché libre. Il a noté que le Royaume-Uni pourrait certainement faire valoir une opinion dissidente. Avant que la table ronde ne passe aux thèmes de la deuxième session, le Président a demandé aux délégués s'ils ont des questions à poser sur les thèmes de la première session.

En réponse aux questions de l'Italie, le Professeur Nambu a expliqué pourquoi les prix à l'importation au Japon pour le gaz naturel liquéfié sont si stables alors que l'Italie a fait l'expérience de fluctuations des

prix en fonction des prix du pétrole. La relation du Japon avec les pays fournisseurs est très forte du fait de sa participation au développement, avec ces pays, de nouvelles technologies pour le gaz naturel liquéfié. Toutefois, la séparation du prix du gaz et du prix du pétrole au Japon est soumise à certains risques futurs en raison de l'évolution des marchés financiers et on voit actuellement que les prix du pétrole sont plus étroitement liés aux prix du gaz.

En réponse à la question de l'Australie – qu'a-t-on fait pour encourager la réaction de la demande sur le marché de l'énergie afin qu'elle puisse jouer un grand rôle dans la sécurité énergétique ? – le Royaume-Uni a expliqué que les fournisseurs ont conçu toute une série de nouvelles structures contractuelles destinées à aider le client industriel à réaliser des économies importantes durant les périodes de pointe. De plus, la concurrence a stimulé l'innovation dans les services et procuré aux clients industriels beaucoup d'avantages nouveaux, y compris la diffusion de l'information (c'est-à-dire la communication des prix lorsqu'ils atteignent certains niveaux).

À la question complémentaire de l'Australie – on peut constater que certains résultats ont été obtenus en ciblant la demande de l'industrie, mais quelle est la situation concernant les consommateurs du secteur résidentiel ? – le Royaume-Uni ra épondu que les consommateurs du secteur résidentiel se sont simplement adaptés aux prix. Toutefois, il existe aussi des exemples d'innovation. Un des fournisseurs nationaux vient d'introduire un nouveau contrat avec lequel les prix pour les particuliers sont liés aux prix de gros.

Le professeur von Hirschhausen a expliqué quel rôle joue le montant des charges dans les prix du gaz et utilise dans sa démonstration le Henry Hub spot price. Le Henry Hub est un prix à court terme qui a chuté dernièrement à 4 - 4.50 USD. Inversement, le prix d'importation du gaz naturel liquéfié au Japon devrait selon le JCC (Japanese crude cocktail) grimper à 8 – 9 USD environ dans le futur. Ainsi il y aura une différence de prix entre les États-Unis, 4 USD, et le Japon, 9 USD. Par ailleurs, les prix à long terme des importations au Japon sont en moyenne de 1 USD plus élevés que ceux des importations en Europe, ce qui représente la prime payée par le Japon pour cette forme de sécurité énergétique. M. von Hirschhausen a indiqué ensuite que les prix dans le futur sur le marché mondial du gaz seront déterminés par le Henry Hub ; c'est pourquoi le lien entre les prix du gaz et du pétrole sera renforcé, même dans le cas de la Corée et du Japon.

L'Allemagne a demandé au professeur Nambu quelle sera l'influence des échanges de certificats d'émission de CO2 sur les prix du gaz naturel liquéfié, parce que l'Allemagne a engagé des actions contre des entreprises pour usage abusif de certificats de CO2.

Le professeur Nambu a réaffirmé sont point de vue : le développement des marchés financiers relie les droits d'émission de CO2 et les prix du pétrole aux prix du gaz naturel liquéfié. Il indique que certains instruments financiers traitent ces structures de prix de la même manière, ce qui implique que la définition des prix sur le marché des droits d'émission pourrait influer sur les prix du gaz naturel liquéfié. Il a observé à nouveau que des organisations puissantes sont susceptibles de jouer un rôle important dans la tarification des droits d'émission, ce qui crée une relation étroite entre les prix du gaz naturel liquéfié et ceux des autres produits de base.

Les États-Unis ont mis l'accent sur deux éléments essentiels : de meilleurs signaux de prix durant les périodes de pointe et une flexibilité du réseau d'approvisionnement pour la sécurité matérielle des biens eux-mêmes lors de catastrophes naturelles ou liées à l'activité humaine. Concernant le premier point, le délégué note que pour obtenir de meilleurs signaux de prix il serait important de disposer d'une technologie de mesure plus avancée pour renseigner l'utilisateur final, ce qui permettrait une plus grande sensibilité de la consommation. Pour faire face uniquement à l'heure de l'année où la consommation est la plus forte, les grands fournisseurs d'électricité de Californie, par exemple, ont investi 5 à 6 milliards de dollars environ ; avec une technologie de mesure plus élaborée, les consommateurs peuvent adapter en

conséquence leur comportement. Pour ce qui est du deuxième point, il est possible de faire face à des catastrophes susceptibles de provoquer des réductions de capacités importantes si le réseau d'approvisionnement dispose d'une souplesse d'adaptation suffisante.

Session II

Le Président, M. Jenny, a ouvert la deuxième session en précisant quelles sont les conditions à remplir pour obtenir une réaction efficace de la demande et une plus grande sécurité d'approvisionnement dans un environnement concurrentiel.

- L'existence viable de substituts au gaz naturel, la possibilité ou non de remplacer facilement à court terme le gaz naturel par du gaz naturel liquéfié ou d'autres sources.

- La question de savoir si la réaction de la demande et les orientations axées sur le marché conduiraient à un niveau adapté d'investissements d'infrastructure, compte tenu de la taille et de l'importance de ces investissements.

- La structure de l'industrie, si le marché est concurrentiel et les résultats du découplage aux différents niveaux ; plus spécialement le découplage est-il utile ou se traduit-il par des pertes d'efficience ?

- Dans quelle mesure peut-il exister des capacités de stockage ; surtout, de quelle façon influent-elles sur un marché qui fonctionne, sur la puissance d'achat, et comment sont-elles créées par le système ?

Le Président, M. Jenny, a demandé au Portugal de préciser, à partir de son expérience, de quelle façon une offre concurrentielle de sources d'énergie contribue à la sécurité d'approvisionnement.

Le secteur du gaz naturel au Portugal est relativement nouveau puisqu'il a été créé au milieu des années 90. Cet investissement important a été facilité par un contrat conclu entre deux grandes installations de cogénération et la société gazière, qui garantissait que l'investissement atteindrait le point d'équilibre. L'objectif de diversification des approvisionnements et de réduction de la pollution a poussé certaines entreprises industrielles à opter pour le gaz et, parallèlement à la consommation du secteur résidentiel dans les principales régions métropolitaines, a permis de satisfaire une demande plus forte que prévu. La part que le gaz représente est comparable à celle d'autres pays. Toutefois, ces évolutions ont soulevé deux questions concernant 1) les possibilités de réduire les risques liés aux investissements, de disposer de capacités excédentaires pour faire face à la demande en période de pointe, et de gérer les perturbations dans l'approvisionnement ; ii) la répartition des risques, qui peut être inégale si l'intervention du gouvernement a pour effet de transférer le risque en majeure partie sur le consommateur, impliquant une augmentation de coûts de 10 – 20 %. Les contrats d'achat d'électricité et les investissements dirigés par l'État peuvent réduire le bien-être des consommateurs.

Pour le Portugal un marché concurrentiel a des chances d'être la mesure la plus importante pour améliorer la sécurité. Avec la concurrence, un marché national interconnecté, une plus grande liquidité de l'offre et la demande, et des marchés spot et à long terme plus actifs, il serait possible d'éliminer en grande partie les monopoles protégés par l'État et les problèmes qu'ils génèrent.

Le Président, M. Jenny, s'est tourné vers M. Cronshaw pour un exposé sur la substitution entre le gaz naturel et d'autres sources d'énergie. Le représentant de l'AIE indique dans quelle proportion la production de gaz diminue actuellement dans les pays de l'OCDE alors que la demande augmente, contrairement à la situation antérieure dans laquelle la production stimulait la consommation. La production de gaz dans les

pays de l'OCDE passera de la moitié de la production mondiale à la fin des années 90 à un tiers en 2010. Ce qui complique ce scénario c'est que les régions consommatrices dans la zone OCDE voient rapidement s'accroître leur dépendance par rapport aux importations. Les pays européens de l'OCDE sont passés d'une dépendance de 38 % il y a quelques années à une dépendance de 50 % prévue dès 2010. Les pays de l'OCDE du Pacifique, à l'exception de l'Australie, sont dépendants quasiment à 100 % des importations de gaz naturel liquéfié ; les États-Unis vont bientôt commencer à importer du gaz naturel liquéfié et les forces du marché mettent en place des terminaux de gaz naturel liquéfié qui permettront de traiter une capacité d'importations de 160 milliards m3, ce qui correspond à quasiment un quart de leur demande de gaz. Comme il est indiqué dans la note de référence du Secrétariat, les achats de gaz naturel liquéfié devraient passer, selon les prévisions, à 360 milliards m3 en 2010. L'augmentation de l'activité dans le secteur du gaz naturel liquéfié est manifeste et les ventes se négocieront sur un marché international qui fixera en fait le prix du gaz naturel liquéfié comme celui d'une source d'énergie majeure. M. Cronshaw a fait ensuite référence à l'exposé du professeur Nambu et a décrit la façon dont l'AIE voit s'amorcer la corrélation des prix du gaz naturel liquéfié entre les différents marchés qui existent au niveau géographique. Par exemple, dans les six derniers mois de 2006, le NBP (prix britannique) et le Henry Hub ont fait apparaître une corrélation qui devrait perdurer en partie du fait de la forte internationalisation de l'industrie du gaz naturel liquéfié. M. Cronshaw a utilisé deux exemples pour illustrer cet aspect. Des chargements sur l'Atlantique ont basculé en 2005 et 2006 d'un marché auquel ils étaient réservés vers un autre marché où les prix étaient plus élevés (les marchés de l'Amérique du Nord consommant le gaz dont les Européens étaient tributaires). En 2006, 40 chargements ou plus sont passés du bassin Atlantique au bassin Pacifique pour satisfaire la demande japonaise, ce qui s'explique par une augmentation rapide des prix du gaz naturel liquéfié supérieure à celle des prix du pétrole et à l'incapacité de l'Indonésie de satisfaire ses engagements à long terme de fourniture de gaz naturel liquéfié. M. Cronshaw a démontré combien il est important de bien comprendre que le marché du gaz naturel liquéfié n'est plus régional, mais mondial.

Compte tenu de l'augmentation exceptionnelle de la demande et de la baisse de l'offre en Europe, l'écart entre la production interne et les prévisions de consommation ne peut être comblé que de deux façons, soit par des importations de gaz naturel liquéfié, soit par des importations acheminées par gazoduc. M. Cronshaw a proposé un scénario d'après lequel l'Europe pourrait couvrir en 2015 un quart de ses besoins en gaz par le gaz naturel liquéfié. Il a précisé que des mesures spécifiques pourraient permettre de limiter la dépendance de l'Europe vis-à-vis de certains fournisseurs.

L'augmentation de la demande de gaz dans les pays de l'OCDE est induite par le secteur de l'électricité. Les trois quarts de l'augmentation totale de la production d'électricité proviennent d'une utilisation du gaz et, dans une moindre mesure, du charbon, du secteur éolien ou du secteur nucléaire. L'augmentation de la production d'énergie nucléaire s'effectue sans que soient construites de nouvelles centrales et la situation est quasiment identique pour le charbon. Le secteur éolien est le troisième domaine où la progression est la plus importante, mais il n'est pas très compétitif en termes de prix. La production hydraulique et la production thermique à partir du pétrole diminuent proportionnellement dans les pays de l'OCDE. Les pays de l'OCDE enregistrent une augmentation générale de leur consommation destinée à la production d'électricité, qui n'est pas seulement limitée au Royaume-Uni ou aux États-Unis. Le délégué espagnol a mentionné l'augmentation correspondante en l'Espagne ; elle couvre 80 % de l'augmentation marginale de la demande d'électricité. La progression a été rapide et la production espagnole d'électricité est passée, au cours des cinq dernières années, de 220 à 290 terawattheures ; 60 % des 70 terawattheures correspondant à l'augmentation sur cette période ont été produits à partir du gaz. Par ailleurs, M. Cronshaw indique que la Russie est fortement tributaire de la production thermique à partir du gaz. En Russie, près de la moitié de la production d'électricité repose sur le gaz naturel et un hiver très rigoureux pourrait accentuer les problèmes d'approvisionnement.

En 2005, les prix du gaz ont augmenté sur la plupart des marchés libéralisés sous l'effet de l'offre et de la demande. M. Cronshaw a réaffirmé l'idée selon laquelle les prix du gaz naturel sur les marchés non

libéralisés sont liés aux prix du pétrole. La possibilité de substitution des combustibles, principalement sur les marchés libéralisés, atténue les pressions sur les prix provenant du secteur gazier comme cela a été le cas pour le charbon. Le secteur éolien offre une possibilité de substitution minime, mais globalement c'est le charbon qui constitue la seule alternative possible à court terme dans le secteur de l'électricité.

La Chine exerce une forte influence sur le marché mondial de l'énergie dans la mesure où l'augmentation de la production d'électricité l'année dernière en Chine a été supérieure à celle de l'intégralité du réseau national allemand. L'augmentation de la production d'électricité repose en majeure partie actuellement sur l'utilisation du charbon ; toutefois, il en résulte des émissions de plus d'une gigatonne de CO2. La Chine pourrait modifier considérablement le marché mondial du gaz naturel liquéfié si elle devenait un acteur de ce marché en utilisant le gaz naturel comme combustible pour une part plus importante de sa production d'électricité. Toutefois, la Chine ne dispose que de deux terminaux de gaz naturel liquéfié et un troisième est en construction, la Chine continuera donc à exercer une faible influence sur les marchés mondiaux du gaz dans un futur proche.

Selon une diapositive présentée par M. Cronshaw, les États-Unis ont perdu au cours des quatre mois qui ont suivi le cyclone Katrina 10 % de leur approvisionnement en gaz. Le marché a réagi par une hausse des prix de 6–7 USD à 15 USD environ. Cette hausse a été corrigée rapidement.

L'Italie et le Royaume-Uni fournissent deux exemples de mesures intéressantes et opposées concernant des perturbations majeures d'approvisionnement et les réactions des marchés. Le marché libéralisé du Royaume-Uni a enregistré d'importantes hausses de prix, à 20 USD initialement et même jusqu'à 40 USD en mars 2006. Par voie de conséquence, un ajustement de la consommation a eu lieu et aucune perturbation ne s'est produite dans l'approvisionnement des particuliers. L'expérience de l'Italie est sensiblement différente, étant donné que le prix de détail en Italie était fixé à 8 USD environ en relation avec celui du pétrole. C'est le secteur du gaz qui, par temps froid, répondait à la demande accrue du secteur de l'électricité et presque la moitié de l'électricité en Italie est produite à partir du gaz. Face à cette augmentation de la demande, l'Italie a connu une pénurie qui a révélé l'absence de sécurité qui pouvait exister dans le cas du gaz naturel sur un marché non libéralisé et non intégré. M. Cronshaw a opposé l'expérience de l'Italie à celle de la France ou de l'Allemagne, qui n'ont pas connu de pénurie en raison de l'existence de réserves importantes. Ces exemples montrent clairement que le marché européen n'est pas un marché unique.

Incidemment, M. Cronshaw s'est félicité de l'accroissement des infrastructures d'importation au Royaume-Uni, notamment de la construction d'un nouveau terminal de gaz naturel liquéfié en à peine onze mois. Prenant cet exemple, il a noté que les modèles liant infrastructures et contrats à long terme ne sont pas essentiels si on prend en compte le fait que certains terminaux de gaz naturel liquéfié sont actuellement construits en l'absence de tels contrats, et parfois pour répondre aux besoins des marchés spot. La création rapide et effectivement coûteuse d'infrastructures devrait être prise en considération dans les stratégies nationales de sécurité énergétique. Le Japon, par exemple, dont le principal fournisseur est l'Indonésie, reçoit aujourd'hui des livraisons qui sont de 10 % inférieures aux quantités prévues dans le contrat.

Aux États-Unis, les consommateurs industriels représentent, par opposition au secteur de l'électricité, la part la plus importante de la consommation. Cela offre de nombreuses possibilités de réduction de la consommation avec des hausses de prix plus modérées en période de contraction de l'offre ; c'est là une particularité de la réaction de la demande aux États-Unis par rapport au Royaume-Uni. Ceci étant, en raison de l'augmentation du coût du gaz, de nombreux consommateurs industriels délocalisent actuellement leur activité dans d'autres pays (la production de méthanol et d'autres produits chimiques, par exemple, est délocalisée à Trinidad et Tobago, en Arabie Saoudite et au Moyen-Orient). Si les prix se situent entre 6 et 7 USD, comme prévu, ces entreprises industrielles ne sont pas compétitives, et par conséquent ces consommateurs ne resteront pas aux États-Unis.

M. Cronshaw a résumé ainsi les principaux messages à retenir :

- Les pays de l'OCDE deviennent plus dépendants et devront s'y habituer.

- Le fonctionnement des marchés du gaz a démontré qu'ils réussissent à surmonter de graves perturbations d'approvisionnement, pas sans coût pour les consommateurs, mais rapidement et facilement.

