Chapter 2

Danish governance and policy context for regional strategies

The relatively new regions in Denmark, mainly responsible for health care, are tasked with regional economic development to promote growth. This chapter first considers the mandates and institutions associated with the regional authorities. It then reviews the regional development policy context as well as that of national innovation and business development policies. The regional role in a multi-level governance context of municipalities, central government, and the EU is discussed. The chapter then explores the governance challenges of co-ordination within the region (among municipalities), with central government, and with other regions in Denmark and beyond to best achieve national and regional growth goals.

Introduction

The new regions in Denmark are charged with promoting regional growth, thus contributing to national growth. Their competencies are mainly for health care, but they were also given a mandate for regional development. New regional institutions and strategies have been created to achieve this mission. Strategies tend to channel financial support to economic development and projects in prioritised economic sectors, as well as horizontal priorities offering a stronger enabling environment for firms. Nevertheless, most public policies and resources to support regional development are outside the competences of regions (e.g. the relevant educational institutions are financed by the state). Regions therefore need to align effectively with other public and private stakeholders across levels of government to finance and implement their growth strategies. This alignment includes several national ministries with respect to different policy areas, such as innovation and business development policies.

The regional development mandate: national and regional roles

Regions are primarily responsible for delivery of health services…

Two governance reforms to consolidate sub-national jurisdictions have mainly addressed needs for economies of scale and separation of tasks for service delivery. A first reform in 1970 restructured the sub-national landscape from 25 county council districts and 1 300 parishes to 14 counties and 275 municipalities. A second reform in 2007 further consolidated to 5 regions and 98 municipalities (see Box 2.1). The process was undoubtedly swift by international (and indeed Scandinavian) standards (Bukve et al., 2008; Thomsen and Nielsen, 2008). This second wave resulted in few mergers between local authorities in the metropolitan Capital Region, while large local authorities were created in the rest of the country through a bottom-up negotiation process with limited central government involvement.

While tasks were moved between the three tiers of government with the most recent reform, regions maintain health care and gained responsibility for regional development. It should be noted that the former *Amter* (counties, i.e. smaller regions) did take action in regional economic development even if there was not the same degree of formal responsibility. Health care nevertheless dominates the regional agenda in terms of expenditure, personnel and political attention. All other tasks – specialised welfare provisions in education, social services and environmental protection – were divided between local and central government. Both local and regional authorities are led by elected councils, but while local authorities have tax powers, regional authorities rely on transfers from central and local government (Thomsen and Nielsen, 2008). Concerns about the capacity of the 14 former *Amter* to manage health and social services in the face of escalating costs, waiting lists and public expectations were part of the background for local government reform. The drawing up of (most of) the borders of the new regions around major university/research hospitals also brought health to the fore.

Box 2.1. **Sub-national governance reforms: new regions and municipalities since 2007**

Since 1970, Denmark has had two major reforms to sub-national governance. Before 1970, Denmark was divided into 86 boroughs and approximately 1 300 parishes within 25 county council districts. The 1970 reform resulted in a first wave of consolidation, reducing the number of counties (*Amter*) to 14 and the number of municipalities to 275. This round of reforms created the basis for restructuring the distribution of some tasks and costs from the state to the counties and municipalities. First, municipalities and counties acquired more influence and more tasks within social services and health care. The transfer of tasks continued after 1970. Later, counties became responsible for local upper secondary schools, state upper secondary schools, and their courses. A major part of the reimbursement schemes were replaced by general state grants – the so-called block grants – and financial equalisation schemes between the rich and the poor municipalities were expanded.

The 2007 reforms resulted in further consolidation, some modifications to responsibilities, and the creation of new bodies. The Commission on Administrative Structure noted problems with the post-1970s model: *i)* administrative units too small for many of the administrative tasks; *ii)* responsibility for some tasks divided across several decentralised administrative units (preventing coherence and co-ordinated efforts); and *iii)* parallel functions and tasks. To address these concerns, mainly associated with the human service delivery tasks, the 14 counties were restructured into 5 regions, and the 271 municipalities to 98. Prior to 2007, more than a third of the population (1.9 million) lived in municipalities with less than 20 000 inhabitants. After the reform, less than 1% of the population (approximately 55 000) were projected to live in municipalities with less than 20 000 inhabitants. The distribution of tasks in terms of expenditure before the reforms was 46% municipalities, 14% counties and 40% the state. The estimate after the reforms was 48% municipalities, 9% regions (previously counties) and 43% the state.

Box 2.1. **Sub-national governance reforms: new regions and municipalities since 2007** (*cont.*)

Responsibilities (post-2007 reforms)
State
– Police, defence, legal system – Foreign service, official development assistance – General planning within the health care sector – Education and research except primary school and special education – Unemployment insurance, working environment and overall employment policy – Taxation and collection of debt to the public authorities – Social services: National Knowledge and Special Counselling Organisation (VISO) – General road network and the state railway – General nature, environmental and planning tasks – Certain cultural measures – Business economy subsidies – Reception of asylum applicants
Region
– Hospital service, including hospitals, psychiatry and health insurance as well as general practitioners & specialists – Regional development, i.e. nature, environment, business, tourism, employment, education and culture as well as development in the fringe areas of the regions and in the rural districts. Secretarial service for the regional growth fora – Soil pollution – Raw material mapping and planning – Operation of a number of institutions for exposed groups and groups with special needs for social services and special education – Establishment of transport companies throughout Denmark
Municipalities
– Social services: total responsibility for financing, supply and authority – Child care – Primary school, including any special education and special pedagogical assistance for small children – Special education for adults – Care for the elderly – Health care: preventive treatment, care and rehabilitation that do not take place during hospitalisation, treatment of alcohol and drug abuse, home care, local dental care, special dental care and social psychiatry – Activation and employment projects for the unemployed without insurance in job centres[1] – Integration and language education for immigrants – Citizen service regarding taxation and collection in co-operation with state tax centres – Supplies and emergency preparedness – Nature, environment and planning: e.g. specific authority and citizen-related tasks, preparation of local plans and plans regarding waste water, waste and water supply – Local business service and promotion of tourism – Participation in regional transport companies – The local road network – Libraries, schools of music, local sports facilities and culture

Notes: 1. Initially, the job centres were a joint responsibility of the state and the municipalities. Since 2009, municipalities are entirely responsible, via a network of 91 job centres, for all contact with the unemployed and those receiving worker disability benefits.

Source: Government of Denmark (2005), *The Local Government Reform – In Brief*, Ministry of the Interior and Health, Department of Economics, Copenhagen.

One challenge with the sub-national reform concerns the capacity for the provision of specialised services, particularly at municipal level. While municipalities and the regional level were consolidated to rationalise public service delivery, in some cases the additional responsibilities are difficult to manage. Therefore, municipalities are less able to provide the more specialised social services within their mandate that were transferred from the prior regions (*Amter*). So while some areas for co-ordination are now internalised, there are others where inter-municipal co-operation may still be relevant, such as those related to business development. At regional level, the development of more specialised services via regional hospitals is progressing, with the resulting trade-offs in proximity of services expected with service rationalisation.

There were different political positions regarding the reform, ranging from eliminating a regional layer to maintaining one. The political outcome was larger units with a slimmed-down regional tier. Given the relatively pragmatic and consensual approach in Denmark, the current situation had been generally accepted and despite recent debates about health care, their existence has been reaffirmed by the change in government late 2011. The new government has also announced an evaluation of this structural reform, which will include an evaluation of the division of labour between central government, the regions and municipalities. Nevertheless, some municipalities and sub-regional units have expressed reluctance to invest in building relations with the regional level given the uncertainty. This reluctance limits the potential of the regional level for achieving its regional development mission which, given a restricted mandate and specific funding streams, requires partnership and alignment across levels of government to be successful.

…with regional development being a new formal competence of regions post-2007…

Regional boundaries drawn for service efficiency, not economic development per se

While the reforms appear to support bottom-up regional development policy, this is in part due to political bargaining at the time.[1] What few would have predicted in advance of reforms was that the second-most important activity of the new regions would become a statutory requirement to pursue regional development through a new partnership-based institutional setup. This changes the trend from decades of voluntary involvement of the Danish *Amter* (counties) with economic development activity. The regionalisation of economic development activities in theory allows for development of solutions that reflect the specific needs of individual regions, including social partners, other tiers of government, and private sector actors.[2] Furthermore, in terms of administrative rationalisation, the regions create an organisational platform that fulfils EU Structural Fund regulations and thus integrates both European policy programmes and mushrooming sub-national activities (Indenrigs- og Sundhedsministeriet, 2004). The reform therefore created a new governance set-up that involved new geographies and politics of regional growth and innovation.

