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Working Party No. 2 on Competition and Regulation

EXECUTIVE SUMMARY OF THE ROUNDTABLE ON FINANCING OF THE ROLL-OUT OF BROADBAND NETWORKS

16 June 2014

This Executive Summary by the OECD Secretariat contains the key findings from the discussion held during Item IV of the 57th meeting of Working Party No. 2 held on 16 June 2014.

More documents related to this discussion can be found at http://www.oecd.org/daf/competition/financing-of-roll-out-of-broadband-networks.htm.

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EXECUTIVE SUMMARY

By the Secretariat[*]

1. Considering the discussion at the roundtable and delegates' written submissions, several key points emerge:

(1) Nationwide broadband coverage is considered essential for the economic and social development of a country. Ubiquitous access to broadband is therefore a key element in many OECD (and non-OECD) countries' digital agendas and national broadband plans.

2. Widespread high-speed internet access is seen as crucial to economic growth and social inclusion. The World Bank, for example, estimates that a 10% increase in broadband penetration in developing countries brings a 1.3% rise in GDP. Consequently, given the role of broadband as a trigger for social and economic development, many countries across the world have adopted national broadband plans and digital agendas to stimulate the deployment of broadband. Digital agendas regularly stress that broadband should be available to all citizens, not only to those in urban centres with comparably higher incomes. National broadband plans, which tend to have narrower scope than digital agendas, typically focus on a national blueprint for the roll out of infrastructure. Often, such agendas and plans set rather ambitious targets that are typically expressed in terms of population or household broadband internet coverage, as well as in terms of minimum speed to be guaranteed. For example, the European Commission's digital agenda aims for 100% population coverage with a broadband connection of at least 30 Megabits per second by 2013 and at least 50% households coverage with a broadband connection of at least 100 Megabits per second by 2020 in each EU country.

3. It is important to stress that there exist strong regional variations with respect to the definition of broadband. For example, the baseline definition used by the OECD refers to an internet connection that allows the transmission of data with a rate of 256 Kilobits per second, which is rather low considering what technology can now achieve. But this definition was developed more than a decade ago. While some countries are keen to revise this definition and increase the baseline speed, at the moment such revision is unlikely. This is because of the cost that providing widespread access at a higher speed would imply for many countries, especially in the developing world.

(2) The roll out of optical fibre to deliver fast broadband is commercially viable only in very densely populated high-income areas. Hence its nationwide deployment is likely to require some form of government funding. Accordingly, the key challenge that countries have been facing is how to ensure broadband roll-out across all of the country, while preserving private incentives to invest.

[*] This Executive Summary does not necessarily represent the consensus view of the Competition Committee. It does, however, encapsulate key points from the discussion at the roundtable and the delegates' written submissions.

4. The roll out of optical fibre broadband by private investors is commercially feasible only in dense urban areas with high income and high demand. Even so, as the example of the Netherlands suggests, it may take 20 to 30 years before the investments in fibre-to-the-home (FttH) are recovered. In order to limit the risk involved in such long term investments some private operators may try to actively "build" and stabilise demand, e.g. by gaining commitment from customers through long-term contracts.

5. In areas where demand is low, the roll out of broadband by private investors is unlikely. Consequently, other forms of financing are being used to ensure that these areas are not left out, such as:

- direct subsidies (i.e. the EU, the U.S, Chile);
- indirect subsidies, like favourable interest rates or tax breaks (i.e. Japan);
- public private partnerships (i.e. Mexico, this option is also being evaluated in Italy), and
- publicly built (wholesale) networks (i.e. Australia).

5. When subsidies are provided the main question is how to ensure their best allocation without adversely affecting the incentives of private firms to invest. For example, granting a subsidy to an operator to build a second infrastructure where a first one has already been deployed with private funds may seriously reduce the value of the investment already incurred. Also the provision of subsidies for building an infrastructure may crowd out private investments.

6. Some jurisdictions have developed rigid criteria for granting subsidies to ensure that the public sector gets involved only when necessary. One example is the EU. The EU broadband guidelines have clearly set out rules that limit the provision of subsides for broadband roll-out. The Guidelines distinguish 3 types of geographic areas that the national authority granting subsidies needs to identify:

- White areas, where subsidies can be provided. These are areas that have no broadband services and where network expansion by private investors is not expected for at least 3 years.
- Grey areas, where subsidies can be granted but only under specific circumstances. These are areas where one network operator is present and another network is unlikely to be developed in the near future. State support in grey areas is justified if no affordable or adequate services are offered to satisfy the needs of citizens or business users and if there are no less distortive measures available (including ex ante regulation) to reach the same goals.
- Black areas, where no subsidies are allowed. These are geographic areas in which at least two broadband network operators are active.