- En l'absence de marchés du gaz qui fonctionnent correctement, des problèmes de déséquilibre entre l'offre et la demande qui ne sont que d'assez faible ampleur peuvent avoir de lourdes conséquences. L'Italie est un exemple mais il serait possible d'en donner d'autres en Europe, comme la Hongrie.

- Les marchés du gaz européens ne fonctionnent pas correctement, ils ne peuvent pas assurer la sécurité d'approvisionnement ou offrir la concurrence nécessaire tels qu'ils sont structurés actuellement, et l'UE l'a démontré clairement.

- Les échanges de gaz naturel liquéfié se développent très rapidement et internationalisent les marchés régionaux. Ils peuvent être et seront une source d'approvisionnement particulièrement importante pour les marchés des pays de l'OCDE à condition que ces pays construisent les infrastructures nécessaires, c'est-à-dire a) qu'ils construisent les terminaux et b) qu'ils relient ces terminaux aux marchés de manière concurrentielle.

Le Président, M. Jenny**,** a noté que l'exposé de M. Cronshaw révèle des sources de préoccupation non négligeables. Pour ce qui est de l'encouragement des investissements d'infrastructure, le Président a relevé que de nombreuses contributions soulignent les problèmes que pose l'adéquation des investissements à tous les niveaux de la chaîne de l'offre. Puisque les investissements nécessaires sont importants et à long terme, il faut s'interroger sur l'adéquation des forces du marché pour financer ces investissements.

Il a poursuivi en faisant valoir qu'à un extrême, on a un modèle plus traditionnel de monopoles réglementés et intégrés verticalement qui garantit les investissements du côté de l'offre par des contrats d'achat à long terme du côté de la demande. À l'autre extrême, on a le modèle de la concurrence fondé sur le découplage, avec de nombreux acteurs aux différents stades de la production. La réglementation vise essentiellement à éviter la discrimination ou à encourager la concurrence même si des situations de monopole naturel apparaissent à certains niveaux de la chaîne de l'offre. Dans ce dernier modèle, on trouve parallèlement des contrats d'approvisionnement à long et court terme et la sécurité d'approvisionnement peut varier selon l'aversion au risque des clients, en fonction des conditions des contrats conclus ou d'autres formes de couverture.

Le Président a posé deux questions concernant l'adéquation des investissements. Ces deux systèmes sont-ils adaptés pour garantir les investissements nécessaires à long terme, ou est-ce qu'un modèle est meilleur que l'autre ? La contribution de l'UE qui est citée par le Président indique : « Si le réseau et la production sont intégrés, les incitations à investir dans les réseaux sont trop faibles, cela constitue un obstacle majeur aux nouvelles entrées et menace la sécurité d'approvisionnement. » Qu'est-ce qui fait croire à la Commission de l'UE que le découplage est une condition préalable à remplir pour atteindre un niveau satisfaisant d'investissements d'infrastructure ?

Le représentant a tout d'abord évoqué le problème soulevé par M. Cronshaw, à savoir que les marchés de l'énergie de l'UE ne fonctionnent pas correctement. Les obstacles à l'investissement se situent essentiellement au niveau de l'intégration verticale des opérateurs historiques sur les différents marchés nationaux, avec des participations croisées entre des secteurs comme la production et les réseaux de

transport (tout spécialement sur le marché du gaz). L'UE a indiqué que l'intégration verticale modifie les incitations au moins de deux façons différentes.

- Elle réduit les incitations à donner accès aux principales infrastructures de façon non discriminatoire aux tiers qui seraient ou sont des concurrents en amont ou en aval.

- Elle réduit les incitations à développer le réseau, à réaliser les investissements nécessaires pour étendre le réseau, afin de répondre aux besoins de clients qui sont une fois encore de véritables concurrents potentiels en amont et en aval de cet acteur qui est l'opérateur historique intégré verticalement.

L'UE a poursuivi son intervention sur le deuxième point soulevé : l'acteur intégré verticalement est incité à préserver le statu quo en réduisant au maximum la concurrence pour maintenir les restrictions de l'offre et obtenir ainsi des revenus plus élevés. Limiter les capacités disponibles pour les concurrents sur le marché renforce également ces revenus plus élevés. On peut observer que toutes les incitations vont dans le même sens puisque des bénéfices plus élevés sont dégagés aussi bien en amont qu'en aval en raison de la réduction de la concurrence. Cet étouffement de la concurrence que l'on observe vaut aussi bien pour les réseaux de transport, c'est-à-dire les gazoducs, que pour les principales installations d'infrastructure c'est-à-dire entre autres la capacité d'interconnexion, la capacité de stockage ou les installations de regazéification.

L'UE a indiqué qu'il faut examiner la réalité et pas uniquement les approches théoriques lorsqu'on aborde la question de la sécurité d'approvisionnement. Même si la justification de l'intégration verticale est d'assurer que les recettes permettent de financer le développement des infrastructures, l'expérience montre que le découplage vertical du réseau de transport entraîne une augmentation des investissements sur tous les segments du marché, tout en continuant à dégager une rentabilité suffisante pour financer ces investissements.

Le Président, M. Jenny**,** a attiré l'attention sur les similitudes entre l'exposé de l'UE et la contribution du Royaume-Uni sur le sujet, qu'il a cité : « Si les barrières à l'entrée sont peu importantes l'augmentation des prix sur les marchés de l'énergie entraîne des investissements dans des installations de production d'énergie supplémentaires, ce qui implique une sécurité d'approvisionnement accrue. Si la structure est centralement planifiée, des informations essentielles sur les préférences des consommateurs, notamment leur consentement à payer pour la sécurité d'approvisionnement, n'apparaîtront pas au grand jour ; [et] pour cette raison, les décisions d'investissement prises dans un tel cadre risquent davantage d'être inefficientes.»

Le Président a demandé au Royaume-Uni de ne pas s'attacher aux aspects qui concernent les investissements à long terme, mais à la différence des contributions précédentes, de justifier son point de vue selon lequel de faibles barrières à l'entrée maintiennent les investissements à un niveau élevé.

Le Royaume-Uni a commencé par préciser les éléments qui ont permis de faire face à la diminution des approvisionnements de la Mer du Nord. En bref, le marché s'est engagé à investir plus de 10 milliards GBP dans de nouvelles infrastructures qui fourniront 60 milliards de m3 de gaz en 2010, ce qui représentera environ 50 % de la demande en période de pointe en hiver dans quatre ou cinq ans. Le marché apporte également d'autres réponses qui sont la construction d'un nouveau grand gazoduc vers la Norvège, le doublement de la capacité du gazoduc provenant de la Belgique et la transformation d'un site de stockage de gaz naturel liquéfié en terminal d'importation qui a pris moins d'un an entre la conception et l'achèvement du projet. Des livraisons de gaz naturel liquéfié ont lieu à partir du nouveau terminal de Teesside, deux terminaux de gaz naturel liquéfié sont construits actuellement dans le sud du Pays de Galles

et une nouvelle extension de l'Eastern terminal est en cours. Les Norvégiens envisagent actuellement la possibilité de réaliser un nouveau gazoduc vers le Royaume-Uni.

Le problème du stockage a été résolu avec la construction d'un nouveau site de stockage, trois autres étant en cours de construction et sept autres faisant l'objet actuellement de demandes d'autorisation. Au total, le Royaume-Uni a fait valoir que les restrictions réglementaires créant des incertitudes liées aux régimes de planification et les infrastructures de connexion constituent les plus grandes difficultés auxquelles il faut faire face actuellement. Néanmoins, le paysage de l'offre au Royaume-Uni sera transformé en 2010 (voir ci-dessus).

Les marchés assurent la sécurité par un moyen qui n'existe pas dans la planification centralisée : la diversité des sources et des éléments d'infrastructure. L'existence de sept ou huit installations différentes permet d'améliorer l'approvisionnement et la sécurité matérielle, et le nombre d'acteurs a conduit à une augmentation du nombre de pays fournisseurs. Les sources d'approvisionnement par gazoduc incluent les Pays-Bas, la Norvège, le Qatar, l'Algérie, Trinidad, Tobago, Oman, l'Égypte et la Russie. De toute évidence, le marché du Royaume-Uni est en train d'investir actuellement et considère la diversité comme une mesure de sécurité, ce qui n'est souvent pas le cas des configurations se caractérisant par une planification centralisée et une intégration verticale.

En résumé, le Royaume-Uni a indiqué que, malgré les difficultés auxquelles ils étaient confrontés, les marchés ont investi promptement et massivement dans de nouvelles sources d'approvisionnement, à tel point que même les risques liés à des perturbations ou à la forte demande hivernale sont couverts.

Le Président, M. Jenny**,** a donné la parole à l'Italie qui a interrogé l'AIE sur les raisons pour lesquelles on n'a pas acheminé du gaz stocké vers le Royaume-Uni puisqu'il n'y avait pas d'absence de réaction au niveau des prix, comme cela avait été le cas en Italie. Pourquoi n'y-a-il eu aucune importation si les prix au Royaume-Uni étaient assez élevés pour provoquer une réaction du côté de l'offre dans d'autres pays ? Des problèmes de concurrence ou des problèmes de pratiques concertées antitrust ont-ils fait obstacle à ces importations ? Le fait que les réserves stratégiques sous le contrôle de l'État soient gérées en fonction d'intérêts nationaux et pas des principes de marché ne constitue t-il pas une explication plausible ?

En réponse, le représentant de l'AIE a noté que les infrastructures actuelles pour les importations n'existaient pas lorsque le Royaume-Uni a connu ces interruptions d'approvisionnement. Néanmoins, il y avait un gazoduc d'interconnexion et un terminal de gaz naturel liquéfié, mais aucun transfert de gaz vers le Royaume-Uni n'a eu lieu, contrairement à ce qu'on aurait pu imaginer. Malgré les bénéfices potentiels qu'offraient les prix élevés au Royaume-Uni, aucun fournisseur continental n'était prêt à fournir du gaz. En interaction avec l'autorité de la concurrence du Royaume-Uni, l'unique terminal de gaz naturel liquéfié qui existait a fortement augmenté sa production, mais cela n'a tout simplement pas suffi pour pallier la pénurie. Le marché a été pris de court d'un an pour pouvoir s'ajuster aux perturbations d'approvisionnement. Les capacités ont augmenté depuis lors de 50 ou 60 milliards m3 et ainsi il existe depuis peu une capacité d'importation qui représente la moitié de la consommation sur ce marché. Cet exemple illustre les faiblesses qui existent en Europe au niveau du stockage, dans la façon de relier l'approvisionnement à la question des terminaux. Selon le délégué, il est possible que les stocks stratégiques contrôlés par l'État aient joué un rôle, mais il aurait fallu que les stocks commerciaux soient beaucoup plus réactifs à l'augmentation des prix comme cela a été le cas aux États-Unis après le cyclone Katrina.

Le Président, M. Jenny**,** a donné la parole aux États-Unis.

Les États-Unis ont demandé des précisions sur la façon de concilier la politique de l'environnement et la politique de la concurrence au Royaume-Uni, surtout sur la possibilité de choisir des sites d'implantation

en moins d'un an. En outre, le délégué a souhaité connaître les méthodes utilisées pour surmonter les craintes exprimées par les consommateurs et la population locale concernant l'implantation d'infrastructures de gaz naturel liquéfié, entre autres.

Le Royaume-Uni a évoqué les difficultés rencontrées dans le cadre du développement important des capacités d'importation et précise que les autorités locales et nationales d'urbanisme ont choisi des sites où des infrastructures de gaz naturel liquéfié étaient déjà implantées auparavant ou bien des sites où ces infrastructures s'ajoutaient à celles du secteur pétrolier et gazier qui existaient déjà. Beaucoup de ces régions connaissent des problèmes d'emploi et ces collectivités étaient beaucoup plus ouvertes. Les sites de stockage posent le plus de problèmes, car le stockage souterrain s'est révélé être une source de préoccupation. Il est fréquent que les meilleurs sites pour le stockage ou les meilleurs itinéraires pour les gazoducs se trouvent dans des zones résidentielles de qualité ou doivent traverser des sites d'une beauté exceptionnelle. Les incertitudes liées aux questions d'urbanisme et d'environnement risquent de déclencher de longues procédures prenant des années avant qu'une décision soit prise.

L'AIE a mentionné l'escalade des objections locales au sujet de l'implantation d'infrastructures énergétiques qui vont de « pas dans mon jardin », « absolument aucune construction à proximité de n'importe qui » à l'exemple californien « pas sur la planète terre ». Ces contraintes d'urbanisme génèrent des coûts et des risques importants pour tous les consommateurs d'énergie dans les pays de l'OCDE et constituent un problème qui mérite une attention particulière. Les centrales nucléaires et thermiques au charbon suscitent des oppositions, ont un coût élevé et les délais de réalisation sont longs. Les installations traditionnellement situées loin des habitations, dans le Golfe du Mexique par exemple aux États-Unis, font apparaître d'autres menaces sur le plan de la sécurité. Le délégué considère que le Royaume-Uni est l'un des rares exemples de bonnes pratiques concernant l'efficacité de la planification pour le choix des sites des investissements énergétiques dans les pays de l'OCDE.

Le Président, M. Jenny**,** a reconnu que des questions plus épineuses se posent pour les investissements futurs dans les infrastructures énergétiques. Puis il a évoqué les problèmes de la Fédération de Russie concernant les goulets d'étranglement de son réseau de transport et demande à la délégation russe d'indiquer dans quelle mesure le régime actuel de propriété des installations, l'intégration verticale et l'absence d'incitation à investir dans le réseau de transport peuvent contribuer aux problèmes liés à la sécurité énergétique. Il lui a demandé également d'évoquer les solutions qui seraient envisageables.

La Russie a confirmé que son modèle d'entreprise est entièrement intégré verticalement et lié aux consommateurs de gaz par un système de contrats à long terme, en Russie et au niveau international. Gazprom est le propriétaire du réseau de transport unifié et, comme il est en situation de monopole naturel, les problèmes techniques et réglementaires contribuent aux goulets d'étranglement. Le délégué russe a expliqué que les pénuries de gaz ont plusieurs causes, notamment l'impossibilité technique de livrer des quantités suffisantes de gaz naturel en partie sous l'effet de l'augmentation de la consommation, et le fait que l'autorité de la concurrence se heurte à une discrimination et des refus de vente ou de transport de gaz à l'encontre de certains consommateurs ou producteurs.

Les solutions proposées incluent un programme de développement à long terme qui fait partie de la stratégie énergétique de la Russie pour 2030 concernant le réseau de transport, approuvée par le conseil d'administration de Gazprom et l'État. Par ailleurs, les violations du droit de la concurrence ont conduit à l'adoption d'une réglementation des prix et de l'accès comportant certaines obligations pour le réseau de transport du gaz. Le délégué informe la table ronde que le réseau de transport est maintenant séparé de la production et de la commercialisation du gaz. Le réseau de transport de gaz naturel dispose de sa propre structure organisationnelle en tant que filiale de Gazprom.

Le principal problème est la discrimination anticoncurrentielle que pratique le propriétaire des gazoducs, Gazprom, envers les autres producteurs de gaz. Ces producteurs de gaz indépendants représentent 10 % de l'offre totale en Russie, mais il peut être difficile pour le consommateur d'avoir accès à ce gaz. L'autorité fédérale anti-monopole est chargée de mettre en œuvre la non-discrimination de l'accès aux principales installations des monopoles, notamment le réseau de transport unifié. L'autorité de la concurrence a fait des progrès dans l'application de ces dispositions à l'encontre de Gazprom, mais pour le gouvernement, essayer d'infléchir le développement du secteur gazier des soixante dernières années est une véritable gageure sur le plan économique. Gazprom pose des problèmes, mais elle est la mieux placée pour garantir la sécurité énergétique des pays d'Europe de l'Est qui dépendent d'elle et Gazprom est la seule société qui puisse le faire. La diversification énergétique en Russie est coûteuse, elle s'inscrit dans le long terme et comporte des risques. Un mécanisme de partage des risques est appliqué actuellement et prend en charge les risques liés aux investissements des fournisseurs au moyen de participations croisées dans des sociétés du secteur de l'énergie des pays importateurs de gaz russe. La diversification des marchés d'approvisionnement pour le gaz ou d'autres ressources énergétiques reste une alternative possible.

Le Président a indiqué qu'un grand nombre de participants dans la salle soutiennent les efforts accomplis par la Russie pour supprimer la discrimination et améliorer l'accès au réseau de transport. Il donne ensuite la parole à M. de Ladoucette pour évoquer le cas de la France, exemple de pays qui a évolué d'un modèle intégré verticalement vers un modèle se caractérisant par une plus grande concurrence et un découplage des activités, et pour commenter les méthodes à appliquer pour faciliter les investissements lors du passage d'un modèle à l'autre.

M. de Ladoucette a commencé par un rappel historique des efforts accomplis pour créer un marché unique de l'énergie en Europe, tel qu'il avait été lancé par les directives de 1998 et 2003 pour répondre aux préoccupations de sécurité d'approvisionnement. C'est sur cette toile de fond que se pose aujourd'hui la question de savoir si l'ouverture actuelle du marché contribue à garantir la sécurité d'approvisionnement. M. de Ladoucette a noté qu'à son avis on considère souvent comme similaires les marchés du gaz et de l'électricité. Toutefois, deux raisons fondamentales peuvent conduire à une approche différente de ces deux secteurs. Le gaz peut être stocké, mais pas l'électricité. Le gaz est une ressource énergétique primaire et les principaux gisements de gaz sont situés en dehors de l'UE, alors que l'électricité est une ressource énergétique secondaire produite à l'intérieur des frontières de l'UE à partir de sources différentes.