The centrality of a partnership principle grew out of the political negotiations that added these regional development competencies. The idea was not initially part of the reform preparations, but was ultimately translated into a blueprint for the new regional growth fora (RGF, see below). The partnership approach brought on board other actors with a vested interest in regional development policy, beyond the regional council, such as local authorities and private sector representatives. These partnerships thereby increase the general legitimacy of regional business development policies, appealing to political actors less in favour of a regional layer.

As the geography of the new regions was largely determined by health care considerations, each region has a mix of development areas to serve (Figure 2.1). There is no ideal set of boundaries for regional economic development, and the regions are therefore governed by institutions that cut across functional economic regions. Functional economic regions in this sense refer generally to areas of commuting flows, but for innovation and business development, that functionality may have a somewhat different footprint. Many local authorities outside Copenhagen have grown significantly through the merger of four to six previous authorities around a medium-sized city. The mergers often made sense for commuting patterns, but have created discussions along urban/rural lines about possible centralisation of welfare services such as education. Another by-product of the municipal mergers is that they are larger and therefore more competitive among themselves to bid for jobs and investments. The diversity of areas in regions outside of the Zealand and Capital Regions (except Bornholm which has its own RGF) is evident both in terms of wealth and designation for intensive policy support for EU Structural Funds, and national policy that sets a minimal investment of 35% of overall regional development funding that has a positive impact on "peripheral" areas.[3]

Despite the small size of Denmark, the redrawing of regional administrative borders has created a new politics of place. Existing points of place attachment were in large part eliminated. In practice, this is likely to be visible at both the local and the regional levels. Some of the old *Amter* were like regions, in the sense that citizens felt a regional identify and would refer to themselves as coming from them, e.g. *Fyn* (Funen) or *Sønderjylland* (the border area which was part of Germany from 1864 to 1920). Such identifications were maintained through separate media services and language patterns. While most *Amter* were low-profile administrative units, providing a variety of welfare services and therefore relatively mergeable from a service efficiency perspective, the existence of sub-regional identities in the new Southern Denmark Region poses particular political challenges when joint strategies have to be established. There are vested political interests as well as perceived differences in identity that render political bargaining more important.

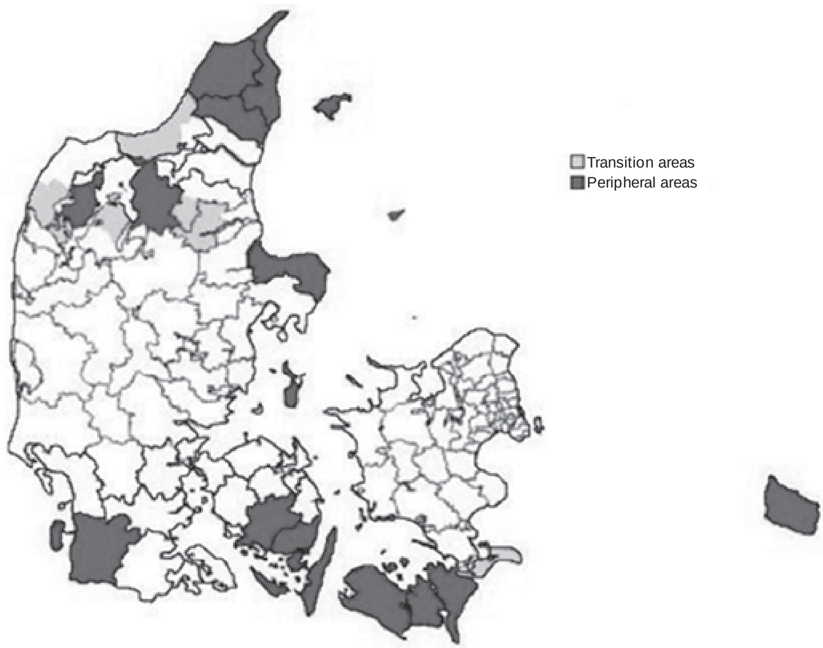
Figure 2.1. **Areas of lagging development**

A. Synthetic index of regional development

Note: Figure A: the 25 commuting areas aggregate current local authority areas within which at least 80% of the employees live in the joint area. The synthetic index uses data on six variables: 1. change in population 2000-2010; 2. share of population of working age (20-64, 2010 figures); 3. average annual growth in jobs 1998-2008; 4. unemployment as a percent of workforce (2009 figures); 5. average growth in taxable income 1998-2008; 6. income per capita (2008 figures). For each variable, the national average is indexed to 100, and by taking their standard deviation into account, the relative weight of the six variables is adjusted to give each of them the same weight in the synthetic index which is reported by the map.

Figure 2.1. **Areas of lagging development** (*cont.*)

B. Structural Funds peripheral and transitional areas from 2006 onwards



Note: Figure B: the designation of peripheral areas is based on localities meeting two criteria: 1. work- and business-related income of less than 90% of the national average; 2. population growth of less than 50% of the national average.

Theses maps are for illustrative purposes and are without prejudice to the status of or sovereignty over any territory covered by these maps.

Source: Regeringen (2010) *Regionalpolitisk redegørelse 2010*. Analyser og baggrund, Indenrigs- og Sundhedsministeriet, Copenhagen, *www.sum.dk/Aktuelt/Publikationer/Publikationer_IN/~/media/Filer%20-%20Publikationer_i_pdf/2010/regionalpol_red_2010/anal_bagg.ashx*. Figure B original source from the Danish Enterprise and Construction Authority (now Danish Business Authority).

General regional development approach in Denmark accents growth and innovation

In the 1990s, the focus of regional development policy was on increasing the growth of regions for national goals. In 2003, the Regional Growth Strategy re-emphasised the peripheral areas with growth challenges. The 2005 Business Development Act highlighted the growth-focused agenda for regions, including six priority areas. Four of those areas focus on "growth drivers" identified by a 2001 OECD report – innovation, ICT, entrepreneurship, and human resources (OECD, 2001). Two other priority areas concern "peripheral" areas as well as tourism development. The regional level is also required to give particular consideration to localities designated by central government as peripheral on the basis of a composite socio-economic index and, partly in support of the latter, tourism development.

Both national and regional policies for economic development shifted focus to innovation early on relative to other countries. Denmark adopted an EU Lisbon-style innovation-oriented agenda in the 1990s, well before the formal EU declaration was made (Halkier, 2008). This longstanding strategic orientation is backed by stable cross-party political consensus as enshrined in the aforementioned 2005 Business Development Act (Økonomi- og Erhvervsministeriet, 2005a; 2005b) that governs national and regional efforts in economic development. Innovation became a pre-requisite for ERDF investment strategies, in particular for the 2007-2013 programming period. And the public-private partnership approach to allocating EU Structural Funds reinforces this unique set-up in Denmark to promote growth.

… resulting in new public and public-private regional institutions

Regional council: the elected body

Regional development is now backed by elected officials and public-private partnerships (see Figure 2.2). The elected regional councils, composed of 41 members directly elected for four-year terms, must approve all expenditures in both the health care and regional development portfolios. The council elects its president from within. The regional public administration supports the regional council and the regional growth fora.

Regional growth fora: public-private partnerships for growth

The new regional growth fora (RGF), institutions created by the sub-national reforms, have evolved to adopt a proactive style of policy making to support innovation and growth. There are six RGF in Denmark (one for each region plus a second for the Island of Bornholm in

Figure 2.2. **Regional development policy actors in Denmark**

Source: Modified from prior categorisation previously available at *www.deaca.dk/regionalpolicyactors*.

the Capital Region). The composition of these public-private boards of 20 members, appointed by the regional council for a 4-year period, is determined by law. It includes: regional and municipal elected officials, business persons, representatives of the higher education and research community, and trade unions. Members are appointed upon recommendation by the municipalities and social partners. They meet approximately six times a year. An advisory group to the RGF with staff from the entities represented in the formal RGF exists in each region, albeit these bodies do not appear in any formal organisational charts. They not only support the RGF efforts by reviewing projects and materials in a first instance, they also help spread knowledge across RGF by having members of the same institution participate in multiple RGF advisory groups. The Danish Growth Council has no hierarchical role with respect to the RGF, but there is an intended goal of co-ordination through dialogue since the RGF presidents participate in this national body (see later section on co-ordination).