7. Furthermore, the guidelines contain a number of other conditions that seek to limit the distortion that subsidies for broadband roll-out can cause to competition. For example, subsidies have to be granted through an open tender process, technological neutrality has to be respected, and wholesale third party access has to be allowed at regulated prices.

8. The Chairman of the Roundtable considered that the impact that subsidies can have on incentives to invest as well as the asymmetry of information that exists between regulatory authorities and market players should be taken into greater consideration when deciding about public intervention in broadband.

9. Another example of public intervention that has been extensively discussed is that of publicly funded broadband networks. In Australia, for example, the government has established and is financing a company whose aim is to roll out a broadband network that would reach all citizens. This network should

simply provide wholesale connections, while retail services to consumers will be provided by competing private operators. This model is different from the old-style vertically-integrated monopolistic provider of publicly funded services, which would have also provided retail services.

(3) As technology evolves the cost of providing broadband access also in more remote and/or less densely populated areas may decline. This means that subsidies and other forms of state intervention that seek to ensure the deployment of broadband may become unnecessary to achieve the objectives set in national broadband plans and digital agendas.

10. Due to technological progress high speed broadband access can now be provided through a variety of means, such as optical fiber and wireless networks. For example, a DSL copper network can be upgraded by rolling out fibre to sub-loops (or further) and by 'vectoring'. Cable networks can achieve higher speeds through special transmission techniques such as DOCSIS) or 'node splitting'; where new elements are added to the existing infrastructure in order to serve subscribers through multiple nodes.

11. Since high speed could be achieved through a variety of technologies, objectives regarding the level of access to high-speed connections are increasingly formulated without reference to any specific technology. Indeed, the experts present at the Roundtable have stressed that governments should be cautious when deciding whether to commit public funding to the roll out of a specific broadband infrastructure as they may not be able to pick the "winning" technology.

(4) Infrastructure competition is likely to lead to better market outcomes than when only one network is available. However, the presence of several parallel infrastructures can in many instances be unprofitable.

12. The presence of parallel competing infrastructures usually stimulates investment. For example, in the Netherlands the existence of two networks with national coverage has led the Dutch incumbent KPN to roll-out an optical fibre network (next to upgrading its existing copper network). This, in turn, has pushed the cable operators to further upgrade their networks. Similar examples have also been brought by Switzerland and Germany. It is interesting to note, however, that only recent technological changes have made this kind of competition between infrastructures possible.

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Working Party No. 2 on Competition and Regulation

SUMMARY OF DISCUSSION OF THE ROUNDTABLE ON FINANCING THE ROLL-OUT OF BROADBAND NETWORKS

16 June 2014

This document prepared by the OECD Secretariat is a detailed summary of the discussion held during Item IV of the 57th meeting of Working Party No. 2 on 16 June 2014.

More document related to this discussion can be found at: www.oecd.org/daf/competition/financing-of-roll-out-of-broadband-networks.htm

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ROUNDTABLE ON FINANCING OF THE ROLL-OUT OF BROADBAND NETWORKS

Summary of Discussion

1. **The Chairman** started the roundtable on the financing of broadband networks and its competition implications by noting that the telecommunication industry had evolved considerably since the OECD had discussed it five years ago. At that time, the cost of fibre deployment was considered to be prohibitively high, while according to the submissions to this roundtable the roll-out of fibre may now be commercially viable in densely populated high-income areas. By contrast, nationwide roll-out of fibre is likely to require some government funding, as without subsidies certain areas are unlikely to attract private operators. The Chairman explained that the roundtable would accordingly focus on two issues: the financing of broadband, including the impact of subsidies on private incentives to invest, and the promotion of infrastructure competition in broadband. The Chairman then gave the floor to Ms. Philippa Biggs, an expert from the International Telecommunication Union (ITU), a UN agency.