Ces caractéristiques font que le gaz est fourni sur un marché mondial, ou au moins un grand marché régional, à des prix qui ne sont pas maîtrisés. Par conséquent, les principales conditions nécessaires — peut-être pas suffisantes, mais en tout cas nécessaires — qui doivent être remplies pour garantir la sécurité d'approvisionnement sont un accès transparent et non discriminatoire au réseau et des investissements dans les infrastructures. Trois points sont à noter concernant ces derniers :

- le besoin d'augmenter les investissements d'infrastructure,
- la nécessité d'adapter les incitations pour encourager les investissements,
- l'importance d'une approche européenne concernant ces investissements, qui doit reposer sur un certain nombre de politiques actuelles et notamment d'initiatives régionales.

Renforcer la sécurité d'approvisionnement en encourageant les investissements d'infrastructure est un sujet périodiquement examiné par la Commission européenne, le plus récemment dans la directive du 26 avril 2004 sur les mesures visant à sauvegarder la sécurité de l'approvisionnement en gaz naturel. Réaliser des investissements dans les infrastructures de transport est un élément essentiel à la sécurité énergétique. Cet aspect a été rappelé également dans la synthèse récente présentée par la Commission européenne le 10 janvier 2007.

L'ouverture du marché du gaz naturel à la concurrence a changé le contexte dans lequel les gestionnaires d'infrastructures opèrent. Elle a en particulier modifié considérablement leur politique d'investissement. D'un côté, dans une configuration monopolistique, le gestionnaire d'un réseau de transport de gaz tente de faire coïncider le plus étroitement possible la capacité des infrastructures et les besoins réels du groupe intégré. À l'inverse, dans une configuration de marché, pour faciliter l'arrivée d'un nombre aussi grand que possible de fournisseurs et pour permettre les arbitrages entre les sources d'approvisionnement, les capacités du réseau doivent être surdimensionnées, ce qui a pour conséquence un taux d'utilisation des infrastructures réellement plus faible. D'un autre côté, le dispositif de décision est lui-même différent dans les deux configurations dans la mesure où un monopole intégré cherche à donner la priorité aux intérêts de l'unité d'approvisionnement en gaz, tandis qu'un gestionnaire d'infrastructure indépendant fonde ses décisions sur l'intérêt général du marché. Par conséquent, un marché concurrentiel doit émettre les signaux de prix nécessaires pour réaliser des investissements qui assureront la sécurité d'approvisionnement aussi efficacement que possible en tenant compte des coûts. Ainsi, la création d'un marché interne concurrentiel doit permettre ou permettra aux entreprises du secteur de l'énergie de l'UE de poursuivre leur activité dans un marché plus vaste et d'envisager la sécurité d'approvisionnement à une échelle plus pertinente que celle du marché national. Ces changements concernant la stratégie d'investissement doivent être encouragés par l'adoption de nouveaux instruments.

Au niveau national, le régulateur français dispose de trois instruments majeurs pour permettre les investissements nécessaires si l'on veut garantir la sécurité d'approvisionnement. C'est là que M. de Ladoucette a répondu à la première question du Président concernant la possibilité pour d'autres pays de passer d'un modèle à l'autre ou de mettre en œuvre un modèle français dans lequel les sociétés sont en réalité intégrées verticalement. Premièrement, la France dispose d'un système d'incitations. La redevance d'accès au réseau prend en compte le paiement des actifs afin d'encourager les gestionnaires à investir. Tous les nouveaux investissements bénéficient d'une prime de 125 points de base comparé au coût d'investissement moyen pondéré pour le transport de gaz. Certains investissements, à la demande du gestionnaire et après décision de la Commission de régulation de l'énergie, peuvent même bénéficier d'une prime complémentaire de 300 points de base pour une période de 5 à 10 ans. Cette décision est prise, en réponse à une demande motivée introduite par le gestionnaire, dans les cas où l'investissement constitue une importante contribution à l'amélioration du fonctionnement du marché, notamment à travers la création de nouveaux points d'entrée dans le réseau national, ou à la réduction de la congestion du réseau.

Le régulateur français a un droit de contrôle et il est le seul du genre en Europe, à l'exception du voisin britannique, à avoir le pouvoir d'approuver le programme d'investissement du transporteur de gaz naturel. Il s'agit d'une disposition récente en France, qui n'a été adoptée par le parlement qu'à la fin de l'année dernière. Le régulateur pourra appliquer cette disposition au programme d'investissement de 2008.

Le pouvoir permettant de donner des instructions relatives aux installations est le troisième mécanisme qui favorise la libéralisation du marché. Si un gestionnaire refuse l'accès à une installation de gaz naturel en raison d'une insuffisance de capacité ou de problèmes de connexion entre l'installation qui appartient à la partie qui recherche un accès et le réseau, la Commission de régulation de l'énergie peut demander ou (selon les circonstances) ordonner au gestionnaire de fournir l'accès. Cette décision peut obliger le gestionnaire à procéder aux améliorations nécessaires si celles-ci sont économiquement justifiées ou si le client potentiel indique qu'il accepte de payer leur réalisation. Au niveau national, ces instruments sont relativement positifs et efficaces. Les investissements concernant le réseau de transport sur la période 2005-2015, par exemple, sont de 400 millions EUR par an, montant supérieur à la moyenne enregistrée dans le passé. Par ailleurs, dans le cadre de la stratégie d'augmentation des surcapacités, le gaz naturel liquéfié a attiré également beaucoup d'investissements car il existe des projets de nouveaux terminaux méthaniers et une extension du terminal de Montoir est déjà à l'étude. Globalement, ces investissements devraient conduire à une véritable amélioration de la sécurité énergétique en ce sens que, si tous ces projets

aboutissent, les capacités d'importation de gaz de la France devraient augmenter de 40 giga m³/an d'ici à 2012, soit une augmentation trois fois plus importante que la progression prévue de la consommation.

M. de Ladoucette, se situant dans l'optique de l'Europe dans son ensemble, a souligné l'importance que revêt le renforcement des interconnexions par augmentation des investissements pour parvenir à une plus grande sécurité énergétique. C'est dans cet esprit que la Commission européenne a adopté une politique d'initiatives régionales qui vise tous les régulateurs et gestionnaires de réseaux d'infrastructures d'une zone géographique donnée. Pour le secteur du gaz, trois zones ont été définies. Pour le secteur de l'électricité, le nombre de zones est plus important. Aujourd'hui, cette démarche commence à avoir des effets positifs et permettra, par des améliorations progressives, le raccordement des marchés grâce à l'interconnexion des réseaux. Elle repose également sur la transparence, l'harmonisation des données publiées par les gestionnaires de réseaux de transport et la bonne utilisation et exploitation des plates-formes.

Tous les progrès accomplis dans la mise en œuvre de ces initiatives peuvent contribuer à achever le marché unique européen de l'énergie. Dans sa communication du 10 janvier 2007, la Commission européenne a préconisé de renforcer les interconnexions selon un plan d'interconnexions prioritaires pour le gaz naturel avec le gazoduc Nabuco, en particulier, qui transportera le gaz naturel de la Mer Caspienne en Europe centrale, et également de développer les installations de stockage de gaz. Dans ces deux régions, la Commission européenne propose d'attribuer des pouvoirs plus étendus au Groupe des régulateurs européens pour l'électricité et le gaz, ce qui, si cette proposition est acceptée par les gouvernements européens, améliorera sans aucun doute le fonctionnement du marché du gaz du fait que les régulateurs pourront intervenir pour garantir que les interconnexions soient correctement réalisées aux frontières et que soit ainsi créé un marché unique dans l'UE.

Le Président, M. Jenny**,** souscrivant à l'évaluation faite par M. de Ladoucette, a évoqué brièvement les approches éventuellement manichéennes du débat précédent concernant la réflexion sur la liberté du marché, ou comme dans l'exemple du Royaume-Uni, la centralisation des investissements par le régulateur. Tandis que l'opérateur intégré est en grande partie responsable du lancement des investissements, le régulateur offre des incitations particulières destinées spécifiquement à accroître les capacités. Ensuite, le Président a donné la parole au professeur von Hirschhausen pour présenter une étude concernant la relation particulière entre la régulation par la politique de la concurrence, les investissements et la sécurité d'approvisionnement.

Le Professeur von Hirschhausen s'est concentré tout d'abord sur les éléments de base d'une évaluation à la fois théorique et pratique de la régulation par la politique de la concurrence dans le contexte de l'investissement. Plus précisément, la modélisation a confirmé l'évaluation de l'AIE selon laquelle le gaz naturel liquéfié jouera un rôle essentiel dans la promotion de la concurrence. Une analyse économétrique a confirmé l'existence d'un marché mondial du gaz en plein essor et il est par conséquent important de bien comprendre ce que cela signifie au niveau de la concurrence. Il a renvoyé les délégués au document distribué et à une vingtaine d'autres qui sont disponibles sur le site web.

Le Professeur a déclaré : "Il est clair que je soutiens fondamentalement le point de vue exprimé par le Royaume-Uni et les États-Unis, qui est résumé très clairement dans la note de référence de Mme Sally van Siclen, à savoir qu' « améliorer l'environnement concurrentiel améliore la sécurité énergétique. » Il étaye cette affirmation en exposant trois thèses concernant les investissements, le découplage et le stockage et en illustrant ses propos par des exemples concernant les terminaux de regazéification, les gazoducs et les installations de stockage. Il a mis l'accent sur l'offre en aval, puisqu'il n'existe en fait aucun problème en amont.

Il a expliqué que la volatilité des prix n'est pas un thème qui doit être traité par la table ronde, puisque les prix reflètent l'offre et la demande sur le marché, et qu'elle doit donc être exclue des débats sur la sécurité d'approvisionnement. Les exemples de Boston de 2004 et du Royaume-Uni montrent que les prix baisseront à nouveau lorsque la demande faiblira. Les trois thèses en question sont les suivantes :

- le découplage vertical intensifie la concurrence,
- une régulation adaptée encouragera les investissements d'infrastructure comme elle encourage les investissements dans d'autres secteurs régulés,
- le stockage commercial peut largement contribuer à la sécurité énergétique.

La première thèse s'appuie sur les éléments exposés par le délégué de l'UE selon lesquels le découplage vertical entre importateurs, négociants de gaz naturel et gestionnaires de réseau intensifie la concurrence. Il limite le comportement anticoncurrentiel des opérateurs historiques intégrés verticalement. L'exemple des États-Unis montre qu'à la suite du FERC Order 636, un marché concurrentiel est apparu notamment entre le Henry Hub et le Nord-Est du pays. Ceci étant, le gazoduc qui arrive en Californie est de toute évidence un monopole naturel. Mais, pour le reste, l'expérience des États-Unis est effectivement encourageante. Dans l'UE, une troisième directive pourrait impliquer un découplage obligatoire. La question est de savoir s'il s'agira d'un découplage reposant sur des gestionnaires indépendants ou d'un démembrement de propriété vertical. Selon M. von Hirschhausen, le démembrement de la propriété est plus efficace, mais le système des gestionnaires indépendants risque d'être davantage réalisable sur le plan politique. L'Allemagne, par exemple, compte 19 zones régionales, mais un opérateur indépendant unique améliorerait l'efficacité. Les pays asiatiques de l'OCDE pourraient également profiter de ce modèle en raison des possibilités d'ouverture à la concurrence et donc de prix plus faibles, ce que souhaitent les consommateurs asiatiques. En plus de l'accès des tiers au gaz naturel liquéfié, la Corée et le Japon pourraient bénéficier de cette approche.

La deuxième thèse concerne les investissements d'infrastructure, à savoir qu'une réglementation adaptée accélère ces investissements. Comme M. de Ladoucette l'a fait observer, si les incitations sont adaptées, on investit. Deux structures d'incitation, les investissements commerciaux soumis à la concurrence, ou les investissements réglementés se caractérisant par un rendement correct des besoins en capitaux, constituent les principales alternatives. Outre l'exemple russe, 95 % des gazoducs sont des monopoles naturels, les multiples liaisons entre Chicago et le Henry Hub étant une exception. C'est pour cette raison que la réglementation est nécessaire pour assurer un contrôle des prix.

Concernant la réglementation, le Professeur von Hirschhausen a contesté la pratique de l'exemption de l'obligation d'accès des tiers aux terminaux de gaz naturel liquéfié comme moyen d'encourager les investissements. Il a fondé sa position en donnant les exemples qui suivent et qui vont à l'encontre de l'article 22 de la directive sur l'accélération de l'ouverture des marchés du gaz et des décisions de la FERC (Federal Energy Regulatory Commission) concernant la suppression éventuelle des obligations d'accès des tiers. Les investissements se poursuivent avec la même intensité étant donné que les volumes d'investissement sont relativement modestes (terminaux de regazéification, par exemple) et que des gains d'arbitrage importants peuvent être réalisés. Le Royaume-Uni, les régions NIMBY (« pas dans mon jardin ») comme la Californie, les Bahamas et le Canada ont tous réalisés des investissements dans le secteur du gaz naturel liquéfié. Chenier et Accelerate Energy sont des entreprises de distribution non intégrées, verticalement découplées qui ont réalisé des investissements lucratifs et l'Europe dispose déjà de plusieurs terminaux gaz naturel liquéfié. Compte tenu des avantages financiers évidents liés aux investissements dans les terminaux de gaz naturel liquéfié, l'exemption des obligations d'accès des tiers risquerait peut-être de limiter les investissements.

La situation des marchés asiatiques est différente étant donné que la demande japonaise se stabilise. Ceci étant, selon le professuer von Hirschhausen, la décision d'investir dans de nouveaux terminaux doit être plus ou moins privée ; plus il y a de prestataires, plus les revenus potentiels de la location des capacités correspondantes sont importants.

En commenttant la troisième thèse concernant le stockage commercial, le Professeur a établi une distinction entre les pratiques de stockage commerciales et les pratiques de stockage traditionnelles qui reposent sur la demande saisonnière, les réserves augmentant durant l'été pour être consommées en hiver. Il a fait référence au nouveau modèle pour le gaz naturel, comportant en général 3 à 5 cycles, comme le montrent les États-Unis, par exemple, avec l'utilisation de cavités salines permettant de développer le stockage commercial. Falcon Storage et Eastern Gas Storage, par exemple, sont des entreprises commerciales qui investissent dans le stockage dans la perspective de revenus d'arbitrage. En Europe, il existe des investissements commerciaux comme le montre un grand projet de stockage commercial en Allemagne. Le Professeur a conclu cette section en indiquant que l'Asie pourrait certainement aussi profiter de ces pratiques.

Le Professeur Hirschhausen a résumé comme suit son analyse :

- les marchés concurrentiels peuvent et devraient contribuer à la sécurité d'approvisionnement,
- le découplage est une condition nécessaire pour garantir que les marchés sont concurrentiels et l'évolution en Europe montre que s'il n'y a pas découplage le système ne fonctionne pas correctement,
- une réglementation adaptée garantit l'investissement,
- le stockage commercial est un élément clé pour assurer la sécurité,
- et enfin, et surtout, ce qui fonctionne aux États-Unis et au Royaume-Uni ne fonctionnera pas obligatoirement en Europe et en Asie.

Le Président, M. Jenny a orienté le débat vers deux sujets, la question de savoir si le découplage est une condition nécessaire pour promouvoir la concurrence, et l'importance stratégique du stockage. Il a demandé au Royaume-Uni d'expliquer si le découplage est effectivement une condition préalable et s'il est efficace compte tenu de l'expérience qu'il a acquise dans le domaine de la libéralisation du marché du gaz. Il a évoqué le cas contraire, l'expérience faite par la Russie où le découplage, plus précisément la séparation entre le transport et les autres infrastructures, a eu peu d'effet.

Le Royaume-Uni a fait référence au récent document d'enquête de la Commission sur le secteur pour expliquer les avantages qu'offre le découplage si l'on veut remédier à l'inefficacité des marchés en Europe. En résumé, l'absence de découplage empêche un fonctionnement correct du marché et crée une barrière d'entrée pour les nouveaux fournisseurs de gaz. Les opérateurs historiques qui ont des intérêts intégrés au niveau de l'approvisionnement et du transport tirent parti de l'asymétrie d'information, en imposant les conditions d'accès par le biais de la fixation des prix ou d'une limitation artificielle des capacités pour les nouveaux entrants en prétendant que le réseau est saturé ou encombré. En outre, ils limitent les échanges d'informations vers les petites entreprises concernant les demandes d'accès aux capacités ou l'utilisation de réseaux par des concurrents. Le Royaume-Uni indique que les sociétés qui n'ont pas découplé leurs activités créent des barrières artificielles en imposant aux fournisseurs non affiliés un régime d'équilibrage et d'autres conditions d'exploitation qui ne reflètent pas les coûts. L'absence de transparence due à des pratiques comme la rétention d'informations importantes sur l'offre et la demande, et la situation en termes de satisfaction des demandes par le système, rendent l'entrée de concurrents difficile. Il n'y a pas

d'investissement dans l'interconnexion, alors que cela pourrait créer une concurrence dans la fourniture et une baisse des prix ; d'où des conséquences négatives pour le marché de l'UE. Dans les années 90, British Gas illustrait bien cette situation jusqu'à ce que les actionnaires, sous la pression du régulateur, se rendent compte qu'il serait dans leur intérêt de dissocier les activités de transport et de fourniture.