The main roles of the new RGF are to develop and monitor regional economic development strategies as well as recommend projects to fulfil those goals. They may recommend projects to both the regional council as well as the Danish Business Authority. Per law, the RGF may cover six areas: *i)* innovation, knowledge-sharing and knowledge creation; *ii)* use of new technology; *iii)* creation and development of new firms; *iv)* development of human resources, including regional competencies; *v)* growth and development of the tourism sector; and *vi)* development activities in peripheral areas. There is some flexibility for variation from one RGF to another. The instruments used by the regional level in pursuit of these goals do not include direct financial grants to individual firms, with exceptions for some of the state aid areas, and therefore must be to the benefit of an "open group" of firms within the region. Over time, the RGF of Central and Southern Denmark have become more concrete and focused; albeit still with similar strategy "headlines" (see Chapter 3). The different types of stakeholders (business leaders, universities, political actors from regional and local levels, etc.) have been learning to work together via this new public-private council.

There is some complexity with respect to this institutional arrangement, but this does not impede strategy development and project approval. The Business Development Act institutes a form of dual-key control where both the elected regional council and the RGF can veto each other's ideas. And it is the regional council that formally approves, or not, the budgets for RGF-recommended projects. Neither the regions nor the RGF have powers of taxation but operate on the basis of block grants from the national level, a statutory financial contribution from local authorities in the region, and European funding allocated by central government. Moreover, neither the regions nor the RGF are allowed to implement policies directly as operators. They must act through separate legal entities, e.g. bodies set up with or jointly by local authorities.

Regional employment council: supports regions but unrelated to regional governments

Regional employment councils act independently of regional level entities (public administration, regional council, and regional growth fora). These public-private councils of 22 members, that include national government representatives, monitor development in the labour markets and recommend actions. Employment policy is split between the central government (policy and benefits) and municipalities (management of 91 job centres that have direct contact with the unemployed). Denmark is the country with the highest level of flexibility in implementing employment policy per a recent study of 25 OECD countries (OECD/LEED, 2011). The regional employment councils liaise mainly with the regional office of the national ministry and the local job centres. The four employment regions in Denmark are more a catchment area for analysis to support national and municipal level efforts. The regional employment councils do monitor the performance of the municipal job centres, even if they do not play a direct role in operations.[4] They also serve as a unit for quantitative analysis, monitor general labour market trends, and are part of the National Labour Market Authority.

This labour market flexibility is potentially a very important advantage for addressing the needs of different functional labour market areas. In a study of 11 OECD countries, policy flexibility was found to be the most important factor influencing local policy integration (Froy and Giguère, 2010). The achievement of local flexibility does not necessarily mean political decentralisation – indeed flexibility at the local agency level is sometimes higher in centralised systems. Yet there is reason to question Danish regions' ability to make the most of the advantages of flexibility given that they are not integrated with the other regional entities. While there may be some interactions between the regional employment council and the RGF, the separation of competences prevents stronger ties. The two bodies therefore operate on separate tracks reporting to different national ministries and bodies.

Several national and regional policy makers report that one of the biggest barriers to regional growth is the unskilled population, which is over-represented in the pool of unemployed. Employment and education policies are not the mandate of the regional level; however, the RGF may support human resource development through special programmes designed to assist the unskilled population as well as through programmes for highly skilled labour to meet local cluster needs. This disconnect can and should be corrected: it is difficult to imagine a coherent, integrated approach to regional development that treats issues of human capital formation and labour-market performance as something apart. Danish regions would be better served if the flexibility that exists with respect to labour-market policy implementation were exercised in the context of broader strategies and initiatives aimed at improving regional growth performance.

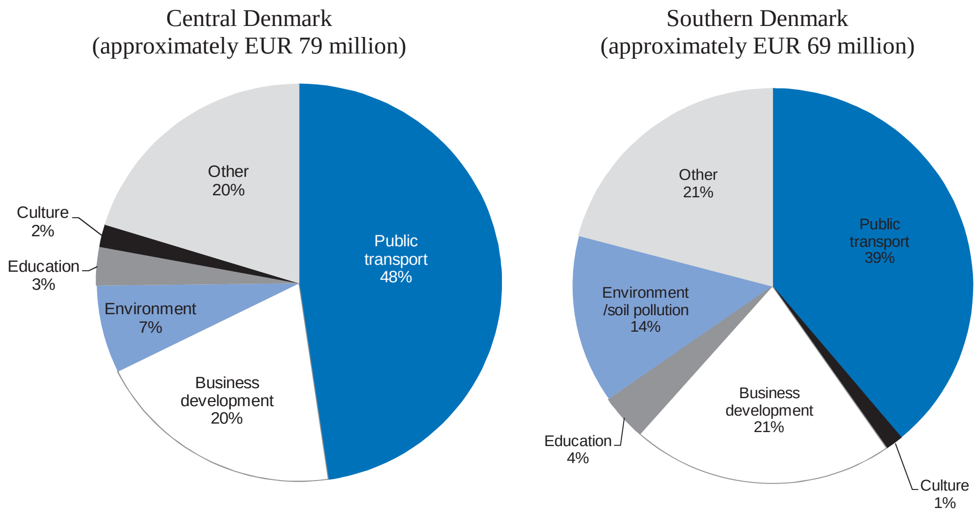
Financing of regional level strategies: multiple sources

Pooling resources around regional goals

While regional development is a function for the new regions, they have relatively limited "own" funds for innovation-promotion programmes without strings attached. Oddly, Denmark is among OECD countries with the highest share of sub-national fiscal expenditure in the OECD (63.4% in 2009, 28.7% of total revenues), although those figures are influenced by the very high share of social security expenses at sub-national level that in other countries are classified separately from national and sub-national expenditure. Regions have no tax-raising authority and rely on inter-governmental transfers from the state and municipalities. Regions receive an annually negotiated block grant from the state and transfers from municipalities. For Southern Denmark, that split in 2008 was 71% state and 29% municipalities, and for Central Denmark that split was 74% and 26%. In general, regional budgets in Denmark are spent on health care, education and social service delivery. In 2008, only 2.6% of the approximately DKK 87 billion for regional operational expenses were for regional development (EUR 303 million), excluding EU funding. Of that share for regional development, the split for all regions combined was approximately: 45% for public transport, 15% to treat soil pollution and 40% for other (EUR 121 million), of which business development and innovation are a part (see Figure 2.3 for regional development spending in both regions).[5]

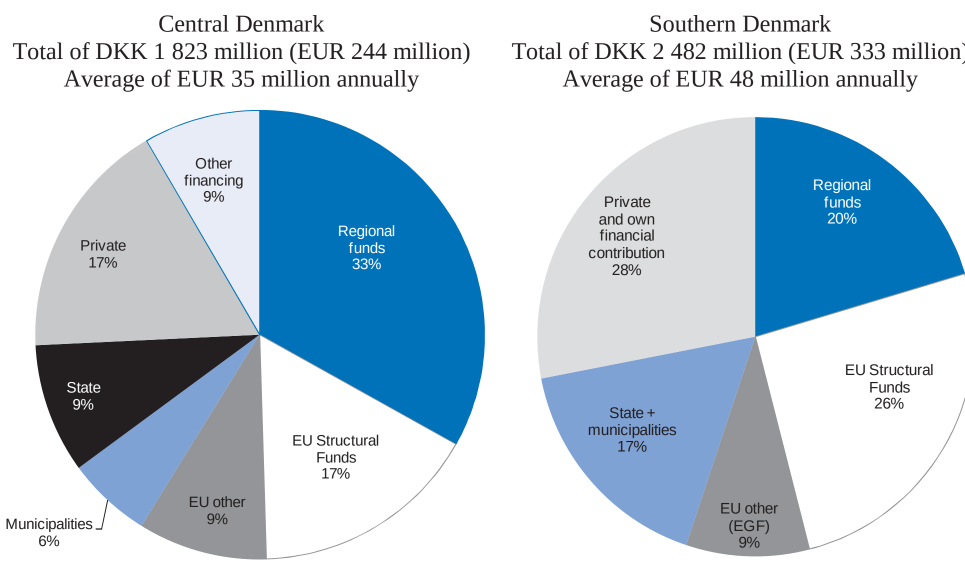
The challenge for regions is therefore to pool together funding from the EU, the Danish state, municipalities, and private sources along with its own budget, towards its regional strategy. As EU funds require matching grants, the region uses some of its "own" funds to support EU-funded projects from that funding stream. In terms of the projects under the authority of the RGF, those regional block grants account for about a third of funding in Central Denmark and a fifth in Southern Denmark (see Figure 2.4). As public funds continue to be under strain during post-crisis fiscal consolidation, the effective mobilisation of private funds becomes even more critical.

Figure 2.3. **Regional development budget 2011: Central and Southern Denmark**



Source: Regions of Southern and Central Denmark.

Figure 2.4. **Multi-level governance sources of financing for growth forum projects: estimations 2007-2013**



Notes: For Central Denmark, this split concerns projects approved by 1 March 2011. EGF stands for European Globalisation Fund.