2. **Ms. Philippa Biggs** (ITU) started by explaining that the ITU had been producing global statistics for its 193 member countries for a number of years. Recently, the ITU had published a report on the state of broadband under the guidance of the ITU-UNESCO Broadband Commission for Digital Development, which tracked progress in five areas: national broadband policies, broadband affordability level of penetration, degree of internet access, and gender divide. On the first area, to date, 140 countries had adopted a national broadband plan. Also, an increasing number of countries had developed so-called "digital agendas", which are broader in scope than national broadband plans. In terms of broadband affordability, Ms Biggs noted that comparing prices for a variety of different packages in 193 countries is extremely complex. Nonetheless the aim is to ensure affordable (amounting to <5% of average monthly income) entry-level broadband services in developing countries by 2015. However, Ms. Biggs remarked, most countries had set very ambitious targets regarding broadband coverage and timescales for its deployment. On the third and fourth areas, the report showed very strong regional variations as internet access was available to only 10% of all households in Africa compared to 75% in developed countries. As for number of households online, it was estimated that globally this figure could reach 40% of households by 2017. But Ms. Biggs stressed that significant uncertainty exists with respect to figures concerning internet user penetration. For example, Google had recently announced that five billion people were still unconnected, whereas the corresponding ITU's estimate was about 4.3 billion. The ITU had also endeavoured to create maps of current networks. Finally, there was still a gender divide with fewer women online than men.

3. The **Chair** thanked Ms. Biggs and asked about the role of the ITU in promoting a common definition of broadband.

4. Mr. Paltridge from the OECD Directorate for Science Technology and Innovation explained that more than a decade ago the OECD had established a baseline for broadband in terms of 256 Kilobits per second. Some countries would now be keen to revise this definition and increase the baseline speed, but at the moment such revision is unlikely. This is because the cost of providing widespread access at a higher speed would be too high for many countries, especially in the developing world.

5. Moving the discussion to the issue of the financing of broadband the **Chairman** gave the floor to the US and asked why municipalities had been rolling out broadband network and if there was any control on whether the public investment undertaken by municipalities were efficient.

6. The **delegate from the US** explained that the US states, and therefore also local and municipal authorities, can decide which technology should be used, how big an area should be served, whether "cream skimming" is allowed or not, and which incentive structures should be used to bring in investment. The delegate mentioned that in 2009 a major legislation had been passed to stimulate the development of broadband in order to further promote economic growth. In particular, Congress had created a new fund, the Broadband Technology Opportunities Program (BTOP), which was administered by the Department of Commerce and Department of Agriculture. These departments decided to target community-anchored institutions and what was referred to as "the middle mile", i.e. areas where broadband was not well developed. Additionally, each grant program was measured against a range of accountability measures to ensure resources were used efficiently. In total, USD 7 billion had been allocated so far to help fund broadband initiatives.

7. The **Chairman** remarked that in Japan the roll-out of broadband was very advanced. However, the high costs of the roll-out led the Government to provide low interest loans, guarantees, tax benefits and other types of subsidies. The Chair asked whether these subsidies were targeted to specific areas and how these areas were selected.

8. The **delegate from Japan** replied that since 1991 the Japanese Government used the measures mentioned by the Chair to support the improvement of the Japanese communications infrastructure by stimulating private sector incentives to invest in broadband technologies (not just optical fibre). These measures were not intended for specific areas. Private carriers, including telecoms companies, had however tended to focus on investing in urban areas rather than rural ones. After the penetration rates in urban areas had become very high, the Government had provided subsidies to municipalities for the development of telecommunications infrastructures in areas where the entry of private carriers into the market was unlikely.

9. The **Chairman** referred next to the Turkish contribution, which described the different forms of government's involvement in broadband. Given that in Turkey 20% of households had been connected to fibre in just a few years, the Chairman wished to know the extent of public funding in the roll-out of broadband and how this support differed with respect to different characteristics of areas and level of household income.

10. The **delegate from Turkey** explained that the fibre network infrastructure and the customer base had grown significantly between 2010 and 2014 because the regulator had introduced 'regulatory holidays' for fibre networks. In other words, no special obligations had not been imposed on the operator that was found dominant in this market, for example no requirement to grant access to its infrastructure at regulated prices. The delegate added that fibre networks are expected to enjoy this regulatory holiday until fibre subscription reaches 25% of all households.

11. The **Chairman** remarked that the EU was the only jurisdiction, where subsidies were subject to legal control. Since recently there had been a revision of the 2009 guidelines on state aid in broadband, the **Chair** asked the EU delegation to explain how and why these had been revised.