Pour assurer un environnement équitable et concurrentiel aux fournisseurs, on a introduit un code des réseaux portant sur la capacité et l'équilibrage. La société de transport, National Grid (NG), a également concrétisé les incitations à investir dans les infrastructures de réseaux et une exploitation efficace, et s'est attachée à fournir les capacités dont le marché avait besoin. Elle procède à des enchères pour les capacités de réseau existantes et nouvelles. Les fournisseurs peuvent acheter des capacités à des conditions non discriminatoires, en fixant leurs prix à l'avance pour une durée pouvant aller jusqu'à 15 ans, ou ils peuvent se présenter sur le marché et acheter des capacités sur une base ferme ou discontinue au jour le jour. Des règles clairement établies gèrent la congestion du réseau, la société de transport rachetant des capacités dans le cadre d'un dispositif d'incitations financières, là encore à des conditions non discriminatoires. Les règles d'équilibrage et d'exploitation sont clairement définies et s'appliquent de la même manière à tous les fournisseurs et la transparence s'améliore nettement. Le site web de National Grid, la société qui gère le réseau de transport, est consulté actuellement 150 000 fois par jour, en particulier durant la période hivernale, les entreprises, les clients industriels et commerciaux ou autres cherchant sur le site web des informations relatives à la situation du marché ou du réseau. Les pratiques orientées vers le marché, non discriminatoires et transparentes, renforcent la confiance des fournisseurs et contribuent à la réalisation d'investissements sur le marché du Royaume-Uni.

Concernant les deux modèles de découplage, le Royaume-Uni a indiqué succinctement que le démembrement intégral de la propriété est préférable au modèle du gestionnaire indépendant. Alors que ce dernier constituerait une amélioration par rapport à ce qui existe actuellement, il ne changerait que faiblement les choses dans les pays où prédominent de grands monopoles. Le délégué a conclu en considérant que le découplage est une condition préalable à la libéralisation et à l'efficacité du marché du gaz.

Le Président, M. Jenny**,** s'est référé à la contribution du Japon en soulignant qu'après une dizaine d'années, les nouveaux entrants détiennent une part de marché total de 8.1%, et en posant la question de savoir si les autorités japonaises considèrent cela comme un succès ou un échec sur le plan de la concurrence. Appprofondissant sa question, le Président a demandé qu'on précise si ce pourcentage représente un niveau de concurrence modeste ou important dans le système. De manière plus spécifique, le Président s'est interrogé sur le niveau du découplage sur ce marché déréglementé depuis 1995.

Le Japon a abordé le sujet sur deux plans, la situation actuelle du marché du gaz japonais en termes de concurrence et la part que représentent les nouveaux entrants. Concernant le premier aspect, le délégué indique que dans l'évaluation des résultats de la libéralisation, deux nouveaux éléments doivent être pris en compte : la réduction des coûts industriels pour la séparation et la distribution de gaz aux consommateurs et l'effet de baisse des prix du gaz sur le marché national malgré la phase de hausse des prix d'importation du gaz naturel liquéfié liée à la structure générale de l'industrie du gaz. Bien qu'il n'y ait pas de réseau de gazoducs national, la part que représentent les nouveaux entrants a augmenté progressivement au cours des dix dernières années. Par ailleurs, l'absorption de petites entreprises par les grandes améliorera l'efficacité du marché du gaz. Au cours de la décennie passée, une diminution de plus de 10 % a fait passer de 244 à 214 le nombre des sociétés de distribution. Le prix du gaz naturel au Japon comparé aux autres pays de l'OCDE ne cesse de diminuer et le niveau actuel est beaucoup plus proche de celui des autres pays de l'OCDE. Le Japon a considéré que le pourcentage de 8 % de nouvelles entrées est dans une certaine mesure satisfaisant. Comme il est mentionné plus haut, l'évolution des résultats de cette libéralisation sera analysée dans le cadre du prochain examen de la politique énergétique dans la perspective de nouvelles mesures de libéralisation l'an prochain.

La Japon a montré ensuite comment certains fournisseurs de gaz s'efforcent actuellement d'obtenir l'interconnexion des réseaux sans découplage afin d'accroître la résilience face aux pressions concurrentielles sur un marché libéralisé. Il semble que les sociétés d'électricité et de gaz et les sociétés pétrolières qui peuvent acheter du gaz naturel en quantités suffisantes mettent en place un réseau de gazoducs entre elles. Même les fournisseurs intégrés verticalement sont incités à connecter les réseaux sans découplage, de sorte que le Japon pourra suivre ce mouvement et observer jusqu'où ira l'interconnexion des gazoducs.

Le Président, M. Jenny a donné la parole au Professeur Lévêque et au Professeur.

Le Professeur Lévêque a évoqué un avantage supplémentaire du démembrement intégral de la propriété en ce sens que cela permettra plus aisément les fusions entre les sociétés du réseau. Par ailleurs, les fusions transfrontalières présenteront certainement des avantages en termes d'efficacité liés à la taille de certains réseaux.

Le Professeur Nambu explique en outre que la part de marché est un indice trompeur au Japon du fait des particularités géographiques. Les investissements des nouveaux entrants se situent essentiellement dans les grandes concentrations urbaines (Tokyo, Osaka, Nagoya, par exemple) où ils sont rentables. C'est vrai pour de nombreux secteurs (télécommunications 10%, électricité 2%, et gaz 8%). L'aspect le plus significatif concernant la part de marché est de savoir si les nouveaux arrivants rivalisent avec les entreprises en position dominante dans ces concentrations urbaines. Leur part de marché serait généralement de 20 % (au niveau national), mais elle est de 50 % (dans les concentrations urbaines) dans les télécommunications.

Concernant le découplage, le Japon met systématiquement en balance les problèmes de discrimination et les économies réalisées avec l'intégration verticale entre la production et le transport d'électricité. De ce fait, le Japon n'a pris aucune décision concernant l'adoption ou non du découplage à une plus grande échelle.

Le Président Jenny a donné la parole à la délégation coréenne pour examiner les limites actuelles et futures de la concurrence sur les marchés en aval en vue d'obtenir des importations de gaz naturel avec une sécurité suffisante.

La Corée a répondu que le secteur gazier coréen évolue progressivement d'une situation de monopole vers la concurrence. Dans la phase initiale de l'industrie du gaz en Corée, le monopole était plus adapté et plus efficace. À cette époque, il fallait en Corée mettre en place un système d'approvisionnement en gaz naturel pour inciter à investir dans les installations nécessaires, garantir la prestation de services et développer les activités de gros et de détail. Cependant, à mesure que l'industrie du gaz s'est développée et équipée des installations nécessaires, l'introduction de la concurrence dans le secteur gazier a été nécessaire pour améliorer la compétitivité de l'industrie du gaz. Le gouvernement coréen a essayé de restructurer cette industrie. Au niveau des importations, la concurrence a déjà été introduite. Depuis 2001, les entreprises peuvent importer directement du gaz pour leur propre consommation. Le secteur du commerce de gros reste un monopole, mais le gouvernement coréen envisage d'introduire la concurrence en autorisant de nouveaux opérateurs sur le marché. Pour ce qui est du secteur de la vente de détail, le gouvernement coréen envisage d'examiner l'introduction de la concurrence lorsque celle-ci sera instaurée dans le secteur de la vente en gros. La conclusion est que la Corée est en train d'évoluer vers la concurrence.

Le Président, M. Jenny a donné la parole à M. Santa pour commenter l'expérience des États-Unis concernant les contrats à long terme et le découplage du secteur du gaz naturel.

Selon M. Santa, les lois et réglementations qui ont restructuré l'industrie du gaz naturel aux États-Unis ne se sont pas intéressées à la question de savoir s'il fallait dissuader ou encourager la conclusion de contrats de gaz à long terme. Néanmoins, l'expérience des acteurs sur le marché de l'industrie du gaz aux États-Unis et des régulateurs au niveau fédéral et au niveau des États a très fortement influé sur l'attitude envers les contrats à long terme. Sur cette toile de fond, les délégués comprendront mieux comment l'expérience a influé sur l'attitude adoptée envers les contrats d'achat de gaz à long terme aux États-Unis.

Les conditions qui ont donné l'impulsion pour restructurer l'industrie du gaz découlent en fait directement des perturbations qui ont été la conséquence d'évolutions imprévues sur le marché qui avaient fragilisé les hypothèses sur lesquelles les contrats d'achat de gaz à long terme étaient fondés. Les origines de la restructuration aux États-Unis remontent aux années 70, lorsque les contrôles de prix fédéraux sur les ventes départ champ sur le marché inter-États ont entraîné des pénuries de gaz imputables à ce marché. Au même moment, les ventes de gaz sur les marchés intérieurs des États réglementés au niveau des États n'étaient soumises à aucun contrôle de prix dans les États producteurs comme le Texas et la Louisiane. En conséquence, l'offre de gaz a été abondante sur ces marchés, et ce qui n'a rien de surprenant, de nombreuses industries grosses consommatrices d'énergie se sont délocalisées dans ces États. Pour remédier à cette situation, le Congrès des États-Unis a adopté en 1978 une loi qui a supprimé la distinction juridique établie entre le marché inter-États et les marchés intra-États, et qui a amorcé une suppression progressive du contrôle des prix concernant le gaz. En outre, pour encourager la production de gaz, la nouvelle loi a mis en place des prix incitatifs pour certaines catégories de gaz, applicables jusqu'à la date où cette catégorie de gaz serait déréglementée. À cette date, avant la restructuration, les gazoducs reliant les États avaient une fonction d'activité de négoce, c'est-à-dire qu'ils achetaient du gaz aux producteurs et revendaient en aval les flux agrégés à des clients qui étaient principalement des sociétés de distribution locales (réglementées par les commissions publiques des États).

Face aux changements introduits par le Congrès des États-Unis, et pour remédier à la pénurie d'approvisionnement imputable au marché inter-États, les exploitants des gazoducs reliant les États ont conclu des contrats à long terme d'approvisionnement en gaz naturel avec les producteurs. En outre, dans bien des cas, les prix contractuels ont été fixés au niveau des nouveaux prix incitatifs qu'autorisait la loi adoptée par le Congrès. Les conditions sur le marché des États-Unis se sont modifiées peu de temps après. L'économie des États-Unis est entrée en récession au début des années 80, ce qui s'est répercuté sur la demande de gaz naturel. Parallèlement, l'incitation à la production résultant de la nouvelle loi a eu l'effet souhaité et des quantités de gaz beaucoup plus importantes ont été disponibles sur le marché. Les gazoducs avaient passé des contrats d'achat de gaz portant sur des quantités supérieures à celles nécessaires sur le marché et les prix ont fini par être sensiblement supérieurs à ceux des petits marchés spot de gaz naturel qui se développaient.

Au milieu des années 80, le régulateur fédéral, la Commission fédérale de régulation de l'énergie (FERC), a engagé une restructuration du marché des gazoducs à travers une série de textes qui, au total, ont donné lieu à une sorte de grande négociation dans laquelle les sociétés de gazoducs sont convenues de fournir un accès ouvert au transport et d'autoriser leurs clients à rechercher d'autres approvisionnements en gaz ; en contrepartie, la Commission donnait aux gazoducs l'assurance qu'ils pourraient récupérer sur leurs clients une certaine partie des coûts encourus pour la renégociation et la résiliation des contrats de gaz à long terme. Ces changements se sont produits durant une période d'offre excédentaire sur le marché inter-États. Les incitations mises en place par le Congrès ont fonctionné. Cette situation d'offre excédentaire a duré quasiment jusqu'au début de cette décennie. La mise en place d'une « garantie de distribution » a fortement influé sur la disposition des acteurs du marché à conclure des contrats d'achat à long terme. Compte tenu de l'offre excédentaire et des prix bas sur le marché spot, les sociétés de distribution locales, entre autres, n'étaient pas incitées à conclure des contrats d'approvisionnement à long terme. De plus, les sociétés de distribution locales ne voulaient pas courir le risque de voir leurs décisions d'achat contestées

par les régulateurs des États. De même, les producteurs n'étaient pas très incités à conclure des contrats à long terme qui auraient retenu les prix bas observés sur le marché spot.

Au bout du compte, la restructuration du secteur de l'électricité aux États-Unis a eu une influence sur l'incitation des sociétés commerciales de production d'électricité à conclure des contrats d'achat de gaz à long terme. Sur les marchés de l'électricité en gros reposant sur des appels d'offres, les centrales thermiques au gaz n'exerçaient aucune influence sur le dispatching. Elles ne souhaitaient donc pas assumer la charge économique de contrats d'approvisionnement en gaz qui les auraient obligées à accepter des livraisons de gaz même si elles n'étaient pas dispatchées. L'équilibre entre l'offre et la demande de gaz aux États-Unis est beaucoup plus tendu depuis quelques dernières années et les prix du gaz sont beaucoup plus élevés qu'ils ne l'étaient dans les années 80 et 90. Il n'en reste pas moins que revenir aux contrats d'approvisionnement en gaz à long terme à prix fixe, qui caractérisaient le marché avant la restructuration, ne présente guère d'intérêt. Les acheteurs de gaz pensent que s'ils ont accès aux infrastructures, l'approvisionnement pourra s'effectuer au prix qui prévaut sur le marché. De façon similaire, les producteurs de gaz et les sociétés de distribution de gaz ont l'assurance que le gaz pourra être acheminé vers le marché par ces infrastructures. Même dans les cas où les producteurs et les sociétés de distribution sont disposés à conclure des contrats à plus long terme, ils laissent le marché définir les prix. Si les acheteurs souhaitent couvrir le risque de volatilité du marché, ils le font au moyen d'instruments financiers et pas par le biais des conditions du contrat d'achat de gaz.

En résumé, les lois et réglementations qui ont restructuré le marché du gaz aux États-Unis n'ont pas indiqué si le contrat d'achat de gaz à long terme était un élément souhaitable. La réalité est que les contrats d'approvisionnement en gaz à long terme sur le marché restructuré du gaz naturel aux États-Unis sont beaucoup moins importants. La combinaison de l'accès ouvert aux infrastructures et d'un segment très dynamique du gaz naturel sur le marché des produits de base a convaincu que ces contrats n'étaient pas nécessaires pour la sécurité d'approvisionnement des clients.

Le Président, M. Jenny a poursuivi le débat en donnant la parole à la France.

La France a fait valoir que les capacités de stockage constituent un élément essentiel pour le bon fonctionnement du marché du gaz naturel en France, notamment parce que la majeure partie des importations de gaz naturel en France repose sur des contrats à long terme et que les installations de stockage souterrain servent à ajuster la fourniture de gaz. La réception du gaz s'effectue à intervalles réguliers durant toute l'année, mais la consommation est inégale et atteint un maximum en hiver, en particulier. Ces installations de stockage sont actuellement la propriété de gestionnaires indépendants. En fait, il existe deux gestionnaires qui possèdent des installations sur plusieurs sites en France, à savoir Gaz de France et une filiale de Total. Actuellement, il n'y a pas de pénurie de capacité de stockage de gaz naturel en France. On constate même une légère surcapacité d'environ 5 %, qui offre des possibilités d'ajustement en fonction des déséquilibres à court terme imprévus de l'offre et de la demande.

Avec l'ouverture du marché du gaz à la concurrence, les tiers peuvent accéder à ces facilités de stockage. Cet accès est même réglementé par le décret du 21 août 2006, en vertu duquel tous les opérateurs du secteur du gaz se voient allouer une partie de la capacité totale de stockage en fonction de leur clientèle. Le droit d'accès peut être modifié en fonction de l'évolution de la clientèle des opérateurs. L'utilisation de ces capacités de stockage est semi-réglementée. En d'autres termes, les frais d'utilisation de la capacité de stockage sont fixés par les deux opérateurs. Toutefois, la Commission de régulation de l'énergie est habilitée à régler les différends entre les opérateurs concernant l'accès aux infrastructures de stockage. Elle a pu notamment se faire communiquer les contrats conclus entre les gestionnaires d'installations de stockage et les autres fournisseurs de gaz.

Les deux opérateurs en place ont plusieurs projets de construction de nouvelles installations de stockage de gaz, notamment des installations souterraines, mais plusieurs projets sont également développés actuellement par des opérateurs privés qui veulent exercer cette activité. Ces investissements ont lieu vraisemblablement parce que les signaux émis par le marché sont favorables à un développement de ce type de stockage et, par conséquent, au développement de l'utilisation du gaz naturel en France ainsi qu'à la poursuite de l'intégration du marché européen, qui offre la possibilité d'utiliser ces capacités pour vendre du gaz à des clients dans les pays voisins.

En résumé, la France se situe à mi-chemin entre les deux extrêmes. Jusqu'ici les capacités de stockage étaient réglementées de manière centralisée, mais nous nous trouvons aujourd'hui dans une situation où le marché peut intervenir et où il existe des possibilités pour les opérateurs privés de développer cette activité.

Le Président, M. Jenny a ensuite donné la parole à M. Santa pour évoquer la question du stockage du gaz aux États-Unis.

M. Santa a fait savoir qu'il donnera des informations générales sur les capacités de stockage qui existent aux États-Unis, leur utilisation dans le passé et la décision récente de la Commission fédérale de régulation de l'énergie (FERC) qui offre une incitation supplémentaire à investir dans le stockage.