Source: Regions of Central and Southern Denmark.

EU Structural Funds a significant financing source of regional growth and innovation programmes

In Denmark, EU funds (and their 50% required domestic co-financing) are used for several purposes, including innovation. They thus represent an important source of innovation financing for regional development and empower local and regional authorities in this area. The EU Structural Funds (mainly the Regional Development Fund and Social Funds and for poorer member countries the Cohesion Fund) are the main instruments to implement EU cohesion policy. They seek to bring all regions to a higher level of welfare and to narrow the gap between poorer and richer regions in Europe. In wealthy countries like Denmark, particularly where inter-regional disparities are low, the objective of the funds is to help areas facing economic stagnation or other development challenges by enhancing competitiveness and improving well-being. An increasingly prominent role is given to innovation in the use of Structural Funds, especially in Denmark. Use of these funds also requires that regional development actors are fully involved in a bottom-up process for the design of regional innovation strategies, programmes and projects. The European Commission is promoting the use of regionally defined “smart specialisation” strategies to help guide the use of Structural Funds in each region in the next programming period.

2000-2006 Structural Funds programming period

The main goals of the Objective 2 programmes were: innovation, globalisation, sustainability and development of endogenous strengths and potential. The instruments promoted in this period were innovation poles, networks and clusters (see Box 2.2). This approach for use of EU Structural Funds is generally in line with the division of labour between Danish national and regional authorities in the field of innovation broadly speaking. Knowledge creation, tertiary education, as well as basic and applied research funding are under the responsibility of the national level. Knowledge diffusion, network promotion and support to (new) firm innovation are promoted through projects funded by regional (and national) levels.

2007-2013 Structural Funds programming period

In the current programming period, 2007-2013, both the orientation of EU Structural Funds and the regional governance models in Denmark have changed. For Structural Funds, the whole territory of Denmark was included under the “Competitiveness and Employment” objective. The micro-zoning approach that had prevailed until 2006 was replaced by a whole-country approach based regional policy. The start of this programming period coincided with the implementation of the new administrative structure in Denmark.

Box 2.2. **EU Structural Funds: 2000-2006 programming period in Denmark**

During the 2000-2006 programming period, small areas scattered across Denmark were eligible under the Objective 2 of EU cohesion policy, meaning they were considered as areas in need of economic and social restructuring. Those areas belong to all five of the post-2007 regions of Denmark, the larger areas being located in the northern and southern periphery of the country, in the North Denmark and Zealand Regions. The eligible areas covered approximately 10% of Danish population (and an additional 7.7% under the phasing-out). In that period, actions to be funded under the Structural Funds were defined by local authorities (county councils and also municipalities) on a voluntary basis (since business development was only granted to the new regions towards the end of the period). Denmark was also eligible in this programming period for Objective 3 programmes, as well as the URBAN and EQUAL programmes.

Over the whole period, EUR 72 million of EU origin (36% of Objective 2 funding) were planned to support research, development, technology and innovation (RDTI) in eligible Danish regions. Taking a broad notion of networking, EUR 70.8 million have been devoted to projects involving formation/strengthening of networks between private firms and other private/public actors, thus absorbing the large majority of Objective 2 funds earmarked for RDTI (Halkier, 2006). As an indication, for the year 2004, national public expenditures on regional development, business advisory services and regional technology centres amounted to EUR 13 million, while the annual average amount of public funding for RDTI projects in the Danish Objective 2 programmes was EUR 7.3 million.

Evaluations of the programme period highlight the need for the development of the regions more generally. The mid-term evaluation of the programme found that funding for partnerships in the regions were likely to be effective to spur regional development; advocating, however, more focus on smaller and more traditional firms in the more peripheral areas. The final evaluation recommended that future programmes should: exploit unrealised potential of private and public co-financing; improve involvement of research and knowledge institutions; strengthen exchange of experience across projects; improve information about the programme; and focus on network and bridge-building projects (Nordentoft Andersen and Plougmann, 2010).

Source: Halkier, H. (2006), "Strategic evaluation on innovation and the knowledge-based economy in relation to the Structural and Cohesion Funds, for the programming period 2007-2013, country report: Denmark", report to the European Commission Directorate-General Regional Policy, Technopolis, Brussels; Nordentoft Andersen, F. and P. Plougmann (2010), "Expert evaluation network delivering policy analysis on the performance of cohesion policy 2007-2013: country report on achievements of cohesion policy: Denmark", report to the European Commission DG Regional Policy.

These institutional and programming changes gave rise to more integrated policy programming. from a range of financing sources towards more defined regional goals. The improvements in this period are supported by the work of the RGF, and to closer co-ordination between regional development policies and EU-supported policy. The Danish regions are in charge of developing regional strategies and receive 90% of the EU funds. The remaining 10% of the funds is allocated through national competition through the Danish Growth Council for innovative and inter-regional projects according to thematic calls through its Competitiveness Pool Programme.

This new institutional setting changed the nature of projects funded under regional policy, towards larger and more integrated projects, in contrast with greater fragmentation previously. Many of these projects combine EU, national and sub-national sources of funding (EPRC, 2009). The main orientations of projects include, among others: networks and business clusters support; soft support to SMEs on product, process and organisational innovation (notably by each region's business support agency called a Growth House); and development of linkages and networks between business and knowledge institutions. According to programme evaluations, there is strong convergence between innovation policy at EU, national and regional levels in Denmark (Nordentoft Andersen and Plougmann, 2010).

Like all old member countries, Denmark experienced a cutback in overall EU allocations in the latest programming period, but innovation-related funds increased. In total, Denmark has been allocated EUR 613 million from EU Structural Funds for the 2007-2013 period, compared to EUR 932 million in the previous period. However, Structural Funds for the new objective of Regional Competitiveness and Employment amount to EUR 255 million, a figure that compares favourably with the EUR 197 million devoted to Objective 2 areas in the previous period. The vast majority of the ERDF funds (82%, EUR 209 million) are devoted to the knowledge and innovation objective over the period. Thus, the amounts available for research, technological development and innovation have increased in absolute terms despite the overall drop in cohesion policy funds to Denmark.

Challenges for regional spending given the prominence of EU spending requirements

Denmark's approach to using EU Structural Funds is conducive to promoting innovation-driven growth. The Danish programme has the strongest innovation orientation across all EU member countries (Bachtler, 2009). However, with a notable share of regional development funding tied in some way to EU funds, Central and Southern Denmark face a number of challenges in getting the most out of regional development spending. The challenges associated with EU spending rules are not unique to Denmark. In a study of 23 regions in 14 countries, the vast majority of respondents in those regions found barriers to access and efficient use due to: complex and bureaucratic procedures, prohibitive auditing processes, and restrictive and inflexible administrative and reporting procedures, among other barriers (Sostar, 2012).[6] Some of the perceived constraints of EU funding identified by study participants include:

- **A disincentive for private sector engagement.** The administrative burden associated with EU-funded projects has been cited by several project recipients as an impediment to engaging certain private sector actors. This gives a more top-down and public sector orientation to some projects. It also requires that applications involve an entity with a strong administrative back-office to manage the paperwork for the project, which is why many projects are managed by the Growth House in Central Denmark and the University of Southern Denmark.
- **The limits imposed by the project-based nature of funds.** Projects have to be defined and then redefined for obtaining new support, often after three years. However, some of the efforts and their benefits are long term, and may require a more stable funding outlook than short-term projects. Project recipients also report that they have trouble recruiting qualified staff for the projects as they may only do time-bound work contracts within the framework of such project-based financing.
- **An incentive to take an audit-oriented approach to monitoring.** While the regions are developing more sophisticated tools for project monitoring and evaluation, and the national government is seeking to promote a more results-oriented approach, there remains a tendency to assess project progress based on their rate of spending down funds in the EU system. This reinforces an audit, as opposed to impact, approach to funds use.
- **Reporting requirements as an impediment to policy learning.** Project managers provide regular reports in the context of project reporting requirements. However, given the audit-focused nature of the review of such materials, project managers have to provide a more administrative reporting for fear of accidentally providing details that may raise questions for audit purposes. Therefore there are sometimes double sets of reporting or valuable project learning information that goes unreported, resulting in missed opportunities to improve the impact of public funds.

Perhaps there are opportunities to identify areas for greater flexibility and simplification by looking carefully at both EU rules as well as the national interpretations of those rules. A planned evaluation study of Structural Funds use may also develop some good practice examples for the study regions, and other Danish regions, on how to overcome the negative impacts of different spending requirements. Possible EU rule changes in the 2014-2020 programming period may also contribute to greater flexibility and a lower administrative burden.