12. The **delegate from the European Union** explained that in the EU broadband infrastructures are considered crucial for economic and social development. Accordingly, the EU had adopted a digital agenda, which had set ambitious targets for broadband, namely that by 2020 the entire EU should be covered by broadband above 30 Mbps that at least 50% of the households should have access to broadband

with download speeds of at least 100 Megabits per second. However, private investment is unlikely to be sufficient to achieve these objectives, especially in less populated areas. Therefore, public funding is considered necessary.

13. The EU state aid rules seek to ensure a level playing field for all operators in the European Union and they aim to avoid the crowding out of private investments. State aid rules also avoid the creation of local monopolies. For this reason, they require open wholesale access to the infrastructure financed through public subsidies. State aid control can also help to inject competition to areas where there was none before. Therefore, under certain conditions, it may be possible to grant state aid for the roll-out of an additional competing infrastructure. Finally, the in order to accelerate the roll-out of next generation access networks, less strict state aid rules apply with respect to very fast networks.

14. The EU delegate explained that state aid can be granted only after the aid granting authority has classified the territory into "white", "grey" and "black" areas depending on the level of deployment of broadband infrastructures. The mapping should take into account also all plans for the deployment of new infrastructures in the following three years. White areas are those where there is essentially no broadband infrastructure. In grey areas there is already at least one infrastructure, and in "black" areas there are at least two infrastructures. Once the mapping has been carried out, the public authority should conduct a public consultation that would allow interested parties to express their views on whether the map is correct. Next, state aid should be provided only in black areas and under specific circumstance in grey areas. These subsidies should be assigned through a competitive bidding process, in which the most economically advantageous offer has to be chosen. The tender should be designed in a technologically neutral manner. Also, under the new rules every winner has to give wholesale access to its infrastructure at prices set on the basis of a benchmarking. If no prices are publicly available then the national regulator has to set prices at a reasonable and fair level. Finally, the national aid granting authority has to monitor the project in all its milestones and it has to claw-back any excessive profits generated by projects with a budget of over EUR 10 million.

15. The delegate explained that the 2009 guidelines had been revised because it had been considered that some changes were necessary in order to ensure the achievement of the objectives set in the Digital Agenda. However, the revision did not lead to any radical changes. The main change consisted in less strict access conditions for very fast NGA infrastructures that offer download speeds of more than 100 Megabits per second. For the rest the revised guidelines mostly contained clarifications to ensure that it was technologically neutral. Also, the compatibility criteria had been refined, in particular with respect to open wholesale access. There had also been some minor changes regarding transparency requirements; for example, information on the amount of the aid that had been granted, the beneficiary and the technology used has to be published on a public website. Finally, the role of the national regulator has also been enhanced, e.g. the regulator had to ensure that wholesale access prices were set at a reasonable level.

16. The EU delegate then referred to the latest development in the area of broadband: the adoption of the general block exemption regulation, which entered into force on 1 July 2014. The regulation exempts Member States from notifying state aid projects that prima facie do not create competition problems. This concerns in particular broadband projects in "white" areas, where the aid is moreover allocated in an open, transparent and non-discriminatory manner, where access prices are based on benchmarking, and where there is a claw-back mechanism for excessive profits on projects above EUR 10 million.

17. The **Chairman** mentioned that in France state aid had only been granted in areas where private development would be unprofitable. The **Chairman** asked France to explain how these areas were identified and how the negative incentive to invest associated with subsidies was taken into account.

18. The **delegate from France** responded that it was possible to distinguish different types of areas: densely populated areas that could support competition between several operators, each investing in their own infrastructure, and less populated areas where investments were less likely or not likely at all. To identify where private investments would not take place operators were asked, in 2010, to manifest their interest to co-invest in all less populated areas of the country. The operators expressed interest to co-invest in ca. 3.400 municipalities, equivalent to roughly 57% of the French population. These were identified as the "grey" areas. Instead the "white" areas were those where no operator expressed an interest to invest. Public subsidies were thus made available for these areas. In terms of technological requirements, the operators had to install FTTH (fibre-to-the-home) in densely populated and in the "grey" areas, whereas several technologies could be employed in the "white" areas in order to facilitate coverage and limit costs. Such a distinction was made because it was considered that in densely populated areas it was necessary to have a standard technology, since there is an obligation to share certain parts of the infrastructure.