Il existe environ 400 installations souterraines de stockage de gaz aux États-Unis. On estime que la capacité utile maximale de ces installations est d'environ 100 milliards m3. Pour mettre ce chiffre en perspective, les États-Unis consomment environ 650 milliards m3 de gaz par an. La géologie détermine en grande partie la localisation de ces installations de stockage ; c'est pour cette raison que la contribution du stockage à la satisfaction de la demande en période de pointe varie selon les régions en fonction des installations de stockage de gaz existantes. Les principaux propriétaires et gestionnaires d'installations de stockage aux États-Unis sont les sociétés de gazoducs inter-États, les sociétés de gazoducs intra-États, les sociétés de distribution locales et les prestataires indépendants de services de stockage. En outre, les performances et coûts liés au stockage varient en fonction des types d'installations. Les gisements épuisés de pétrole ou de gaz naturel, les anciennes nappes aquifères et les cavités salines sont les trois principaux types d'installations de stockage souterrain. Le stockage dans les cavités salines et la possibilité de recycler le gaz plusieurs fois durant une saison est une solution très prisée et attrayante sur le marché actuel.

Sur le marché des États-Unis, le stockage du gaz remplit plusieurs fonctions. La principale et première fonction du stockage est d'être une source d'approvisionnement saisonnière et une réserve pour faire face à la demande de pointe. Par ailleurs, les gazoducs utilisent le stockage pour équilibrer le débit des installations en maintenant la pression du gazoduc dans les paramètres prévus ou pour faciliter le service « no notice » au profit des chargeurs. Ceux-ci utilisent le stockage pour maintenir l'équilibre entre réceptions et livraisons en fonction des contrats en place afin d'éviter les pénalités en cas de déséquilibre. Les producteurs utilisent le stockage pour lisser la production durant les périodes de fluctuation de la demande dans le cadre des contrats. Les sociétés de distribution utilisent le stockage à des fins d'arbitrage pour acheter du gaz lorsque le prix est bas et le revendre lorsque les prix sont plus élevés. Le stockage pourrait jouer un rôle encore plus important sur le marché des États-Unis avec l'augmentation des importations de gaz naturel liquéfié et la possibilité d'utiliser le stockage pour acheter du gaz naturel durant les mois creux quand il arrive que des chargements spot de gaz naturel liquéfié soient disponibles.

Le stockage inter États est un service découplé qui doit être offert sur la base d'un accès ouvert à des tarifs approuvés par la FERC. Les tarifs traditionnels basés sur les coûts ne permettent pas à un opérateur qui crée des installations de stockage de couvrir entièrement les coûts des projets parce que les tarifs basés sur les coûts ne correspondent pas entièrement à la valeur du stockage sur le marché.

À titre d'explication, M. Santa a fait observer que souvent les clients ne sont pas disposés à conclure des contrats à long terme aux tarifs basés sur les coûts qui seraient nécessaires pour couvrir le coût des installations. Ainsi, les tarifs basés sur les coûts sont un élément relativement dissuasif pour l'opérateur qui envisage de développer un projet. En conséquence, la FERC autorise souvent l'application de ce qu'on appelle des « tarifs basés sur le marché », c'est-à-dire que si la Commission parvient à la conclusion qu'il y a suffisamment de concurrence sur le marché du stockage, elle autorise le tarif basé sur le marché ou ce qui est, de fait, un tarif déréglementé. En général il est facile d'obtenir l'autorisation d'appliquer des tarifs basés sur le marché pour des projets de stockage qui concernent la production. Il est plus difficile d'appliquer des tarifs basés sur le marché dans les secteurs du marché où il n'existe guère d'autres solutions de stockage et il est donc beaucoup plus difficile pour celui qui demande l'autorisation de démontrer qu'un marché concurrentiel imposera une discipline des prix. Face à cette situation et en espérant encourager des investissements plus importants dans de nouveaux projets de stockage, la Commission a adopté l'an passé des dispositions permettant aux opérateurs qui développent des solutions de stockage d'obtenir des tarifs basés sur le marché.

Dans le cadre des pouvoirs qui lui ont été récemment conférés par le Congrès des États-Unis, la FERC a défini les règles à appliquer pour autoriser des tarifs basés sur le marché pour le stockage même dans le cas où le demandeur ne démontre pas qu'il n'exerce pas de pouvoir de marché. Le Congrès a indiqué que la Commission pouvait donner son autorisation à condition de s'assurer que la capacité de stockage est nécessaire et que des garde-fous suffisants empêchent l'exercice d'un pouvoir de marché par les opérateurs d'installations de stockage.

La FERC a actualisé son critère de pouvoir de marché pour permettre aux demandeurs de démontrer qu'il existe d'autres produits que le stockage de gaz naturel qui sont de bons substituts au stockage de gaz naturel, les substituts efficaces devant être inclus dans le marché de produits lorsque la Commission calcule la concentration du marché. La Commission a proposé qu'il soit possible de démontrer que la production locale de gaz et les terminaux de gaz naturel liquéfié ou même certains types de services de transport par gazoduc soient pris en considération en tant que substituts du stockage. La conséquence serait une plus faible concentration du marché et il serait plus aisé pour les opérateurs qui créent des installations de stockage d'obtenir des tarifs basés sur le marché.

Le Président, M. Jenny a noté l'opposition qui existe entre la situation de la France et celle des États-Unis, où la capacité de stockage est utilisée pour arbitrer entre les périodes où les prix diffèrent. Il a demandé à M. Santa si un excédent de 5 % du stockage par rapport à la consommation serait suffisant pour faciliter ce type d'arbitrage.

M. Santa a répondu que l'élément essentiel est que toute capacité de stockage aux États-Unis peut être utilisée pour des activités d'arbitrage si on pense que c'est l'usage le plus intéressant et si on investit dans cette capacité.

Le Président Jenny a ouvert le débat sur les déterminants de l'entrée dans des activités du secteur gazier précisant que ce sujet est particulièrement important en Allemagne. Il a invité la délégation allemande à commenter des cas de fermeture de l'entrée du secteur du négoce de gaz naturel qui sont liés à des contrats à long terme entre des sociétés de transport de gaz et des distributeurs de gaz, ainsi que les litiges qui en ont découlé.

L'Allemagne a exprimé sa conviction que l'ouverture du marché du gaz en aval est un élément très important pour la concurrence et les consommateurs, et qu'un contrat d'approvisionnement à long terme comporte un risque de fermeture du marché en aval. Dans le passé, les contrats d'approvisionnement en gaz avaient une durée de 20 ans et parfois même plus longue. Face à ce problème, l'autorité de la concurrence a pris une décision d'interdiction à l'encontre de E.ON-Ruhrgas, le plus grand distributeur. En

application de cette décision, un contrat d'approvisionnement en gaz ne peut avoir qu'une durée de deux ans maximum s'il couvre 82 % ou plus de la demande du principal fournisseur régional. Il se peut que ce soit une mesure particulièrement contraignante comparé à l'approche suisse, qui a opté pour une durée de 5 ans ou à celle évoquée par le Japon, où il existe des contrats d'approvisionnement de gaz à long terme d'une durée de 25 ans.

La question est de savoir si cette décision est en contradiction avec l'objectif de sécurité énergétique. Premièrement, cette décision ne concerne pas les contrats d'importation existants entre E.ON-Ruhrgas, la Russie et la Norvège, qui ont effectivement une durée de 25 ans ; elle ne concerne que les activités en aval. On faisait valoir en Allemagne que le marché en aval devait refléter les contrats d'importation à long terme du côté achat. Toutefois, il y a aussi un risque pour les négociants et c'est ce risque qu'ils doivent assumer, de sorte que cette nécessité peut être écartée. La demande en Allemagne se développe et la liquidité du marché du gaz est bénéfique en ce qu'elle ouvre des possibilités d'entrée en aval.

Autre question : les contrats à long terme font-ils monter les prix ? Les partisans des contrats à long terme pensent que les contrats à long terme d'approvisionnement en gaz sont en fait une bonne chose pour les prix sur le marché en aval, mais les théories économiques laissent penser qu'avec une concurrence plus forte sur le marché en aval les prix baisseraient, ce qui est bon pour la concurrence et les consommateurs.

Dernière question : quelle est la liquidité du marché ? La délégation allemande pense que la liquidité du marché en aval s'améliorera et que la liquidité sur le marché est suffisante du fait de la dimension du marché allemand qui est, avec le Royaume-Uni, le plus important en Europe.

La délégation allemande a conclu que l'ouverture du marché et la réduction de la durée des contrats d'approvisionnement en gaz à long terme n'est pas en contradiction avec la sécurité énergétique. Ce point de vue a été confirmé par une juridiction d'appel allemande dans une décision provisoire, mais l'affaire a été portée devant la Cour fédérale de justice. L'autorité de la concurrence a déjà reçu six engagements d'autres importateurs de gaz qui s'en tiendront à une durée maximale de deux ans pour les contrats d'approvisionnement. Cela indique que le marché du gaz en aval en Allemagne est actuellement ouvert, et l'autorité de la concurrence cherche à développer la concurrence.

Le président, M. Jenny**,** a donné ensuite la parole à M. Santa sur les contrats de gaz naturel à long terme avant et après la restructuration intervenue aux États-Unis.

M. Santa a opposé les conditions et les barrières à l'entrée en particulier, qui prévalaient avant et après la restructuration du marché du gaz aux États-Unis. Le contraste concerne en majeure partie les incitations ou désincitations à développer des infrastructures de gaz naturel. Aux États-Unis, pour réglementer l'industrie du gaz naturel, la FERC s'appuie surtout sur une loi, le « Natural Gas Act », qui remonte au New Deal. En vertu de cette loi, il faut, pour que soit autorisée la construction d'un nouveau gazoduc ou l'extension d'un gazoduc existant, que la FERC établisse que l'installation répond « à l'utilité et la nécessité publiques ». En d'autres termes, il appartient au régulateur de déterminer que cette installation répond à un besoin public. Avant la restructuration, deux éléments limitaient l'entrée et la concurrence pour la construction des infrastructures gazières. À cette époque, les gazoducs inter-États avaient des activités de négoce du gaz, c'est-à-dire qu'ils achetaient du gaz aux producteurs, regroupaient leurs achats et revendaient à des clients en aval. Ainsi, sauf si une installation était indispensable soit pour acheminer de nouveaux achats de gaz qu'allait effectuer le gazoduc, soit pour maintenir ou développer une prestation en faveur d'un client existant, il n'y avait aucune raison particulière de construire de nouveaux gazoducs.

Avant la restructuration, la FERC, ou la Federal Power Commission qui l'a précédée, examinait la nécessité d'un nouveau gazoduc en procédant à une analyse très factuelle. Elle se demandait si l'approvisionnement en amont était suffisant pour justifier l'extension, si la croissance en aval était

suffisante et si la justification de cet investissement était suffisante. En d'autres termes, pour remplir ce qu'il considérait comme sa mission, à savoir protéger l'intérêt public, le régulateur substituait son appréciation à l'appréciation du marché concernant les investissements liés aux gazoducs.

La restructuration a tout changé. Quand les gazoducs ne se sont plus livrés au négoce, l'élément déterminant de leur activité a été la capacité de transport et pas la vente du gaz qu'ils transportaient. De plus, avec l'apparition des négociants en gaz naturel et d'autres intermédiaires, les parties désireuses de s'engager dans le transport de gaz naturel se sont multipliées au-delà des sociétés de distribution qui étaient les clients historiques et cela a poussé les gazoducs à chercher de nouvelles possibilités de développement de leur activité. Ainsi, la FERC a abandonné son examen factuel concernant la nécessité de nouvelles installations pour le remplacer par un critère de marché. Un gazoduc pouvait justifier la nécessité d'une nouvelle installation en démontrant qu'il avait conclu des contrats pour une partie importante de sa capacité et la FERC n'irait pas contester l'appréciation des chargeurs qui signeraient les contrats. La FERC a évolué aussi de plus en plus vers une tarification marginale pour les projets de nouvelles installations. Cela a évité l'opposition qu'auraient exprimée les clients existants, qui se seraient plaints d'une hausse des prix si les nouvelles capacités des gazoducs ne leur procuraient pas l'avantage correspondant.

À la suite de ces réformes, la partie de la procédure qui demande le plus de travail et de temps pour l'obtention de l'autorisation du régulateur concernant la construction d'un nouveau gazoduc est l'analyse environnementale effectuée par la FERC et l'obtention de diverses autres autorisations fédérales et de l'État concerné. La réglementation économique n'est plus un obstacle à l'entrée sur le marché dans le secteur du transport de gaz naturel. Du point de vue du régulateur, le processus est soumis à une discipline du fait que les sociétés de gazoducs doivent continuer à prélever des tarifs réglementés liés aux « coûts de service » établis sur la base d'un long d'amortissement, en général de 20 à 30 ans. De cette façon, le gestionnaire et les investisseurs d'un gazoduc ne réalisent pas d'investissement dans un nouveau projet sauf s'ils sont suffisamment assurés que le retour sur investissement nécessaire peut être obtenu dans les limites des tarifs que le gazoduc peut appliquer aux chargeurs. Cela favorise une attitude conservatrice qui évite un développement excessif du réseau de gazoducs.

Enfin, un autre élément qui a certainement contribué à la possibilité d'entrer sur le marché du gaz aux États-Unis : les gazoducs doivent offrir leurs services non seulement sur la base de contrats fermes à long terme, mais aussi sur la base de contrats interruptibles, et il existe aussi un marché *secondaire* très dynamique pour les capacités de gazoduc. Ainsi, une société de distribution de gaz naturel, par exemple, peut accéder au réseau de gazoducs sans avoir à conclure de contrat à long terme en tant que chargeur, ou une centrale électrique, par exemple, qui ne souhaite pas conclure de contrat de ce type du fait qu'elle ignore si elle va être dispatchée, peut accéder au marché secondaire des capacités de gazoduc et obtenir de cette façon la capacité souhaitée.

En résumé, un revirement a eu lieu au niveau des barrières d'entrée. Le résultat est une situation de concurrence bien développée du côté des gazoducs inter-États : souvent, dès qu'il existe une opportunité sur le marché, plusieurs gazoducs rivalisent pour pouvoir développer le projet. Au bout du compte, il est vraisemblable qu'un seul projet verra le jour, mais ce sera le projet qui aura été validé par le marché.

Le Président Jenny, a observé que deux scénarios ressortaient du débat. L'un d'eux est que s'il y a un marché qui fonctionne bien, les contrats à long terme ne sont plus un problème puisque la réalité du marché s'est écartée de ces contrats à long terme. En revanche, les contrats à long terme prennent beaucoup plus d'importance, comme c'est le cas en Allemagne, si le marché n'est pas bien développé.

Session III

Le Président Jenny, a ouvert la troisième session consacrée aux activités des autorités de la concurrence dans l'industrie du gaz naturel en indiquant que les contributions écrites se regroupent en deux catégories : (1) les cas de fusions dans lesquels la fusion va accroître le pouvoir de marché, ce qui suscite des préoccupations de la part de l'autorité de la concurrence et (2) une autre série de cas où la question qui se pose est celle de la compatibilité entre la concurrence et la sécurité d'approvisionnement. Plusieurs affaires dans lesquelles un ministre passe outre la position de l'autorité de la concurrence pour des raisons d'intérêt général offrent un exemple de cette dernière situation. Le Président a donné tout d'abord la parole à M. Lévêque.

M. Lévêque a formulé deux remarques fondamentales :

- Premièrement, la libéralisation de l'énergie a modifié considérablement le cadre des investissements, et bien sûr l'initiative privée, dans ce nouveau cadre, joue un rôle plus important. Du fait de la concurrence, nous pouvons nous attendre à ce qu'il y ait moins de surcapacités que dans le passé, c'est-à-dire en l'absence de concurrence ou avec moins de concurrence, et nous pouvons également nous attendre à un coût plus faible pour atteindre un niveau donné de sécurité d'approvisionnement.

- Deuxièmement, les caractéristiques particulières des industries de l'électricité et du gaz sont bien connues, notamment la faible élasticité de la demande par rapport aux prix et également la difficulté d'obtenir des preuves de l'exercice d'un pouvoir de marché ou de l'existence d'un pouvoir de marché potentiel important dans ces industries. Ces caractéristiques particulières appellent, dans une certaine mesure, un traitement spécifique. Ce traitement spécifique a fait l'objet récemment d'un article publié dans l'Electricity Journal, dont l'auteur était M. Lévêque. Les autorités de la concurrence, par exemple, devraient être plus rigoureuses dans leur examen des fusions dans les secteurs du gaz et de l'électricité. La raison en est très simple : le coût des erreurs de type 1 est très élevé du fait des dommages que provoque en termes de surplus des consommateurs une très forte inélasticité. La liste de recommandations inclut la mise en place de commissions de surveillance des marchés. Le point intéressant pour la table ronde est que la sécurité d'approvisionnement ne figure pas sur la liste des éléments qui sont particuliers et spécifiques au secteur de l'électricité. Il n'est pas nécessaire d'adopter un régime spécifique de la sécurité d'approvisionnement dans les secteurs de l'électricité et du gaz. En fait, on peut même dire que le problème est inverse. La difficulté réside peut-être dans une limitation de l'intervention du gouvernement, qui interfère avec l'application de la loi de la concurrence en exploitant les arguments de la sécurité d'approvisionnement comme un prétexte pour atteindre ses objectifs dans le domaine de la politique énergétique. La véritable difficulté n'est pas d'adapter la législation de la concurrence pour favoriser la sécurité d'approvisionnement, mais plutôt d'empêcher ou de réduire les interventions des pouvoirs publics, qui exploitent des arguments liés à la sécurité d'approvisionnement ou à la sécurité énergétique susceptibles de restreindre, ou de modifier défavorablement, la mise en œuvre de la loi sur la concurrence.