Danish national policy context for innovation and entrepreneurship

National policy with respect to innovation and entrepreneurship support determines to a significant extent the context for regional economic development action. The concern in any country is therefore whether such innovation-related policies, thought to be space blind, actually have important spatial implications (such as by default benefiting an innovation hub region, such as a capital). The flexibility of these policies to be relevant for different region types (in terms of industrial structure, availability of research institutions, etc.) therefore becomes critical. A second group of policies to consider are those that have an explicit regional dimension by design, and their effective integration with regional strategies and goals. The commonly perceived tensions between excellence and place-based approaches for research and innovation policy are giving way to a greater understanding of the mutual benefit for national and regional governments for greater consideration to the role of regions (see later section on co-ordination for examples of how other OECD countries are addressing this). This tension is also changing because of the greater pressure on research and innovation investments to have economic payoffs and social impacts, which implies greater linkages with nearby firms and institutions (OECD, 2011).

STI policy: building regional strengths in a knowledge-intensive, small country context

Danish policy increasingly taking a broader approach to innovation

Innovation policy in Denmark has evolved quite rapidly in the last few years, and is prioritised by the government. Since the early 2000s, innovation has climbed higher on the government’s policy agenda and remains so today.[7] The principles for key drivers of growth per an OECD report (OECD, 2001) – namely ICT, entrepreneurship, innovation and human resources – have been adopted whole-heartedly by Danish policy makers. Innovation featured prominently in the 2006 Globalisation Strategy and in the two successive National Reform Programmes (2005 and 2008). In 2007, the Danish Agency for Science, Technology and

Innovation published *Innovation Denmark 2007-2010*, a comprehensive Action Plan for Innovation. This action plan provides the basis for the policies to be implemented by this agency together with the Danish Council for Technology and Innovation. The four focus areas concern mainly the effective transfer of knowledge to firms from universities, research institutions and technology centres.[8]

A traditionally linear drive to innovation policy has evolved to give greater consideration to a broader approach to innovation that is not only science driven. Danish innovation policy has been under the authority of the Ministry of Science, Innovation and Higher Education.[9] Actions had been focused on technology transfer from public research to the economic sector to benefit Danish firms.[10] However, the policy is paying increased attention to innovation that is not science-driven, including all areas (organisation, management, processes, products and services) (*Innovation Denmark 2007-2010*). As a result of this evolution, the strategy incorporates a dual goal: *i)* that Danish companies become more and sustainably innovative (with a particular focus on SMEs); and *ii)* that the dissemination of knowledge and interaction between researchers at the academic and research institutions and actors in the Danish business sector be strengthened. The increased importance of the first goal is reflected in the subsequent policy document *Innovation Denmark 2008*, which focuses more on strengthening innovation in the service industry, in the public sector, and through employee-driven innovation; on reinforcing the business innovation support system; and on strengthening the international orientation of innovative enterprises. Also, in 2009, the new strategy for the GTS network introduced a more business-driven model to identify priority areas of action of these technology providers.

Policy support for innovation from experienced-based learning makes sense in the Danish context. The evolution of an "STI" model of innovation (where most of the emphasis is placed on science as a source of innovation), towards one that is grounded on a "DUI" mode of innovation (experience-based learning) is very relevant for small open economies like that of Denmark (Jensen et al., 2007). Given the limited size of the home market and the globalisation of knowledge, there are opportunities to access knowledge abroad. In addition, the quality and creativity of the labour force, and the collaborative relationships with users and various knowledge providers, all contribute to the success of innovative firms (especially SMEs). The dual goal of the Danish innovation strategy is reflected in the use of the following types of criteria for its assessment, an increase in: *i)* the share of innovative companies; *ii)* the share of SMEs that have highly educated employees; and *iii)* the intensity of academia-business collaborations.

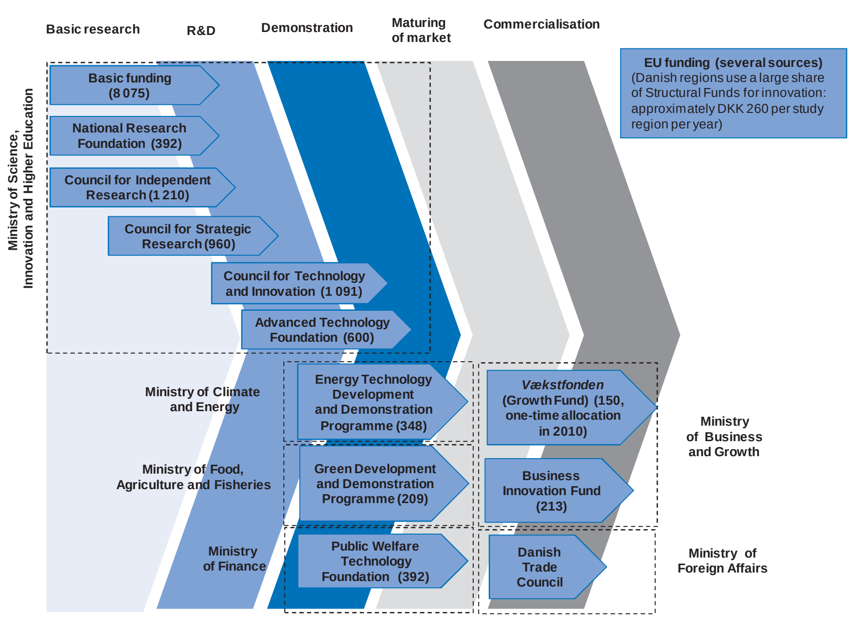
Several national funding bodies support STI programmes

There have been several changes in the nature of the funds that regions, and the actors located in them, may access. Danish national STI policy has witnessed a reduction in the number of national programmes overall. And there is a trend towards larger and broader programmes in combination with an enhanced focus on the use of competitive funding principles.

From a research and technology point of view, the majority of the publicly funded effort in support of innovation is under the responsibility of the Danish Ministry of Science, Innovation and Higher Education. But a range of other funding bodies placed under other ministries play important roles as well (see Figure 2.5). The Ministry of Business and Growth[11] and the Ministry of Climate and Energy are among the other ministries that support proof of concept and market development, often directed towards specific sectors and prioritised areas of technology.

Figure 2.5. **Major funding bodies and budgets for STI policy in Denmark**

Millions DKK (2011)



Source: IRIS Group and Danish Agency for Science, Technology and Innovation with modifications.

The distributed funding responsibility has the disadvantage of increasing complexity, rendering the work of regions to develop and upgrade their regional innovation systems more challenging. There are several autonomous councils (appointed by the different ministers) that govern many programmes.[12] Each council and board typically has its own guidelines and funding principles in accordance with the task given by the minister. Any attempts at reducing the complexity of national level institutions will therefore render the landscape of public support easier for regional actors to navigate.

Danish universities remain the central nodes in the national STI policy. Universities have extensive autonomy to decide what fields of research to prioritise and how much to invest in national or regional outreach activities. Thus, most national programmes in support of R&D activities and much of the investments in infrastructure for knowledge-sharing are anchored around the universities (see first three programmes in Figure 2.5). As a result of their key role, and the integration of formerly separate public research facilities, the universities in all regions have witnessed a significant rise in their basic funding (around 19% from 2005-2010). While Danish universities are now called to consider a third mission by the 2003 University Act, basic funding for universities has no explicit "third-stream" funding for activities beyond teaching and research. It is thus left to the universities to decide whether and how to invest in outreach activities – and whether these activities should focus on specific sectors and fields of technology of national and/or regional priority. The University of Southern Denmark received approximately 9% of the total basic funding each year, and the University of Aarhus, in Central Denmark, received 22%.[13] Similarly, in terms of public research, 10% flowed to Southern Denmark and 20% to Central Denmark (see Chapter 3: innovation system actors).

Several sources for mission-driven research exist, including technology-oriented support. The Council for Strategic Research is a major funder of problem-oriented research, mainly to universities, within thematic areas that are prioritised by Parliament.[14] Technology-oriented programmes are implemented by other ministries (see Figure 2.5). Hence public and private research actors can combine these sources when developing (applied) research falling under prioritised themes.