19. The **Chair** turned to the Netherlands and remarked in its territory were present two major networks - cable and telecommunications -operating side-by-side. He also noted that the government had intervened to ensure the roll-out of fibre-to-the-home across the country. Hence he was wondering the **Chair** wished to know why it was necessary to subsidize the roll-out of fibre also in a densely populated area like Amsterdam, if there was already a healthy competition between two major providers.

20. The **delegate from the Netherlands** reported that the authority's priority was to ensure appropriate incentives for private investments. The contribution provided two examples of government involvement: one in a small city, where it had been prohibited, and one in Amsterdam, where it had been allowed. In case of Amsterdam, the Government intervened in 2007, at the early stage of the deployment of fibre. The infrastructure had not been subsidized by the municipality of Amsterdam, although the municipality acquired a stake in a fibre network company. In 2009 this stake had been sold to a private investor (Reggefibre), which had subsequently been taken over by the incumbent. Since then KPN/Reggefibre had rolled-out fibre that covered more than 25% of the country. In hindsight, the involvement by the municipality of Amsterdam in 2007 was premature.

21. The delegate then noted that the last few years had shown that different networks are capable of offering next generation speeds. For example, the cable network operator had substantially invested in DOCSIS, which allowed the network to offer a speed of up to 200 Megabits per second, well ahead of the targets set in the digital agenda. Also, the upgraded copper networks could soon offer speeds of over 100 Megabits per second. Hence, the market may actually offer more than has been expected beforehand. Therefore, governments should be cautious when providing public funding if private firms are investing in new technologies and their roll-out. For example, even in rural areas in the Netherlands, the market players were still unclear on the technology/technologies that could fill the existing gap to provide digital services.

22. The delegate concluded that the role of governments and regulators should be to encourage private investments. For example, in the Netherlands, competition between two networks with national coverage created strong incentives for market players to invest in the next generation technology. However, the Netherlands is densely populated and thus it has few "white" areas, so investment costs and risks are quite modest compared to many other countries. To create the right incentives for private investment, the government could for example ease procedures for investing while the regulator should implement access regulation that reduced the risks for investors. For example, in 2009 the regulator implemented a model that accounted for real capital expenditures, so that investors could at least earn those back. The regulator also allowed higher returns to compensate for the higher risk linked to investments in fibre. The delegate added that the intention of the regulator is to prolong the existing regulatory regime for more than 3 years, in order to encourage investors. The delegate concluded by stating that in his view the

European Commission's recommendation on non-discrimination and cost-based prices, that had been issued in 2013, placed too much risk on the investors.

23. The **Chair** remarked that the roll-out of broadband had been left to market forces also in Denmark, where state aid had been made available only in marginal cases, such as on the small island of Bornholm. The Chair asked the delegate whether there were guidelines in place that determined where to make subsidies available.

24. The **delegate from Denmark** stated that Bornholm was currently the only example of an area that qualified for state aid and that the aid amounted to DKK 60 million. However, the authorities were awaiting for a sufficiently detailed mapping of broadband access and for reports on the state of competition in the telecommunications market to determine if further government involvement was necessary. Therefore, in the future there could be further cases of state aid, even if in general, the Danish government is reluctant to intervene as it believes that market forces are sufficient. The delegate concluded by stating that at the moment there were no plans for investing more public funds.

25. The **Chair** then asked Lithuania which criteria had been used to identify areas where state aid could be granted and whether the impact of subsidies on the incentives to invest had been taken into consideration.

26. The delegate from **Lithuania** clarified that to grant state aid, the responsible authority had first organised a public consultation to determine whether firms would want to invest in certain areas, and based on the replies it received the authority identified the "white" zones. So far private investors had generally been willing to invest across the country, consequently state investment had not been huge while 97% of the population has broadband access.

27. The **Chair** noted that in Sweden a number of municipalities had been involved in the roll-out of the broadband infrastructure, although the decision whether to invest in the roll-out had largely been left to the market. He asked Sweden to better explain how this had been achieved.

28. The **delegate from Sweden** confirmed that Sweden had a market driven, local roll-out of broadband, with some coordination from the national government. The competition authority, together with the telecom regulator and the Swedish association of local authorities, had prepared a document which stated clear principles limiting municipal interventions in the broadband market. As Sweden is not a densely populated country, government intervention was necessary to ensure the roll-out of broadband to remote areas. The delegate pointed out that in Sweden municipally-owned companies are responsible for a large part of the rental housing, which explains why many of them get involved in the roll-out.