On peut citer deux exemples. L'un d'entre eux est très évident. Il s'agit de la situation où les gouvernements contournent l'interdiction de certaines fusions prononcée par leur autorité de la concurrence. Nous avons malheureusement de bons exemples de cette situation en Europe. L'autre exemple est le cas où l'autorité de la concurrence peut être encouragée à utiliser la loi sur la concurrence pour accélérer le processus de libéralisation. Il existe une sorte de dissuasion excessive dans l'UE qui peut également poser problème.

L'autre question concerne les contrats à long terme. Est-il vrai qu'une sorte d'approche *per se* serait pertinente ? M. Lévêque s'est montré très circonspect à l'égard du point de vue selon lequel les contrats d'achat à long terme seraient habituellement anticoncurrentiels, les effets proconcurrentiels des contrats à long terme pouvant contrebalancer leurs effets anticoncurrentiels.

M. Lévêque s'est interrogé également sur la nécessité éventuelle d'un traitement spécifique de la mise en œuvre de la loi sur la concurrence sur les marchés de la production d'énergie nucléaire en raison des caractéristiques particulières de l'industrie nucléaire.

Le Président Jenny, a ensuite donné la parole à M. Khayat. M. Khayat s'est référé à la proposition de la Commission de l'UE en faveur du démembrement complet de la propriété dans les sociétés intégrées verticalement, consistant à ne plus autoriser la propriété commune entre les éléments logistiques et commerciaux de ces sociétés intégrées verticalement. Cela viendrait compléter la séparation comptable et la séparation juridique qui existent déjà. M. Khayat a examiné les conséquences de cette mesure sur le plan de la sécurité d'approvisionnement.

Selon le World Energy Outlook qui a été publié en 2006 par l'Agence internationale de l'énergie, la demande de gaz de l'UE devrait augmenter de 145 milliards de m3 entre 2004 et 2030 dans le scénario alternatif et de 1 milliard de m3 de plus dans le scénario de référence. Pour satisfaire cette augmentation de la consommation, l'Europe devra entreprendre prochainement d'importants investissements dans trois types d'activité :

- investir pour accroître la capacité de livraison aux utilisateurs finals,

- investir pour relier l'Europe aux nouvelles sources d'approvisionnement, essentiellement à cause de l'épuisement progressif, malheureusement, des ressources nationales,

- investir pour accroître la capacité de transit des plates-formes parce que l'activité des plates-formes de commerce de gros en Europe augmentera.

Total pense que ces investissements amélioreront la sécurité d'approvisionnement surtout parce qu'ils relieront l'Europe à de nouvelles sources et qu'ils diversifieront les approvisionnements – les investissements et la diversification des achats sont des éléments positifs pour la sécurité d'approvisionnement. Total a l'expérience d'une interconnexion dans le Sud-Ouest de la France, appelée Euskadour, qui a été réalisée entre l'Espagne et la France. Total construit actuellement un tronçon du sud au nord de la France pour acheminer le gaz provenant d'un terminal recevant du gaz naturel liquéfié situé près de Marseille. Ce terminal recevra du gaz venant d'Égypte et du Moyen-Orient et nous participons donc en tant que gestionnaire intégré du réseau de transport à ces projets qui améliorent la sécurité d'approvisionnement.

Si on s'accorde à penser que les investissements sont une bonne chose pour la sécurité d'approvisionnement, on a deux façons d'envisager le processus de décision en matière d'investissement : la réactivité ou l'anticipation. Le gestionnaire du réseau de transport complètement indépendant, ce qui implique un démembrement complet de la propriété, serait neutre sur la question de l'accès au réseau car il n'a aucune raison de favoriser une société commerciale apparentée pour l'accès à son réseau. Mais malheureusement, sur la question de l'investissement, un gestionnaire de réseau de transport aura une attitude réactive. Il attendra qu'un signal du marché déclenche des investissements, ce qui signifie qu'il est nécessaire que ces signaux du marché existent. Les signaux du marché, ce sont les prix, ce qui signifie qu'il faut avoir des prix sur une période suffisamment longue et qu'il faut que le message émis par ces prix soit stable dans le temps. C'est effectivement une difficulté aujourd'hui en Europe, parce qu'on ne dispose pas de ces prix de gros sur le continent, et même au Royaume-Uni l'horizon temporel pour les prix est trop

court. Il est en principe de trois ans. Si le message n'est pas obtenu à travers les prix, il provient des demandes des chargeurs potentiels. Mais cela veut dire qu'il faut que les chargeurs puissent exprimer des demandes fermes et les expriment suffisamment à l'avance de sorte que le gestionnaire du réseau de transport puisse construire les installations nécessaires. C'est également difficile si on ne dispose pas de prix de gros sur une longue période. Si le gestionnaire du réseau de transport est réactif et s'il ne reçoit pas le signal approprié, il aura un comportement à courte vue. Il ne saura pas quelle décision prendre en matière d'investissement.

Total a noté que la Commission de l'UE avait proposé de créer un Observatoire de l'énergie. Apparemment, cet observatoire doit assurer des fonctions essentielles concernant l'offre et la demande d'énergie en Europe. Cette mission est difficile à assumer sans un renforcement notable de la transparence concernant les besoins d'investissements futurs de l'UE dans les infrastructures électriques et gazières. Cette proposition repose sur l'idée que les gestionnaires de réseaux de transport entièrement indépendants agissent à courte vue. Ils ont besoin de l'aide d'un tiers qui a une vision à long terme de la nature des investissements à réaliser. Total se pose des questions au sujet de cette institution parce que, bien que son rôle soit de prévoir les évolutions du marché, elle ne pourra le faire que de manière limitée dans la mesure où elle n'organise pas ce marché et n'y participe pas.

Le dernier point qui intéresse un gestionnaire de réseau de transport complètement indépendant est que ce sera coûteux. On a fait observer à propos des États-Unis que si quelqu'un investit dans une installation de transport, cet investisseur souhaite obtenir un revenu assuré ce qui signifie que l'investisseur demandera aux chargeurs des engagements à long terme qui exigeront une dérogation pour l'accès des tiers. Mais si les projets sont conçus avec un régime dérogatoire pour l'accès des tiers, quel est l'avantage d'un démembrement complet de la propriété ? Total ne pense pas que cela présente un avantage. En plus ce sera tout le secteur des chargeurs qui devra supporter le risque lié aux investissements.

Par contre, il existe une « approche anticipative », qui devrait permettre à n'importe quelle société d'investir dans des installations de transport sans aucune sorte d'obligation de démembrement. Total pense que les sociétés intégrées verticalement ont un avantage dans ce domaine parce qu'elles ont une vision à long terme. Cela veut dire que si vous êtes producteur, vous voulez acheminer votre gaz sur le marché. Vous avez votre idée sur ce qu'il faut qu'une installation intermédiaire puisse réaliser pour y parvenir. Si vous êtes fournisseur, vous voulez connecter votre secteur du marché à la source. Vous avez votre propre idée des installations intermédiaires qui sont nécessaires. Si vous êtes gestionnaire de réseau de transport indépendant, vous n'avez pas ces incitations.

Le deuxième point sur lequel Total pense que les sociétés intégrées verticalement présentent un certain avantage est qu'elles sont prêtes à assumer le risque lié aux investissements parce qu'elles considèrent ce risque en synergie avec leurs activités en amont et en aval. Il est vrai que les sociétés intégrées verticalement peuvent causer des problèmes sur le plan de l'accès au réseau de transport. Nous sommes d'accord sur ce point. Mais Total pense que le démembrement complet de la propriété n'est pas la bonne solution ; on peut mettre en œuvre l'obligation de transparence sur le plan de l'information et aussi des règles de la concurrence et faire en sorte que ces sociétés appliquent ces règles. Ce scénario a été évoqué ce matin dans le cas de la France, où le régulateur est relativement puissant lorsqu'il s'agit d'accès au réseau. Ce que pense Total également, c'est que si certains investissements sont obligatoires pour la connexion des réseaux, par exemple, comme nous l'avons fait entre l'Espagne et la France, on ne peut attendre du gestionnaire du réseau de transport qu'il réalise ces investissements que s'il peut s'appuyer sur des règles d'investissement stables et claires.

En conclusion, Total considère que l'investissement est un élément essentiel de la sécurité d'approvisionnement ; c'est incontournable. Total redoute que si le démembrement complet est obligatoire, cela puisse conduire à une faible réactivité et à des processus de prise de décision médiocres. Total est en

faveur d'une approche permettant à toute entreprise de réaliser autant d'investissements que possible, mais les entreprises devraient être soumises à un contrôle sur le plan de la transparence et du respect des règles de la concurrence.

Le Président Jenny a noté d'un côté la volonté de l'industrie de voir la loi sur la concurrence correctement mise en œuvre, mais avec également un plaidoyer en faveur des sociétés intégrées, qui est un peu en contradiction avec certains des exposés qui ont été faits au début de la réunion. D'un autre côté, certains orateurs sont d'avis que la mise en œuvre de la loi sur la concurrence ne doit pas trop se préoccuper de la sécurité d'approvisionnement, puisque la concurrence aidera à développer la sécurité d'approvisionnement.

La France a commenté le point soulevé par le Professeur Lévêque qui concerne les industries grosses consommatrices d'électricité : en raison de leurs caractéristiques particulières, à savoir qu'elles consomment de très grandes quantités d'électricité de manière continue et sur de longues périodes allant de 10 à 20 ans, elles devraient payer moins cher que le prix de marché. Cela attire l'attention des autorités de la concurrence, et en particulier de l'autorité française, dans la mesure où ces prix inférieurs au prix de marché font courir le risque de créer une discrimination par les prix sur le marché national ou le marché européen dès lors qu'ils ne sont pas offerts à tous les consommateurs.

L'autorité française de la concurrence considère ces demandes de réduction de prix comme un bon exemple illustrant les conflits potentiels entre la sécurité énergétique et les exigences de la concurrence. Les autorités de la concurrence, nationales et européenne, ont l'obligation et le pouvoir de rétablir une concurrence saine. Quand il a été confronté à cette situation en France, le Conseil de la concurrence a présenté un avis au gouvernement français pour déterminer la meilleure solution à apporter à ce problème. Cet avis était fondé sur trois raisonnements principaux qui étaient (1) que ces contrats à long terme de fourniture d'électricité à des industries grosses consommatrices d'électricité n'étaient pas intrinsèquement anticoncurrentiels et qu'ils devaient bénéficier en particulier d'une dispense d'application de l'article 81, paragraphe 3 du traité européen, (2) que les montants couverts par ces contrats ne devaient pas être tels qu'ils restreignent le marché, (3) que la concurrence « pour le marché » peut être réalisable même si la concurrence « sur le marché » ne l'est pas. Le délégué français estime que ces trois points peuvent être utilisés pour régler des conflits potentiels entre la concurrence et la sécurité énergétique, comme l'autorité de la concurrence l'a fait dans une affaire récente où la capacité couverte par le contrat proposé était proportionnellement importante par rapport au marché.

Le Président Jenny a orienté le débat vers les différentes affaires et a demandé aux États-Unis de commencer cette partie de la table ronde en commentant une affaire de fusion d'installations de stockage de gaz naturel à un niveau local.

Les États-Unis ont exposé cette affaire concernant de remarquables installations de stockage de gaz naturel situées dans des dômes de sel, sur la côte du Golfe du Mexique, en précisant que l'examen lui-même était classique. Il y avait quatre sociétés dotées d'installations de stockage dans la région. Il s'agissait d'une fusion ramenant de « quatre à trois » le nombre de sociétés, les deux qui fusionnaient représentant environ 70 % de la capacité correspondante. De l'avis de l'autorité de la concurrence, la fusion proposée était un cas simple comportant des effets unilatéraux très nets et reposant simplement sur le regroupement de deux entreprises. L'intérêt de cette opération et de son évocation est lié directement au souci de préserver un secteur du stockage de gaz naturel flexible et robuste. L'intérêt de garantir l'existence d'un secteur concurrentiel offrant ces services est directement lié à la position de l'autorité de la concurrence selon laquelle il est important de conserver un marché du stockage concurrentiel pour préserver la flexibilité du marché de l'approvisionnement.

Pour situer cette affaire dans son contexte, les États-Unis ont attiré l'attention des délégués sur une étude citée dans une note de bas de page de la présentation écrite. Cette étude sectorielle a été menée par la Federal Trade Commission à la suite des dommages causés par le cyclone survenu sur la côte du golfe du Mexique. Elle donne un aperçu précis de l'interdépendance du secteur de l'électricité et du secteur de la production et de la transformation du pétrole et du gaz. Elle montre à quel point les dommages causés à l'industrie électrique ont joué un rôle critique au moment où on a relancé la production dans les raffineries, gazoducs et installations de traitement du gaz naturel. Elle permet également d'avoir une idée précise de la façon dont peut réagir en termes d'approvisionnement un système de livraison interconnecté relativement flexible, un des points évoqués par M. Cronshaw auparavant. On a vu, une fois les destructions survenues, comment les appels téléphoniques se sont multipliés partout dans le monde pour acheminer des produits vers les États-Unis. Il y avait obligatoirement des délais pour obtenir des méthaniers pouvant livrer des produits pétroliers de Rotterdam à la côte Est des États-Unis, mais on peut constater dans le détail quelle a été l'intensité de la capacité d'adaptation et de la réactivité du secteur de l'offre. L'étude souligne, de manière très frappante, comment un réseau d'approvisionnement interconnecté et flexible, notamment sous l'angle du stockage, peut améliorer la capacité de réaction en cas de crise.

Le Président Jenny a demandé des précisions sur la définition du marché géographique localisé qui a été utilisée pour contester la fusion.

Les États-Unis ont répondu qu'il existait diverses régions de stockage et d'installations de production qui se recouvraient partiellement. Certaines sont beaucoup plus proches que d'autres des principaux centres de production et des centres de traitement de sorte que le coût est nettement moins élevé si on profite de l'installation géographiquement la mieux située que si on est dépendant de l'interconnexion pour transporter, dans le cas présent, du gaz naturel liquéfié vers une autre installation. À différents égards, c'est une définition standard du marché géographique, dans laquelle le coût du transport est l'élément principal à prendre en considération.

Le Président Jenny a demandé à la Corée de commenter l'affaire Dopco et la solution adoptée.

La Corée a décrit l'affaire comme une fusion verticale entre la société de raffinage de pétrole SK et la société de transport par pipeline Dopco. La KFTC s'inquiétait de pratiques anticoncurrentielles telles que le refus de demandes de transport de pétrole, l'imposition de limitations en volume du transport pouvant être demandé, la discrimination dans l'ordre des transports, etc. Pour régler ces problèmes, la KFTC a pris une décision visant à corriger certains comportements, selon laquelle la Société SK devait exercer ses droits de vote à l'assemblée des actionnaires de Dopco pour mettre en œuvre les mesures correctives suivantes, la Société Dopco devant prendre les mesures nécessaires pour les appliquer. La première d'entre elles est que la société SK exerce ses droits de vote pour introduire des interdictions contre les pratiques anticoncurrentielles dans les statuts de Dopco (comme le refus de demandes de transport de pétrole par des opérateurs de pipelines, l'imposition de limitations en volume du transport pouvant être demandé, la discrimination dans l'ordre des transports dans les conditions contractuelles, y compris les coûts de transport, et la fourniture de certaines informations sur l'entreprise) et veille à ce que Dopco les respecte. La deuxième concerne l'interdiction des pratiques anticoncurrentielles. SK Corporation doit organiser une réunion consultative au cours de laquelle les représentants des sociétés de raffinage de pétrole de Dopco et le public auront la possibilité d'examiner les questions, et de prendre des décisions, concernant l'utilisation des gazoducs et de déterminer le financement et les modalités de la réunion. Ces mesures doivent être introduites dans les statuts de Dopco.

Le Président Jenny a demandé à la Corée si le respect des mesures adoptées fait l'objet d'un suivi. La Corée a répondu par l'affirmative. Il a demandé ensuite à la République tchèque de présenter l'affaire RWE Transgas.

La République tchèque a situé tout d'abord cette affaire dans son contexte. Le marché du gaz tchèque a commencé à s'ouvrir au début de 2005. Pendant toute l'année 2005, l'ouverture du marché ne concernait que les clients les plus importants, environ 35 sociétés comprenant toutes les grandes sociétés de distribution de gaz. Il existe 10 distributeurs de gaz en République tchèque, huit d'entre eux font partie du groupe RWE et deux sont des opérateurs privés et indépendants.