The Council for Technology and Innovation is a key national player (under the Ministry of Science, Innovation and Higher Education) regarding investments in infrastructure for knowledge-sharing and innovation.[15] The objective of the council is to promote collaboration and dissemination of knowledge between knowledge institutions, advanced technology groups and enterprises. The council has a total budget of DKK 3.5 billion for the four-year period of 2010-2013 (for 2011 the budget was DKK 1 091 million). A large number of programmes are found under its four priorities: technological support (via the GTS institute network); human resources; collaborative R&D; and commercialisation (for a description of these programmes, see Table 2.A1.1 in annex). There are increasing examples of inter-council collaboration.[16]

The above funding channels are key elements in the national effort to promote a more innovative and knowledge-based economy. The programmes under the Ministry of Science, Innovation and Higher Education are designed as national instruments and, as mentioned, most of them work under competitive funding principles. Thus regions get their share of support through national programmes according to their success in accessing these funds. The location of universities and GTS is an obvious factor that determines the geographic distribution of funds, through the financing of basic and applied research. Hence the large bulk of the national funding for innovation flowing to the regions is determined *ex post*, rather than on the basis of *ex ante* regional considerations.

Only a few of the national programmes have an explicit regional dimension in the sense that the funding is dedicated to support a particular region or specific regional clusters. Two are provided by the Ministry of Business and Growth:

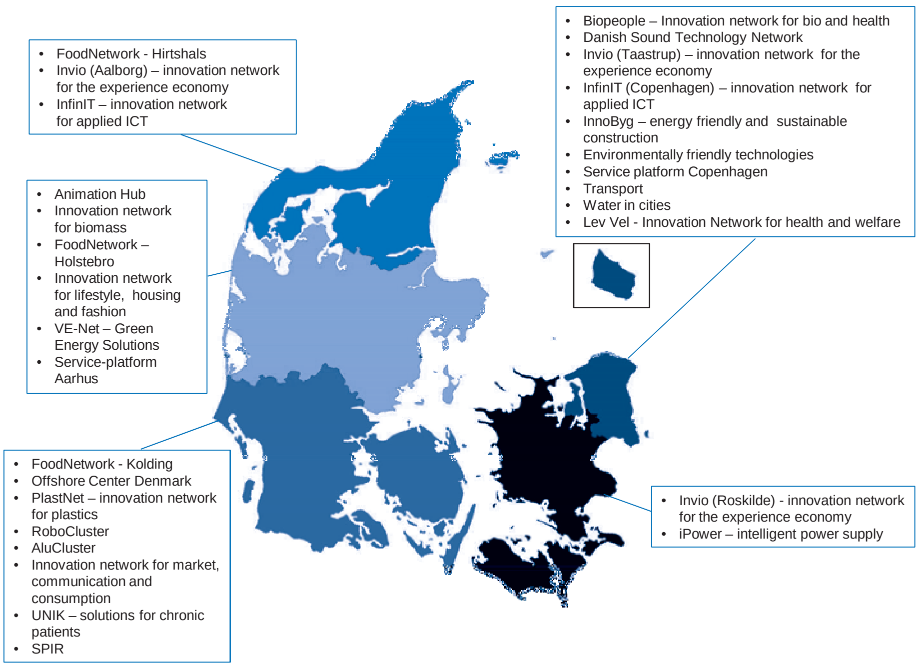
- ***Vækstfonden*** **(Growth Fund):** this one-time investment of DKK 150 million in western Denmark (the area outside the Capital Region) is for venture capital to technology-intensive firms.
- **Business Innovation Fund:** to promote growth, employment and export by supporting business opportunities within green growth and welfare as well as providing support for change-over to exploit new business and growth opportunities in less favoured areas of the country. It focuses on large, cross-funded innovation programmes as well as market maturation through grants and guarantees to firms. Around DKK 700 million has been allocated to the fund for the period 2010-2012 (DKK 213 million in 2011). The Regions of Southern and Central Denmark have been quite successful in attracting funding for a restructuring of their industry base from this fund. For example, Southern Denmark received DKK 37 million to develop the area where Lindø Shipyard is located. The closure of the shipyard is scheduled for 2012 and the ambition is to restructure the area into a brand new Lindø Renewable Energy Centre with incubation facilities for start-ups, a test centre, and other facilities that can attract new businesses and job opportunities within renewable energy to the area.

Under the Ministry of Science, Innovation and Higher Education, some programmes run by the Council for Technology and Innovation, while not focusing on specific regions, are designed on the basis of place-based considerations and aim at reinforcing localised innovation systems. Note that the Knowledge Vouchers and Knowledge Pilot Programmes to support SME access to knowledge may also, in practice, support relationships within a given region's innovation system, but the programmes are not place-based *per se*:

- The **Innovation Incubators** Programme: an incubation programme for research-based businesses, often spin-outs from research, provides risk capital and incubation support. The geographical location of the six innovation incubators is to some extent linked to the location of publicly funded research activities and universities. There is an innovation incubator in all regions, including one in Southern Denmark (20% of national funds) and two in Central Denmark (26% of national funds).
- The **Proof of Concept** Programme: enables technology transfer offices at the universities to apply for up to DKK 1.5 million in proof of concept funding for market maturing of research results and inventions with a commercial potential. Two "proof of concept" boards operate the programme – one that covers universities in the western part of Denmark and one representing the universities in the eastern part.
- The **Innovation Networks** Programme: supports clusters and networks in specific domains through knowledge transfer from research to firms. While they have a national dimension, they often also have a regional positioning. As this programme is of particular relevance to regions, it is described in more detail below.

The Danish Innovation Networks Programme promotes national "clusters" within various technologies and disciplines based on initiatives that often started from a regional base. It currently supports 22 national networks that help companies with project development as well as matchmaking activities such as contact to relevant researchers/experts (Figure 2.6). The innovation networks play a particularly important role in helping small and medium-sized enterprises getting started on collaborating and sourcing new knowledge from universities and other knowledge institutions to boost innovation. Via outreach initiatives, information activities, conferences, matchmaking offers, innovation projects, etc., the networks act as the gateway to the knowledge institutions and the right researchers and trainers.

Figure 2.6. **Regional distribution of Denmark's 22 national innovation networks**



Note: Some networks are located in more than one region, for example FoodNetwork, Invio and Serviceplatform. This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.

Source: IRIS Group and *www.netmatch.dk*; map based on Wikimedia Commons (2007), "Regions of Denmark".

The 22 networks serve companies all over the country and are not necessarily in line with the priorities supported by an RGF. The network management units are based in a region with a strong and relevant research and/or industry base. Close to 50% of the companies engaged in an innovation network are located outside the region where the network has its home base. Each network organisation typically has four to six employees and an annual turnover of DKK 7-10 million, of which national funding from the Council of Technology and Innovation is the single most important funding source. In 2010, more than 3 000 Danish companies were involved in activities organised by the innovation networks (26.3% were from Central Denmark and 21.5% from Southern Denmark) (DASTI, 2011a).

Regional use of national programmes targeted towards particular sectors and technologies

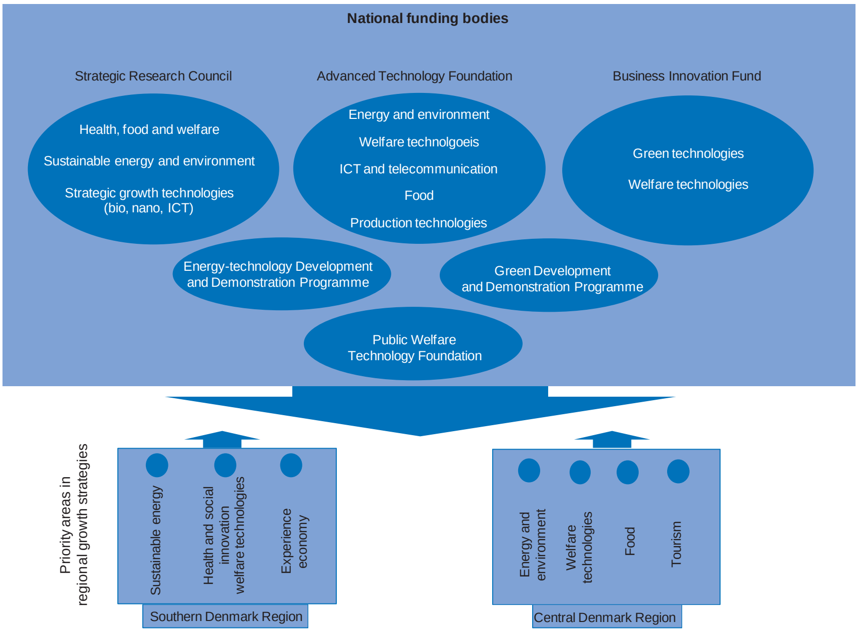
Programmes oriented towards specific technologies or fields of research give *de facto* prioritised access to some regions, research areas and sectors. When regional strengths in research and industry coincide with the fields of technology prioritised by national funding bodies, this creates in practice an *ex post* advantage in public funding allocation. The national funding bodies have a total budget of close to DKK 3 billion (2010) invested in programmes directed at R&D and demonstration of specific fields of technologies: this creates opportunities for the Danish regions to draw on national funding sources to enhance regional innovation capacity in those fields.