29. However, municipal investments had frequently been undertaken in situations where the limit for municipal action had not been clear under the Swedish public law. According to public law, local government and companies can only carry out and support activities that are of common interest in their area. Moreover, municipally-owned firms are not allowed to make profits. Municipalities are therefore forced to act in a way that is not neutral to competition as they cannot make profits in the same way as the private sector can. There had thus been considerable debate about the level of profits that should be allowed to cover capital expenditure, without running into the issues of state aid, and about what should be done if generated profits exceeded the capital expenditure. The debate led to some proposals that had been put forward to clarify the applicable regulation. The delegate added that municipal companies are subject to Swedish competition law, as all other companies, and that since 2010 Sweden has had a specific provision regulating public sector activity in the market, which forces public companies to give access to their infrastructure. It has not yet been possible to evaluate the impact of this provision. However, most municipal network infrastructure had been open to competitors. The delegate concluded by stating that so

far, the Swedish competition authority had not considered the present regulations to be problematic from a competition policy standpoint, although the provision of network infrastructure by local authorities had raised concerns with respect to competitive neutrality.

30. The **Chair** asked how the system of subsidies worked in the UK where over 70% of households were connected to very fast broadband, and where such high penetration had been achieved through public subsidies.

31. The **delegate from the UK** responded that the UK had a national roll-out program for very fast broadband based on a "gap funding model", according to which the public sector provided subsidy necessary to make up for any shortfall in private investment. The private investor would bear the full risk of take-up not reaching 20%; if take-up was higher, a risk-sharing mechanism allowed a proportion of the additional revenues to be clawed back and reinvested in further roll-out.

32. The **Chairman** referred to a study by the German federal ministry of the economy, cited by BIAC, that concluded that nationwide broadband coverage of at least 50 Megabits per second could be achieved four or five times more cheaply by a mix of technologies than pure fibre optic network. He asked whether this would reduce or eliminate the need for subsidies.

33. **BIAC** first pointed out that it is well known that the creation of the next generation broadband is crucial to economic and social growth as well as regional cohesion. For example, the World Bank estimated that every 10% increase in broadband penetration leads to 1.3% of GDP growth in developing countries. The delegate then referred to the objectives set by the European Commission in its digital agenda for 2020 for broadband roll-out; e.g. the target of having 100% of the population covered with connections of at least 30 Megabits per second and 50% of households connected with at least 100 Megabits per second. The delegate then explained that in order to achieve such ambitious targets it is necessary that private operators and public bodies complement each other. This is because in some geographical areas there is no business case for rolling-out broadband networks without state intervention. Where state intervention is necessary, it has to be as efficient as possible.

34. BIAC recalled three general principles that seek to ensure that state intervention is efficient. First, there should be no crowding-out of private investments. Second, all subsidies should technologically neutral and third, wholesale access should be grated on all subsidized networks. Accordingly, the broadband guidelines and the legal framework provided by the European Commission require the mapping of existing and soon to be achieved geographic coverage in order to identify potential market failures; otherwise intervention could take place in regions where it was unnecessary. Furthermore, public consultations and credible commitment from those operators who claim they would invest in certain areas are essential. This in turn required selection through a competitive bidding processes. The delegate also confirmed that a mix of technologies is likely to significantly lower the costs of rolling-out new generation access networks, hence technologically neutral subsidies are essential to achieve the most efficient outcome. Unfortunately, according to BIAC, the legal framework did not always follow these principles. While the EU broadband guidelines implemented the principle of technological neutrality and took into account the demand for wholesale services to identifying the wholesale products to be offered by the beneficiary of the aid, the same could not be said about the general block exemption regulation. BIAC concluded that the block exemption should be aligned with the broadband guidelines to achieve better results.

35. The **Chair** concluded that new technological developments had made it possible to deliver high speeds through a mix of technologies, including dated ones (such as copper) and that further technical progress could be expected.

36. The **delegate from Australia** explained that Australia had adopted an approach that differs very much from the experiences of most countries. To roll-out nationwide broadband the Australian government had established, and had been financing NBN, a national broadband network company. NBN had been set up as a wholesale-only broadband network with open access obligations. In addition it had been decided that the broadband network elements of Telstra, originally the government-owned vertically integrated operator, and the second telecommunications operator, the cable operator Optus, would be integrated into NBN. Hence this would have led to a single network providing regulated wholesale services, while a number of competing operators would provide retail services.