L'autorité de la concurrence a commencé l'enquête sur RWE à la fin de l'été 2005, RWE étant propriétaire non seulement de la société de distribution, mais aussi du réseau de gazoducs. Il n'existe qu'un seul importateur de gaz en République tchèque. L'enquête a révélé deux problèmes notables dans le portefeuille de contrats entre RWE ou les sociétés d'importation d'un côté, et les clients de l'autre côté. Le premier problème concerne le fait que RWE appliquait des conditions défavorables aux deux sociétés de distribution qui sont indépendantes et distribuent le gaz dans la partie méridionale de la Bohême et dans la capitale. Ces deux distributeurs indépendants sont des sociétés relativement importantes qui ont une large clientèle. Les conditions étaient si défavorables qu'il était quasiment impossible de rivaliser avec les sociétés de distribution affiliées à RWE. Le deuxième problème, le plus important, était que RWE en République tchèque appliquait des clauses de destination dans les contrats conclus avec tous les distributeurs, non seulement dans le groupe RWE mais avec tous les distributeurs, et quasiment avec tous les clients. Ainsi le marché était totalement fermé, puisqu'il était impossible de vendre du gaz à une autre partie du pays. L'explication donnée par les représentants de RWE était que ces conditions reflétaient celles de RWE avec Gazprom.

La première partie du procès en deux phases a conduit à l'imposition d'amendes s'élevant à 12 millions EUR environ en août de l'année dernière (2006). Étant donné que RWE, depuis les sanctions initiales, a modifié tous les contrats conformément aux recommandations de l'autorité de la concurrence et aux recommandations de l'autorité de régulation de l'énergie, les amendes imposées devraient être légèrement inférieures, soit 9 millions EUR environ.

Le Président Jenny a donné la parole à l'Espagne pour qu'elle présente l'affaire Viesgo Generacion.

L'Espagne a un marché de l'électricité concentré qui est composé de deux acteurs importants, deux acteurs moyens, deux petits acteurs et une série de concurrents qui sont de nouveaux entrants. De manière générale, les producteurs d'énergies renouvelables et certains nouveaux entrants ne disposent que d'une seule, voire deux unités de production. L'affaire concerne un petit producteur. Toutefois, l'autorité de la concurrence a étendu ses recherches au reste des acteurs et ne les a pas limitées à Viesgo Generacion.

Une caractéristique importante du marché de l'électricité espagnol est la prédominance des achats en gros sur le marché spot. Au moment de l'affaire, la majeure partie de l'électricité, plus de 90 %, était vendue/achetée au jour le jour sur le marché spot. Aujourd'hui, les contrats à long terme sont encouragés, mais à l'époque telle était la situation. Dès lors, la manipulation des prix sur le marché spot a de nombreuses conséquences pour le coût de l'électricité sur le segment réglementé et sur le segment libéralisé.

Une autre caractéristique est l'absence d'éclatement en sous-marchés en cas de déséquilibre régional entre la demande et l'offre au niveau local. Ces restrictions régionales (congestion au niveau du transport), si elles apparaissent, sont réglées par un système où le régulateur paie à l'unité de production nécessaire le prix de son offre antérieure. Ainsi l'hypothèse fondamentale dans ce système est que la centrale doit faire une offre concurrentielle, et si elle n'est pas dispatchée il est logique de payer ses coûts parce que, si elle n'est pas dispatchée, c'est que le prix de marché ne couvre pas ses coûts. On pourrait dire que c'est là une approche candide et naïve d'un point de vue réglementaire, mais les autres solutions seraient d'introduire l'éclatement du marché en cas de congestion, d'augmenter la capacité interréseaux sur le territoire ou d'introduire des prix réglementés pour ces unités (et cela peut être lent et coûteux à réaliser).

Ce que l'autorité de la concurrence a découvert, c'est que certaines sociétés se rendent compte du fait qu'elles sont indispensables dans ces régions et adoptent une stratégie de retrait volontaire de leur capacité, qui n'est offerte qu'à des prix anormalement élevés. Cela a deux conséquences : (1) les retraits de capacité augmentent le prix du pool, ce qui renchérit par conséquent l'électricité pour tous les consommateurs, et (2) la société concernée obtient des bénéfices au-dessus de la normale pour les unités de production pratiquant ces retraits. Évidemment, il s'agit d'un cas de prix excessifs, d'abus de position dominante, ce qui est toujours très complexe. L'autorité a dû effectuer plusieurs comparaisons tests pour analyser les prix appliqués dans le passé par ces unités et elle a tenu compte du rôle qu'il faut laisser jouer aux prix supérieurs à la normale pour signaler au marché où il faut investir et où il faut affecter de nouvelles capacités. Nous sommes parvenus à la conclusion que ces unités exploitaient de manière abusive le système réglementaire. L'autorité de la concurrence a infligé des sanctions.

Le Président Jenny a donné la parole à l'Australie, qui a posé une question sur les règles régissant les fusions. Le Professeur Lévêque a indiqué dans son exposé qu'il pensait que, certainement pour les fusions dans ce secteur, le gouvernement devait être réellement plus rigoureux dans une certaine mesure. Est-ce que cela signifie en fait que, peut-être, puisque le marché dans ce secteur est si différent des autres marchés de produits, il peut justifier l'application de règles de fusion différentes, ou est-ce que cela signifie seulement « plus rigoureux » sur le plan de la mise en œuvre ? L'Australie indique également qu'elle souhaiterait savoir si les autres pays ont des approches différentes des fusions dans le cas du marché de l'énergie ou s'ils ne s'en tiennent qu'au droit commun des fusions ?

Le Professeur Lévêque a répondu qu'il recommande aux autorités de la concurrence chargées de surveiller les fusions d'être plus rigoureuses parce que le coût de l'erreur de type 1 est plus élevé que dans les autres secteurs, premièrement à cause de l'inélasticité de la demande par rapport aux prix et, deuxièmement, parce qu'en cas d'erreur de type 1 la fusion est autorisée alors qu'elle est anticoncurrentielle. Sur de nombreux marchés, on peut s'attendre à ce que l'entrée et la concurrence d'autres fournisseurs limitent le comportement anticoncurrentiel, mais dans le cas de l'électricité et du gaz, il sera plus difficile d'y parvenir et l'abus de position dominante est plus difficile à prouver. C'est donc la raison pour laquelle nous sommes amenés à faire cette recommandation pour ce secteur.

Le Président Jenny a donné la parole au Professeur Nambu qui revient sur la discussion du délégué allemand et du Professeur Lévêque à propos du problème des contrats à long terme. La relation entre « les contrats à long terme et la concurrence » est un problème plus complexe que ce qui a été dit, a commenté le Professeur Nambu. Les importations japonaises de gaz naturel liquéfié, que ce soit de Malaisie, d'Indonésie ou d'Australie, impliquent forcément des contrats qui doivent être conclus entre deux parties, celle qui vend et celle qui achète. Si la durée du contrat était réduite de 15 à 2 ans, par exemple, que dirait la partie qui vend ? Elle serait obligée de dire que compte tenu de la réduction de la durée du contrat, elle doit augmenter le prix du gaz naturel liquéfié. Par exemple, et c'est un cas extrême, si la durée du contrat était ramenée de 15 à 2 ans, la partie qui vend pourrait dire qu'elle double le prix ou l'augmente encore plus parce qu'elle doit récupérer l'investissement sur cette courte période. Ainsi, le premier effet immédiat est l'augmentation du prix des importations de gaz naturel liquéfié du côté de l'acheteur. Dans le cas du Japon, nous importons du gaz naturel liquéfié à un prix élevé. Bien sûr, l'objection en termes de politique de la concurrence est que le contrat à long terme pourrait être une sorte de barrière à l'entrée ; par conséquent, en réduisant la durée du contrat à long terme, la concurrence pourrait être stimulée. Mais, dans ce cas, nous devons penser à l'ampleur de la baisse des prix de détail ? De quel pourcentage serait la baisse de prix liée à l'introduction de la concurrence ? Nous devons comparer l'augmentation du prix des importations et la diminution du prix de détail. Si le prix des importations augmente de 50 %, il faut que le prix de détail diminue au moins de plus de 50 % si la concurrence est l'objectif le plus important de la politique mise en œuvre. Il est possible qu'une telle évolution se produise au Japon ou dans d'autres pays parce que l'élasticité-prix de l'offre n'est pas très élevée. Aussi y a-t-il peu de chances que l'augmentation du prix des importations soit facilement annulée par une diminution des prix de détail. Le

Professeur Nambu pense que les décideurs devraient faire preuve d'une plus grande prudence, surtout dans le cas du Japon, concernant l'application de la politique de la concurrence aux contrats à long terme.

Le président Jenny a donné ensuite la parole à la délégation suisse pour la présentation d'un cas qu'elle a subdivisé en trois parties : i) le problème ; ii) la réaction du parlement cantonal ; iii) l'incidence de la décision de l'autorité de la concurrence.

i) Le problème : il remonte aux premières années de cette décennie et concerne un refus de transporter des produits énergétiques. En Suisse, il existe environ 900 propriétaires de réseaux électriques qui, pour la plupart, produisent une faible quantité d'énergie. Cette situation remonte à la fin du XIX^{e} siècle, lorsque les communes utilisaient les rivières situées à proximité pour produire de l'électricité et la distribuer. Aujourd'hui, évidemment, les choses ont évolué, mais les structures sont restées les mêmes en grande partie. Bien sûr, une autorisation officielle était nécessaire pour créer un réseau. Quand on la détenait, on se contentait de l'utiliser ; aucune réglementation n'en définissait l'usage. La commission de la concurrence a fait savoir que si l'autorisation officielle était utilisée, les utilisateurs devaient observer les principes du droit de la concurrence, et que, puisqu'ils avaient un monopole, ils ne pouvaient l'utiliser pour interdire le transport d'énergie de concurrents sur le réseau. La logique était qu'il s'agissait d'un abus de position dominante. Or, les entreprises concernées défendaient l'idée que l'autorisation obtenue pour la construction d'un réseau leur conférait une sorte de droit intrinsèque de l'utiliser à leur guise. C'est cette question que le Tribunal fédéral a dû trancher. Il a finalement confirmé notre point de vue selon lequel les utilisateurs ne disposent d'aucune protection juridique leur permettant d'utiliser le réseau comme ils le souhaitent, et sont soumis à la loi sur la concurrence à cet égard.

ii) Ce sont les législateurs cantonaux et pas les tribunaux cantonaux qui ont déclenché la controverse. Ils considéraient que puisqu'il n'existait pas de monopole juridique (mais seulement un monopole de fait), ils pouvaient modifier leurs lois et réglementer dorénavant l'utilisation du réseau. Il s'agissait non seulement d'autoriser sa construction, mais aussi son mode de fonctionnement. Certains l'ont fait. C'est vrai que c'était anticonstitutionnel et le Tribunal fédéral le laissait déjà entendre dans sa décision. L'élément le plus intéressant est que cela n'a pas vraiment fonctionné comme le souhaitaient les parlements cantonaux, parce que la pression du marché était trop forte. La Suisse a plusieurs cantons qui ont adopté une réglementation en la matière, mais en réalité ils ne peuvent pas vraiment l'appliquer. Il s'agit par conséquent davantage d'une anecdote que d'une véritable réponse au problème.

iii) Alors quel est l'effet de tout cela ? Aujourd'hui, les réseaux sont ouverts par principe et l'énergie doit être transportée et l'est effectivement, mais bien sûr la question qui se pose désormais est de savoir à quel prix. Le prix du transport est relativement élevé par rapport au prix final. En Suisse, environ les deux tiers du prix total sont destinés au transport, c'est donc une part très importante. Le marché fonctionne plus ou moins. Nous l'observons. Il ne fonctionne pas vraiment de façon satisfaisante, mais il fonctionne plus ou moins. À cet égard, nous avons eu à trancher deux ou trois affaires concernant des contrats à long terme et à court terme. Notre position a été de dire que la conclusion de contrats à long terme est acceptable, –mais quand nous parlons de long terme il s'agissait d'une durée de cinq ans – et à deux conditions. Premièrement, l'acheteur doit avoir eu une véritable possibilité de choix entre un contrat à long terme et à court terme, et deuxièmement la liquidité doit effectivement exister sur le marché. Il ne faut pas se trouver dans une situation où toute une série de contrats bloquerait le marché pour une longue période. Cependant, ces conditions étaient remplies dans les affaires que la Commission a eu à traiter. Les dispositions fédérales concernant la réglementation du secteur de l'électricité sont attendues et

avant que les prix ne soient régulés d'une façon ou d'une autre si ce n'est pas le cas rapidement, le problème du prix du transport devra être abordé autrement.

Quelles sont les conséquences pour le secteur du gaz ? Les principes fondamentaux qui ont été appliqués dans le cas présent par l'autorité de la concurrence s'appliqueraient également au secteur du gaz, qui est moins important en Suisse que dans d'autres pays. Aucune plainte n'a été déposée jusqu'ici, mais l'autorité de la concurrence commencerait certainement par appliquer les mêmes principes à une différence près, le stockage. Il est possible de stocker du gaz alors qu'on ne peut pas stocker l'électricité. Tous les arguments qui sont invoqués dans le cas de l'électricité pour relier la sécurité aux contrats à long terme valent également pour le secteur du gaz, à l'exception du stockage, qui est techniquement possible dans le secteur du gaz.

Le Président Jenny a donné la parole à M. Smith avant de se tourner vers l'Allemagne pour qu'elle évoque un conflit entre concurrence et sécurité énergétique.

M. Smith a réagi à la discussion précédente et à la relation établie entre les caractéristiques des marchés de l'énergie, la politique concernant les fusions et le droit de la concurrence. On s'est penché sur la question au Royaume-Uni et M. Smith a observé que le Professeur Lévêque avait parfaitement raison ; l'industrie de l'électricité présente des caractéristiques particulières, notamment une demande très inélastique, tout particulièrement durant une courte période, ce qui implique des conditions économiques différentes. L'idée n'est pas nécessairement qu'il faut d'autres critères pour les fusions, parce que les inélasticités peuvent être si extrêmes que cela conduirait effectivement à la conclusion qu'il faut même se soucier des très petites parts de marché. Avec une approche aussi rigoureuse, on risquerait de bloquer des fusions dans des cas où de véritables gains d'efficience peuvent être attendus d'un regroupement. Par contre, cette approche justifie beaucoup plus de vigilance a posteriori et demande de réfléchir comme l'a proposé le Professeur Lévêque à la nécessité de surveiller les marchés, et malheureusement cela conduira sans doute à des cas difficiles comme ceux évoqués par la délégation espagnole qui sont des abus liés à un pouvoir de marché dans une région donnée. On n'en arrive sans doute pas au point de bloquer des fusions qui augmenteraient l'efficience, mais cela ne facilite pas obligatoirement la vie aux autorités de la concurrence et aux régulateurs.

La délégation de l'Allemagne a fait une remarque préliminaire sur son intention de présenter E.ON-Ruhrgas de manière aussi neutre que possible. En 2001-2002, E.ON a racheté 100 % du capital de Ruhrgas AG. Afin de donner une idée de la dimension de la fusion intervenue en 2003, il est à noter que l'entité issue de la fusion, E.ON- Ruhrgas, représentait alors environ 65 % de la production nationale de gaz naturel. Le Bundeskartellamt avait bloqué cette fusion pour diverses raisons qui ont été exposées à plusieurs reprises dans des réunions à l'OCDE. Le Bundeskartellamt invoquait, entre autres, l'argument selon lequel cette fusion renforcerait la position dominante de Ruhrgas sur le marché de la distribution du gaz et entamerait la position d'autres sociétés de transport de gaz en Allemagne.

À la suite du blocage de la fusion par le Kartellamt, les parties se sont adressées au ministère fédéral pour obtenir une autorisation ministérielle. Il convient de savoir qu'en Allemagne on a deux possibilités en cas de blocage d'une fusion par le Bundeskartellamt. L'une consiste à porter l'affaire devant la juridiction d'appel en invoquant une application incorrecte de la loi par le Kartellamt. L'autre est de s'adresser au ministère pour obtenir une autorisation ministérielle de la fusion. Le ministère peut passer outre la décision du Bundeskartellamt s'il pense que la limitation de la concurrence est plus que compensée par des avantages pour l'économie dans son ensemble. Si cette solution est retenue, il s'agit d'une décision très politique et elle est toujours largement débattue dans le public. Les parties ont fini par obtenir l'autorisation ministérielle de la fusion et l'argumentation du ministère a été la suivante. Il a invoqué l'augmentation de la demande de gaz naturel, la dépendance accrue de l'Allemagne par rapport aux importations de gaz, le fait que le gaz venant de Russie serait à l'avenir la source d'approvisionnement de substitution la plus

économique. Mais le ministère a également indiqué que la condition préalable à un approvisionnement fiable en provenance de Russie était de réaliser d'énormes investissements dans le secteur gazier. Ces investissements ne pouvaient être garantis que s'il existait une détermination sérieuse de la part des pays consommateurs, dont l'Allemagne, et la fusion devait contribuer à donner à l'entité fusionnée le pouvoir financier nécessaire pour couvrir sa part dans les besoins d'investissement en Russie. Vu la complexité des arguments invoqués, la validité de cet argument n'a rien d'une évidence.

Pour revenir à la question posée par le Professeur Lévêque : l'approvisionnement en gaz de l'Allemagne est-il plus sûr après cette fusion ? Les autorités de la concurrence n'ont jamais évalué les résultats de la fusion sous cet angle. Une chose est certaine, bien des problèmes auxquels le secteur du gaz en Allemagne est confronté aujourd'hui proviennent directement de la fusion. Personne ne peut dire si elle a contribué ou non à renforcer la sécurité d'approvisionnement en gaz de l'Allemagne. Ce qu'on sait c'est que lorsqu'il a été question de développer un grand gisement de gaz, par exemple, ce n'est pas E.ON-Ruhrgas qui s'est attelé au projet avec les partenaires russes. C'est Vingas, une entreprise beaucoup plus modeste, qui s'est lancée dans cet investissement. Il serait donc intéressant de procéder à une évaluation, ce qui est évidemment très complexe et peut-être pas non plus une mission incombant à l'autorité de la concurrence.