The sectors and technology areas of national and regional priority (in Central and Southern Denmark) coincide to a large extent, facilitating regional access to competitive national funds (see Figure 2.7). This alignment also reinforces the role of the regions in building excellence to better compete for these national resources, as well as assisting actors in their region in accessing such programmes. An estimated 50%-70% of the total budget is directed towards technology areas that are also prioritised in the regional growth strategies of Southern and Central Denmark. This underlines a notable degree of common priorities for national and regional support. But it is difficult to make a clear regional split of national funding, as much of the money is directed towards consortia with a large number of collaborators from all over the country, not just in one region.

For many programmes, both regions appear to capture funds in line with the regional distribution of companies and public/private R&D activities. Central Denmark has 13% of participating companies in the programme of the Advanced Technology Foundation and 20% of the funds in the user-driven programme. For Southern Denmark, those figures are 20% and 19% respectively.

Sectoral alignment between national and regional levels in Denmark generally makes sense to achieve critical mass in the global economy, but also raises a few questions. As Danish national policy has been focusing mainly on science-based and high-tech sectors, analyses have suggested that this is not sufficiently covering the firm base of many SMEs not in these sectors. The country's Globalisation Strategy has nevertheless highlighted the importance of boosting innovation in SMEs (European Commission, 2009). There is a greater imperative for the regions to ensure growth in sectors of importance to their economy or related to their assets to counterbalance possible gaps in national policy. If the vast majority of firms and employment are **not** in the prioritised sectors, there would appear to be a mismatch between these priorities and a realistic strategy for achieving overall economic growth goals at both national and regional levels.

Figure 2.7. **Alignment of national and regional prioritised technologies and industries**



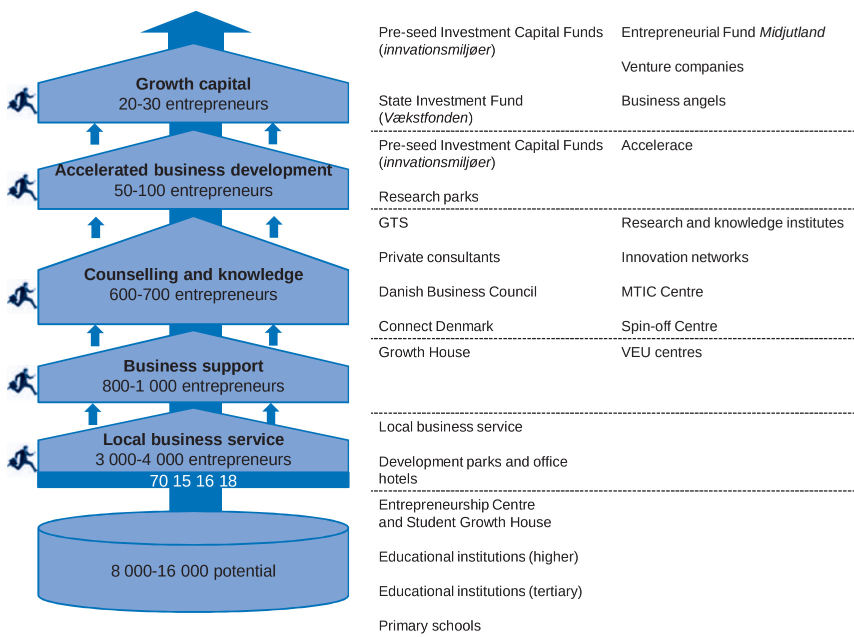
Source: IRIS Group.

Business and entrepreneurship support: an active sub-national role

Denmark has been prioritising entrepreneurship policy in its efforts to boost productivity. Previous policy approaches have emphasised framework conditions as the best way to increase entrepreneurship. These efforts were evaluated as positive in an OECD context, with the exception of taxation rates. More active entrepreneurship policies have been put in place to support start-ups and high-growth firms in the last decade, culminating in more prominence and funding via Denmark's Globalisation Strategy. Further improvements in entrepreneurial education, availability of venture capital, and greater knowledge transfer to firms have been suggested (OECD, 2008a).

The delivery of many entrepreneurship-related services is performed by municipal business development units and the Growth House in each region. The municipal level is in charge of basic business development services, implemented with local business development councils, and offers the first contact for firms seeking business support. The Growth Houses have a generalist profile and provide impartial assistance by referring advanced and high-growth businesses to specialised service providers. The Growth Houses are now funded by the municipalities that are also on their board of directors. The national government transfers funds per capita to the municipality that is earmarked for business support, and municipalities then transfer these amounts to the regional Growth House. Growth House services are of course part of a much more complex system of business support that includes many other actors (see Figure 2.8). Regions rely on these operators to differing degrees (see Chapter 3 for further information on the role of Growth Houses in the two regional innovation systems).

Figure 2.8. **Services to entrepreneurs by type of firm need: example of Central Denmark**



Source: Region of Central Denmark.

Co-ordination mechanisms for achieving each region's innovation and growth goals

The issue is not whether Danish regions should pursue an innovation-oriented economic agenda, as they do, but how this shared goal across levels of government can best be achieved. The effectiveness of the joint efforts requires appropriate governance arrangements, strategy development, and implementation. Several governance challenges are faced by Danish policy makers to realise these goals:

- **Horizontal co-ordination of actors in the region and beyond** within the framework of the post-2007 institutional set up, including the new statutory regional growth fora (RGF) which bring together social partners and sub-national political actors in programming and implementing regional policy.
- **Vertical co-ordination between the local, regional and national tiers** of government while maintaining scope for initiatives tailored to address the specific challenges of individual localities and regions.
- **Cross-sectoral co-ordination at national level** between the activities of two main pillars of the Danish innovation support system: particularly those revolving around basic research within the Danish Ministry of Science, Innovation and Higher Education, and those funded by the more business-oriented applied knowledge processes driven by the programmes of the Ministry of Business and Growth. However, other ministries are involved with the regions for the implementation common goals, such as the Ministry of Foreign Affairs and the Ministry of Food, Agriculture and Fisheries, among others (see Figure 2.5).

Working within and across regions and municipalities

Public and private collaboration among regional institutions facilitated by regional growth fora

The RGF have increasingly played an effective horizontal co-ordination role among public and private actors focusing on innovation and growth. They bring private business, public knowledge institutions, local authorities and the regional council together in developing and implementing a future-oriented growth agenda in the Danish regions. Efforts have been made to maintain a strategic focus of the RGF.[17] RGF would benefit from being more outward-looking towards global trends, as well as being more inclusive to ensure even greater private sector feedback, if not via RGF members then through other associated working groups.

The regional council gives an administrative approval of RGF projects to ultimately accept or reject a budgetary allocation. It was reported that in both Central and Southern Denmark, the Regional Council has never rejected a proposed project by the RGF. The volume of paperwork on the projects for the council to approve is significant, preventing some council members from being able to take the time to review them. The Secretariat of the Growth Forum, located within the regional government, along with the RGF advisory group comprised of staff of representatives to the formal RGF, will often play a mediating role. They address potential conflicts before they reach the RGF for recommendation and the council for official approval. Furthermore, in both regions, the President of the Regional Council is also the President of the Growth Forum, creating strong institutional relations.

Given that the majority of spending is related to health care, the regional council naturally must devote considerable time to this policy area. But legally, the regional council has to approve budget allocations for projects suggested by the growth forum. Some easing of the administrative burden resulting from this double approval has been implemented to avoid multiple considerations of the same project, which had been causing administrative delays for recipients.

The partnership and horizontal collaboration role is reinforced by the requirements of the RGF to consider peripheral areas. This national political agreement must be adhered to by all six RGFs; namely that at least 35% of Structural Funds expenditure must benefit the designated peripheral areas, with individual targets set for each of the RGF. Territorial politics are therefore not just about inter-city distribution of regional funds but also about supporting peripheral areas, often by developing stronger links of the designated peripheral areas to nearby cities and areas of growth and innovation (Halkier, 2011b). Peripheral regions' or sub-regions' interests need to be appropriately voiced at regional or sub-regional level, as well as the east/west divide (including rural/urban disparities).

Co-ordination between the regional and the local tier has in many ways been one of the most difficult parts of the partnership processes within the RGF (Larsen, 2011). First, inter-local rivalry in terms of location of projects and activities naturally remains. Second, there is a widespread aim to strengthen the position of local authorities *vis-à-vis* the regional level. With the sub-national reforms, local authorities increased in size and tasks, whereas regional actors saw their scope of tasks minimised, their powers of taxation removed, and long-term political support from the national level reduced. The Danish regional development plans (RUPs) are one vehicle to focus local-regional dialogue. These plans are broader in scope than the regional business development plans developed by the RGF. RUPs also serve as a tool for regional-national dialogue but are not subject to partnership agreements like the business development strategies.