37. However, the roll-out of the infrastructure had been exceeding the budget and it had also been falling significantly behind schedule. Consequently, last year the new government had initiated a strategic review. The original plan to have ubiquitous fibre to the premises had been replaced by the use of a range of fixed line technologies, depending on local circumstances. The delegate noted that the regulation of NBN was currently under review, including the extent of the government's involvement and the scope for introducing infrastructure competition.

38. The **delegate from Chile** explained that Chile had had subsidies for broadband infrastructure for almost 30 years. Subsidies were assigned to the company that asked for a lesser amount of subsidy. In 2011, the competition tribunal had recommended a change to the existing regime according to which subsidies should be given to the company that had offered to charge the lowest price to consumers. However, no decision had yet been reached on whether to follow this recommendation. The delegate concluded by adding that subsidies could only be re-negotiated twice and after that the operator had to assume full risk for the project.

39. The **Chair** moved the discussion to the second issue: infrastructure competition in broadband services. He started by stating that infrastructure competition in broadband already exists, especially in countries where traditionally a cable industry and a telecoms provider operated side-by-side in most geographic areas. The **Chair** noted that in Switzerland market players had decided that in certain areas every home should be supplied by a network with four different fibres which are owned by Swisscom - the Swiss telecoms incumbent – and a local utility. Swisscom and the local utilities notified their co-operation agreement. The **Chair** wished to know why it was felt that four competitors were necessary and what was the nature of the agreement between the public utilities and Swisscom.

40. The **delegate from Switzerland** first wished to clarify that in Switzerland telecoms regulation applies only to copper, and not fibre. As for the development mentioned by the **Chair**, the delegate explained that the whole process had been started by public utilities when they had decided to enter the fibre market. As a consequence, Swisscom also decided to have its own fibre network and it invited the public utilities to cooperate. The competition authority became involved when the public utilities and Swisscom notified co-operation agreements related to the building of several overlapping fibre networks. These co-operation agreements included some potentially anti-competitive clauses, e.g. only public utilities could offer "dark" fibre or that one party could notify to the other party price discrimination in order to maintain a certain price level, which would effectively eliminate aggressive price competition. The delegate explained that although the Swiss Competition Commission could not forbid such clauses, it could threaten to impose sanctions in the future as these clauses were subject to ex-post evaluation. In the end, the entities had proceeded with the roll-out without the clauses that had caused competition concerns.

41. The delegate acknowledged that the Swiss solution involved high capital expenditures, but stressed it would generate competition between providers. However, due to the very close co-operation between Swisscom and the public utilities, he admitted that there was a risk that they could implement the anti-competitive clauses, even though these were no longer part of the official agreement. Overall, the

delegate considered that there were encouraging signs of active competition between providers and that the recent introduction of the first offer based on fibre had led to a real drop in prices.

42. The **Chairman** asked whether the Belgian competition authority had in any way been involved in the government plan for the roll-out of broadband, which foresaw a systematic coordination between regions, communities, municipalities as well as operators.

43. The delegate from **Belgium** explained that the Ministry of Economics had developed a national plan for the roll-out of high and very high speed internet, which however still needed to be approved by the new government. This plan had been conceived to open the market to new operators in order to create effective competition, even though some competition had already existed. For the plan to be successful, it would be necessary to carefully coordinate public and private activities. Currently, it was envisaged that the federal regulator, and not the competition authority, would be directly involved in this plan.

44. The **Chair** wished to discuss the spectrum auctions launched in Colombia in 2012 and 2013 for the provision of 4G services and the role the competition authority had played.

45. The **delegate from Columbia** answered that a government-led sector study detected the risk of dominance in the mobile market. The competition authority thus assumed the role of a mediator between the regulator, the institution in charge of the allocation of spectrum, and market players to convince them of the importance of a competitive allocation process for the spectrum.

46. The **Chairman** opened the floor to comments and other presentations.

47. The **delegate from Mexico** reported that Mexico had decided to have a new public-private wholesale access carrier. The Ministry for Communications and Transport was in charge of its development while the Federal Institute of Telecommunications was responsible for its regulation. The objective was to have a nationwide broadband network funded through public and private investments and that would offer wireless access, using a large share of the 700 megahertz band. The network would also use the fibre optic network of the Federal Electricity Commission. this network should become operational before the end of 2018 and it would only offer wholesale services to carriers and to virtual operators on a non-discriminatory basis, and it is expected that. The delegated added that in the process of setting up a public-private carrier, Mexico had paid special attention to ensure that all regulations comply with the principle of competitive neutrality, and that the government involvement, as well as its role as an investor, is clearly defined.