Le Président Jenny a invité l'Italie à présenter une affaire d'investissement dans le secteur du gaz naturel.

L'Italie a d'abord situé cette affaire dans le contexte du marché du gaz italien. La consommation de gaz naturel en Italie est d'environ 85 milliards m3 par an et l'Italie est fortement tributaire des importations. 86 % de la demande intérieure sont couverts par des importations. Le gaz naturel liquéfié représente une part très marginale de la consommation totale de gaz naturel, moins de 5 %, et tout le reste est du gaz naturel venant principalement d'Algérie par gazoduc. En effet, l'Algérie est la source de gaz naturel la plus importante pour l'Italie. Elle représente 37 % des importations. D'autres importations importantes viennent de Russie et de pays d'Europe du Nord. Le gaz est acheminé par des gazoducs internationaux qui sont contrôlés par Eni. La société Eni est dominante sur le marché du gaz italien. Elle dispose de parts de marché très dominantes à tous les niveaux du secteur gazier. Elle est propriétaire de tous les gazoducs internationaux et du réseau national. Elle assure plus de 50 % des importations. Elle contrôle les installations de stockage ainsi que les terminaux de regazéification. Elle détient aussi une part de marché très importante au niveau du détail.

L'affaire concerne l'importation de gaz d'Algérie. Le gaz d'Algérie arrive en Italie par deux gazoducs, le gazoduc transtunisien, qui part de l'Algérie et traverse la Tunisie puis la Mer Méditerranée, rejoignant le gazoduc transméditerranéen, qui passe sous la mer, pour rejoindre l'Italie. Ces deux gazoducs sont contrôlés à divers titres par Eni.

En 2002, TTPC, la société qui détient les droits de transport par le gazoduc transtunisien jusqu'en 2019, a décidé de porter la capacité de celui-ci à 6.5 milliards m3 ; ainsi un volume supplémentaire important de gaz aurait été acheminé vers l'Italie en 2007. TTPC a alors engagé une procédure de mise en concurrence pour allouer des droits de transport aux chargeurs. Au début de 2003, elle a conclu des contrats provisoires avec quatre chargeurs. Ils étaient provisoires parce que certaines conditions devaient être remplies pour qu'ils entrent en vigueur ; les chargeurs devaient notamment obtenir une autorisation de l'État tunisien pour transporter le gaz à travers son territoire et celui-ci devait conclure un contrat avec la Société transméditerranéenne pour le transport par ce gazoduc. Les chargeurs ont eu plusieurs mois pour se mettre en conformité avec ces dispositions.

Entre-temps, Eni a révisé son scénario du marché du gaz italien, parvenant à la conclusion qu'avec l'aménagement d'un nouveau terminal de regazéification, le marché italien allait se caractériser par une

situation préoccupante de surapprovisionnement. Eni a révisé son plan stratégique et les objectifs définis pour les nouveaux projets étaient de maintenir le volume de gaz national, de prendre les mesures nécessaires pour se conformer aux dispositions « take or pay » des contrats internationaux et d'adapter son programme d'investissements au nouveau scénario du marché. La conséquence a été une révision du programme d'investissements de TTPC, qui a informé Sonatrach, le fournisseur algérien, qu'elle avait décidé de reporter l'investissement de 2007 à 2013. TTPC l'a fait quelques jours avant la date butoir fixée aux chargeurs pour se conformer aux conditions. Il était donc évident que TTPC n'avait pas l'intention de conclure un contrat définitif avec les chargeurs. Pendant ce temps, les chargeurs avaient tous évidemment fait le maximum pour se conformer à ces dispositions mais, bien sûr, leurs efforts n'avaient pas abouti étant donné que la collaboration de la société TMP leur était indispensable pour conclure le contrat de transport sous-marin. TMP, détenue en partie par Eni, n'a jamais répondu à la demande des chargeurs de signer un contrat.

Ces différents agissements, considérés globalement, ont été considérés comme abusifs par l'autorité de la concurrence italienne. La violation de l'article 82 se décomposait en deux éléments : d'une part le fait d'exploiter de manière artificielle l'existence d'une disposition contractuelle afin d'empêcher les chargeurs de finaliser leur contrat et, d'autre part, l'absence de mise en œuvre du programme d'investissements prévu à l'origine.

Du point de vue de l'autorité de la concurrence italienne, cette affaire met en lumière deux points essentiels. Le premier révèle l'importance de l'intégration verticale. Bien sûr, l'affaire n'en aurait pas été une si Eni n'avait pas contrôlé TTPC. Elle montre également à quel point l'intégration verticale peut fausser les incitations. Le deuxième point concerne l'importance du respect de la législation de la concurrence dans une situation importante pour la sécurité énergétique. L'exposé de l'Italie conclut que cette affaire serait difficile à généraliser parce que la décision de l'autorité de la concurrence repose sur les circonstances spécifiques à cette affaire, notamment pour ce qui est de la preuve de l'exploitation artificielle de dispositions contractuelles.

Le Président Jenny a donné la parole à la délégation du BIAC (Comité consultatif économique et industriel auprès de l'OCDE) pour qu'elle expose les vues des milieux d'affaires.

Le BIAC a commencé par noter qu'il est essentiel pour une économie concurrentielle de garantir un approvisionnement prévisible et concurrentiel en gaz naturel. Ceci étant, obtenir des volumes de gaz suffisants est une condition préalable pour mettre en œuvre la concurrence. Le fait que quasiment 75 % des ressources en hydrocarbures appartiennent aux États ou sont sous leur contrôle est un élément particulier que l'OCDE doit prendre en considération lorsqu'elle examine les interactions entre la politique de la concurrence et la sécurité d'approvisionnement.

L'industrie s'interroge sur l'application du droit de la concurrence si l'on ne prend pas pleinement en compte le fait que les principaux détenteurs de ressources sont souvent des nations souveraines auxquelles ne s'applique pas le droit de la concurrence. Cela implique premièrement le risque de créer des conditions inéquitables entre les sociétés privées qui sont soumises au droit de la concurrence et les détenteurs souverains des principales ressources ; et, deuxièmement, cela pourrait poser des problèmes de sécurité d'approvisionnement pour les nations qui sont très tributaires du gaz naturel d'un seul et unique fournisseur d'énergie. Certains des principaux détenteurs de ressources pourraient décider, par exemple, de vendre du gaz naturel liquéfié plus particulièrement aux pays où ils obtiennent le régime réglementaire le plus favorable. L'approche de la Commission européenne pour les mécanismes de répartition des bénéfices dans les contrats de gaz, et surtout les contrats de gaz naturel liquéfié, est un bon exemple. Les sociétés publiques en question sont les principaux détenteurs des ressources au Moyen-Orient, par exemple, et elles ne comprennent ni n'acceptent obligatoirement la condamnation, par la Commission, des mécanismes de répartition des bénéfices. Le résultat pourrait être de susciter une forte préférence de leur part à vendre du

gaz sur des marchés comme le Japon, la Corée ou les États-Unis, qui n'ont pas la même approche. En réalité, l'effet pourrait être le même si différentes autorités de la concurrence dans le monde adoptaient des approches différentes concernant les contrats à long terme, par exemple.

À propos des infrastructures, le BIAC encourage vivement les pays de l'OCDE à veiller à ce que la politique de la concurrence ne dissuade pas les investissements et craint que l'accès obligatoire des tiers aux infrastructures ne soit pas sans doute la meilleure méthode pour garantir que les entreprises prennent des risques et réalisent des investissements.

Enfin, le BIAC salue évidemment l'application du droit de la concurrence sur les marchés du gaz naturel et se félicite de l'approche des États-Unis. Le BIAC se demande cependant si de nouvelles mesures sont nécessaires ou si les lois et réglementations en vigueur concernant la concurrence sont suffisantes, à condition d'être appliquées avec efficacité, pour garantir un marché du gaz concurrentiel.

Le Président Jenny a demandé à la Commission de l'UE de réagir à la contribution du Royaume-Uni qui affirme : « Il n'existe aucune obligation de limiter l'application du droit de la concurrence sur les marchés de l'énergie pour des raisons de sécurité d'approvisionnement. Les fournisseurs d'énergie appartenant au secteur public sont sans doute des entreprises soumises à la législation sur la concurrence de l'UE et du Royaume-Uni. » Cela semble être une affirmation très nette sur le fait qu'il n'y a aucune différence à faire pour le marché du gaz ou tout autre marché de l'énergie et que le droit de la concurrence doit s'appliquer dans son intégralité à ce secteur. Le Président a demandé à l'UE de répondre à ce commentaire et d'indiquer quelles mesures elle serait susceptible de prendre en réponse à l'éventuelle création d'un cartel international entre les fournisseurs de gaz.

Précédant l'intervention de l'UE, le Royaume-Uni répète qu'à son avis il n'existe aucune obligation de limiter l'application des règles de la concurrence pour des raisons de sécurité d'approvisionnement. Cette conclusion est un simple corollaire du fait qu'un marché qui fonctionne bien assure la sécurité d'approvisionnement. Toutefois, il est possible d'établir une distinction entre les marchés qui sont libéralisés depuis un certain temps, puisque le marché du Royaume-Uni est libéralisé depuis les années 80, et les marchés qui ont été libéralisés plus récemment et qui craignent peut-être que les forces du marché ne réalisent pas les investissements nécessaires pour assurer la sécurité d'approvisionnement. L'exemple du réseau électrique norvégien montre comment les marchés développés aident à s'adapter aux perturbations. L'expérience du Royaume-Uni apporte la preuve de réactions à court terme et également d'investissements à long terme. Comme on l'a indiqué, le Royaume-Uni a des investissements prévus de l'ordre de 10 milliards GBP.

Il y a cependant une deuxième question connexe qui a été abordée par la délégation américaine et plusieurs autres délégations et qui concerne toutes les autorités de la concurrence : les marchés peuvent-ils fonctionner correctement en présence de certaines restrictions imposées par les pouvoirs publics en matière d'urbanisme et d'occupation des sols. Aux États-Unis, de nombreux projets de création de nouvelles installations de gaz naturel liquéfié sont enlisés dans des procédures complexes et très longues liées à protection de l'environnement ou à l'occupation des sols. La délégation du Royaume-Uni pense que dans ce domaine, comme dans d'autres, toute la question de la mise en œuvre du régime d'aménagement est en effet relativement préoccupante dans la perspective du bon fonctionnement des marchés.

Le Royaume-Uni a également attiré l'attention sur deux points dans sa contribution écrite concernant des affaires de concurrence liées au stockage de l'énergie et à l'application des règles de la concurrence en situation de crise d'approvisionnement

En réponse à la question du Président concernant une éventuelle OPEP du gaz, la délégation de l'UE indique que hormis certaines déclarations publiques, on n'a guère d'informations sur un tel projet d'OPEP

du gaz. Il ne s'agit donc pour le moment que d'un exercice théorique. La vérité est que Gazprom, Sonatrach et les autres acteurs sont déjà très puissants face à la demande et surtout vis-à-vis des membres de l'UE. Ainsi, en principe, il ne semble être aucunement nécessaire pour eux d'établir une coordination pour acquérir un pouvoir de marché. Par ailleurs, il est vrai aussi que des évolutions sont en cours sur ces marchés, un élément essentiel examiné aujourd'hui étant l'émergence du gaz naturel liquéfié et l'apparition de nouveaux acteurs sur ces marchés, en l'occurrence de nouveaux acteurs du côté de l'offre qui peuvent introduire certains changements sur ce marché. De plus, les pays consommateurs (nets) sont davantage conscients qu'à cet égard ils doivent diversifier leurs sources d'approvisionnement pour acquérir un pouvoir de marché en tant qu'acheteur. Cela pourrait éventuellement expliquer pourquoi on voit surgir aujourd'hui sur la scène internationale cet appel en faveur d'une organisation du type cartel.

Il est évident que la Commission de la CE, comme la plupart des participants à la discussion, n'accueillerait pas avec satisfaction un tel cartel de l'offre mais existe-t-il des instruments pour lutter contre ce type de violation du droit de la concurrence ? Si cette organisation devait être fondée sur des accords conclus entre des États souverains en dehors de l'UE, il est peu vraisemblable que les autorités de la concurrence de l'UE seraient compétentes. Si les accords sont conclus entre des entreprises, qu'elles soient publiques ou privées, l'UE aurait compétence, mais c'est une autre question de savoir si les autorités de la concurrence auraient les moyens d'accéder aux informations nécessaires pour poursuivre ce type d'infraction. Il s'agirait donc d'un exemple où la coordination internationale entre les autorités de la concurrence serait indispensable ; dans le cas contraire, il serait relativement difficile de réprimer ce type de comportement pour le moment.

S'agissant des contrats à long terme., l'autorité de la concurrence de l'UE a entrepris une très vaste enquête sectorielle qui a fait l'objet de commentaires publics durant tout le processus, et cet exercice a bénéficié d'un large soutien, sauf de la part des opérateurs historiques intégrés verticalement, qui pensent qu'il ne s'agit pas de la bonne méthode pour aller de l'avant. Un problème qui a attiré l' attention lors de cet exercice est précisément le risque de fermeture créé par les contrats à long terme. En dépit de ce constat, l'autorité de la concurrence de l'UE n'est pas opposée aux contrats à long terme en tant que tels. Il s'agit d'un dossier très complexe, comme cela a été indiqué par plusieurs délégations, parce que ces contrats à long terme peuvent avoir des effets proconcurrentiels qui peuvent être l'unique moyen pour certains nouveaux entrants de pénétrer le marché. Ce type de contrats peut donner de bons signaux déclenchant des investissements d'infrastructure supplémentaires. Le principal problème se pose lorsque les contrats à long terme verrouillent une grande partie du marché, qu'ils portent sur le marché en amont et en aval et qu'ils sont conclus avec des opérateurs historiques. Il n'est pas correct de dire que l'autorité de la concurrence de l'UE a une politique générale qui est opposée par principe à ce type de contrats.

Le Président Jenny a clôturé la table ronde en résumant ainsi les débats :

- S'agissant de la sécurité d'approvisionnement, il y a très clairement deux aspects : la sécurité d'approvisionnement matérielle et la question des prix auxquels les approvisionnements peuvent être obtenus.

- Des exemples très intéressants ont été présentés, par les participants britanniques, par M. Santa, et par la Norvège ; ces affaires convaincantes montrent que les marchés peuvent vraiment, peut-être pas complètement, répondre aux préoccupations concernant la sécurité d'approvisionnement, mais les marchés contribuent certainement à créer une réponse de la demande qui sera sensible aux prix et atténuera par conséquent de nombreux problèmes auxquels nous sommes confrontés. L'élément le plus frappant réside en ce qu'il est possible que le marché apporte une réponse adaptée non seulement à court terme, mais aussi pour les investissements à long terme.

- Sur la question de savoir si la réglementation restait nécessaire, il est apparu que la réglementation incitative n'était peut-être pas tout à fait aussi mauvaise qu'on pouvait le penser, notamment à la lumière des observations de M. de Ladoucette.

- Pour que les marchés deviennent concurrentiels il faut bien sûr remplir un grand nombre de conditions structurelles, ou de conditions juridiques ou réglementaires.

- De longs débats ont eu lieu sur le découplage, et la plupart des intervenants ont considéré un très large découplage comme une condition préalable pour obtenir un marché concurrentiel. Les délégations japonaise et coréenne ont exprimé un certain scepticisme à propos de cette conclusion. Elles mettent en doute qu'un très large découplage soit une si bonne idée, considérant que le pouvoir de l'acheteur est important pour obtenir la sécurité nécessaire et de meilleurs prix de la part des pays fournisseurs d'énergie.

- L'existence d'installations de stockage peut être intéressante pour pouvoir se couvrir contre certaines évolutions et se prémunir contre les perturbations dans l'approvisionnement à court terme. On peut aussi disposer d'une certaine sécurité d'approvisionnement en utilisant les contrats à long terme à condition qu'il existe un nombre suffisant de fournisseurs en concurrence pour offrir des contrats à long terme.

- La mise en œuvre du droit de la concurrence dans ce contexte soulève des questions intéressantes, car la plupart des problèmes qui se posent présentent une certaine complexité pour les autorités de la concurrence.

- Il y a des affaires d'abus de position dominante, y compris des affaires d'exploitation abusive.

- Il est évident que les fusions verticales posent le dilemme entre l'efficience et la concurrence, et ouvrent la possibilité de fermeture du marché.

- Les contrats à long terme peuvent susciter certaines préoccupations, mais de nombreux critères permettent de déterminer quand, ou si, ces contrats sont proconcurrentiels ou anticoncurrentiels.

- Au bout du compte, il est relativement clair, intéressant et peut-être absolument évident que les pays qui se soucient le plus de la sécurité d'approvisionnement sont réticents à un plein essor des marchés et sont très tributaires de l'étranger pour leurs approvisionnements. Les pays comme les États-Unis ou le Royaume-Uni, où les préoccupations sont moins aiguës parce qu'il n'y a pas lieu de s'inquiéter à propos des approvisionnements venant de l'étranger, ont beaucoup plus de latitude et sont bien plus disposés à expérimenter les solutions de marché et à les développer.