48. The **delegate from Germany** said that the question of how to best finance broadband expansion had also been lively debated in Germany. The problem of financing was one of the reasons why Germany had been behind in terms of broadband roll-out compared to what was generally anticipated some years ago. Therefore, at the beginning of the last legislative period the government had called on the relevant authorities to examine the options available to roll out broadband without restricting competition. It was expected that broadband expansion could be boosted through co-operation between big, nationwide players and smaller regional ones. In 2010, the German competition authority published a comprehensive analysis on the possible forms of co-operation between different types of companies, focusing in particular on the possibility of parallel and complementary network expansion, with or without the participation of Deutsche Telekom, the incumbent telecoms operator. The authority also discussed in detail various co-operation projects with companies. However, these projects had not been realised because the companies were unable to agree: not only were the costs of expansion high, but demand for higher transmission capacity had only recently increased.

49. The delegate pointed out that the industry was consistently calling for an easing of regulation and competition law enforcement arguing that revenues in Germany were generally lower than in other parts of the world and that there was a trade-off between competition and investment. According to the delegate, it was not clear, however, that higher revenues resulting from less competition would in fact be invested. Investments in Germany had taken place in the presence of infrastructure competition between cable and telecom companies. Therefore, the easing of regulation to the benefit of the incumbents and to the detriment of competition was not the right strategy to pursue.

50. Another argument often raised by the industry was that competition law enforcement prevented consolidation, and hence economies of scale, which would be positive for investments. However, this did not seem true. If economies of scales were indeed important individual providers would have made more use of the opportunities to expand into other geographic markets. The delegate concluded by stating that measures to advance the creation of the internal market should be strengthened, i.e. barriers to entry should be further reduced, while state aid should be used reasonably and only when necessary.

51. The **delegate from Italy** explained that its national digital agenda was clearly modelled along the lines of the European digital agenda. Italy has already complied with the first EU broadband target, i.e. almost 100% of the population is covered by basic broadband. However, the level of coverage of the next generation fixed network remains amongst the lowest in Europe, so Italy lags behind in achieving the second objective of the digital agenda.

52. Investment plans of the major network operators seem to indicate that by 2017, 50% of the population could be covered by the next generation broadband network. However, the problem with these plans is that they had unrealistically focused on a specific technology (fibre-to-the-cabinet) and had no detailed operational plans. Moreover, the main operators are basically all investing in the same high-density areas. Under these circumstances the Italian competition authority together with the telecom regulator had launched an investigation to assess whether the main operators' focus on fibre-to-the-cabinet is likely to hamper the achievement of the objectives of the digital agenda, and whether public-private partnerships could induce more investment, in particular in grey areas.

53. The **delegate from the US** explained that in terms of competition between providers, US states can ban broadband offerings at the municipal level. Indeed, 20 out of 50 states had placed restrictions on municipal broadband entities, which varied from a complete legislative ban at the state level to various types of restrictions, and threat of legal action. In the past, the telecoms regulator - the Federal Communication Commission (FCC) - had not paid great attention to this issue. However, the current FCC Chairman had recently said that community broadband should not be stopped by state laws, which were promoted by cable companies to limit competition; and the FCC would exercise its power to prevent states from banning or restricting competition from community broadband service providers.

54. The **Chair** concluded that it was quite clear that the development of broadband infrastructure was a priority for all countries, even though the way broadband roll-out was financed differed. He noted that the adverse impact that public subsidies could have on the incentives to invest, as well as asymmetry of information between the regulator and the operators, were seldom taken into consideration in the design of policy, while they should warrant more analysis. The Chair also stressed that while in the past it was thought that fibre was the technology for the next generation of access networks, the newest developments have revealed that a combination of mobile, fibre and copper technologies could lead to high connection speeds at lower cost. This of course has an impact on competition. Finally, he argued that discussion had shown that competition is an important driver of investments. He gave the example of those countries where cable and telecoms networks co-existed and competition between had led to benefits for consumers in terms of higher quality, more choices and lower prices.