In all Danish regions, local authorities have formed *kommunekontaktråd* (KKR – local government regional councils) which try to build common positions also on regional development matters. The extent of effort and success in this has been varied, especially in the early years of RGF operation. The current, relatively constructive, working relations can be seen as a result of a learning process on the part of the actors involved (Larsen, 2011, *cf*. Andersen, 2008). An agreement in the RGF is a condition for drawing down funding from the national and European levels. Furthermore, the type of projects primarily funded by the current Structural Funds programme are of a network-oriented nature that are less tied to particular localities such as through physical investment in infrastructure. A recent agreement between the Ministry of Business and Growth and the Danish Local Authority Association concerns the future financing of the specialised business development activities in the regional Growth Houses.[18] This helps to ensure that the Growth Houses initiated by the national government remain intact and at regional level, even through their funding is now being channelled by national government through local authority budgets.

Horizontal collaboration at municipal level: different approaches in the two regions

Horizontal co-ordination at the local level takes place in two ways. The first is through collaborative arrangements for all the local authorities in a particular region. The second is collaboration between groups of local authorities within a region. Collaboration between the smaller pre-reform local authorities had both been growing from below and actively encouraged through a series of central government schemes in the 1990s (Halkier and Damborg, 2000; Halkier and Flockhart, 2002).

The sub-regional units of bottom-up municipal horizontal collaboration are more developed in Southern Denmark, where functional economic regions and historical identities are more complex. These entities function as drivers of projects and networks in business development, and presumably thrive thanks to their capacity to mobilise the commitment of private firms and public institutions in their (identity) areas of operation. While this could be perceived as a problem for vertical co-ordination within the region, it could also be viewed as an effective way of mobilising non-government actors for business development and innovation activities which target the particular strengths of sub-regional areas (see Chapter 3 for further information on the role of Growth Houses in the two regional innovation systems). Three examples drawn from both study regions illustrate the nature of such horizontal municipal co-operation in practice (see Box 2.3).

Box 2.3. **Examples of horizontal municipal co-operation in the two regions**

Trekantsområdet (the triangle area) is an inter-municipal collaboration between six post-reform local authorities in the Southern Denmark Region which taken together are nearly the size of one of the old *Amter* (350 000+ inhabitants). The area is one of the three most dynamic and wealthy parts of Denmark, and its business development is organised through TRIN ("steps" in Danish) as an RGF-style partnership focusing in particular on cluster, network and competence building in collaboration with local government, private business and public knowledge institutions. As the financial budget is relatively limited (DKK 2.1 million in 2006), its main resource is the time invested in collaborative projects by its private and public partners and its role as a knowledge hub through its innovation monitoring programme (IRIS Group, 2011).

Nordvestjysk Erhvervsråd in the north-western corner of the Central Denmark Region serves as an interesting contrast. The organisation was originally established around three medium-sized industrial towns, one of them Struer, which is home to the Danish hi-fi firm Bang & Olufsen, and serves as a delivery vehicle for local authority business development policies (business advice, network building, competence development through education, and attraction of highly skilled staff). At the same time, it is a membership organisation for private firms within the area. Now the three local authorities have ceased to be regular sponsors of the organisation which instead continues to work on the basis of membership contributions and services. This change is likely to have been caused by a combination of inter-municipal rivalry, financial austerity, and a growing involvement in regional-level RGF-driven activities.

UdviklingsRåd Sønderjylland (URS) in the southern part of the Southern Denmark Region bordering Germany is a collaborative project between the four post-merger local authorities which cover the area of the old Sønderjyllands *Amt*. Activities focus on specialised business services with a clear cluster orientation (lean energy, biotech), while more basic services for start-ups and entrepreneurs are taken care of by the local authorities themselves. URS works with a budget of around DKK 3 million, partly derived from local governments and other partners, and partly through RGF and Structural Funds projects.

Sources: www.trekantområdet.dk; www.trin.dk; www.nordvest-erhverv.dk; and *www.soenderjylland.dk.*

Danish cross-regional efforts could intensify

Given the transaction costs associated with cross-regional collaboration, this should be undertaken when there is a clear rationale for working together. Such possible benefits include: supporting a functional area that crosses administrative boundaries (the case for neighbouring regions); addressing common problems, increasing critical mass and supporting greater specialisation/complementarity, or economies of scale for joint action. In Sweden, for example, the nature of regional level support of the biotech industry served to divide the cluster around Stockholm instead of strengthening it (OECD, 2007a). In other locations, cross-regional collaboration is driven by the private sector given political impediments to joint public action (OECD, 2012). Other international examples of cross-regional collaboration in regional contexts more similar to Denmark include the Northern Way that grouped three regions in England that faced common challenges, had some common strengths, and needed greater critical mass to compete with the regions around London (see Box 2.4).

Box 2.4. **The Northern Way: North of England, United Kingdom**

The Northern Way was created in 2004 by the government as a vehicle to support the regions of the North of England in efforts to reduce the output gap with other parts of the United Kingdom. It was structured as a partnership between the three regional development agencies (RDA) in the North but works also with local authorities, universities and the private sector. The Northern Way's Growth Strategy was supported by a fund of GBP 100 million (50% from government, 50% from the different RDA budgets), allocated to collaborative projects in ten different investment priorities. including skills, transport, innovation, clusters, entrepreneurship, etc. Starting in 2007, the Northern Way revised its approach to be more strategic than programme oriented. The budget provided by the RDAs for the next three-year period was GBP 45 million, to support an ambitious policy research programme and collaborative demonstration projects, including in the innovation field. This revision has resulted in a change in roles and priority areas. The refocused priorities for action fell under three categories: transport, attracting private investment and innovation. There is also a stronger emphasis on providing an evidence base for policy with respect to the North, and in influencing national policy in areas of distinctive interest to the North. It should be noted that the RDAs and Northern Way ceased to operate in 2011.

Source: OECD (2008), *OECD Reviews of Regional Innovation: North of England, United Kingdom 2008*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264048942-en*.

In the case of Central and Southern Denmark, and likely other Danish regions (particularly outside of the Capital Region), several of these collaboration rationales exist. For example, they both lack critical mass in many areas of industrial and research expertise for effective global competition and face several common problems regarding different aspects of their industrial structure and geographic position, among others. They also may face issues of insufficient specialisation for certain business services. There are research institutions or clusters in one region relevant for the development of the cluster in another region. In fact, many of the regional clusters already see beyond the administrative barriers. There exist several areas of common sectoral priorities. Disincentives, beyond co-ordination costs, may concern the types of success measures of the RGF (what they do for their own region) as well as the fact that a limited number of regions in Denmark means that multi-regional projects would, in fact, come close to being national projects and hence might be funded through other channels.

A recent mapping by the Danish Regions association of cross-regional collaboration among RGF notes there is cross-regional collaboration in Denmark.[19] It occurs notably in the priority areas such as welfare technology, climate and energy, and growth projects that are common to most Danish regions. They found 37 formal cross-regional initiatives, 40% between two regions and a third among all Danish regions. It notes that while in the early phases the RGF focused on engaging actors located within the region, in more recent years they have reached out to other regions. The Competiveness Pool in Denmark requires cross-regional collaboration for receipt of funds. Projects with regions in other countries are mainly driven by the EU INTERREG programmes and associated with neighbouring countries, and may also involve cross-regional collaboration within Denmark.

The Association of Danish Regions plays an important role in organising networks across regions that can be focal points for collaboration. This is particularly relevant for several areas, such as for data, evaluation, interfacing with the national government, etc. For example, the six RGF and the Danish Business Authority began a joint project on improving impact measurements of the initiatives taken by the RGF.

There exist a few incentives from the national level promoting inter-regional collaboration. One example is the 10% of EU Structural Funds allocated by the Danish Growth Council for cross-regional initiatives, the Competitiveness Pool (see Box 2.5). While funds are one way to drive inter-regional collaboration, given the restriction of themes for projects and the administrative burden, it is not clear that increasing the share of EU funds in the pool would necessarily improve regional and national growth prospects. In other national competitive programmes, particularly from the Danish Agency for STI, there are explicit requirements in tenders to involve more than one region as a condition for competition. Evaluations of the regional Growth Houses have also suggested greater cross-regional support for specialised services given findings by firms that the services are too generic (see Chapter 3 for discussion of the use of Growth Houses in the different regional innovation systems).

Box 2.5. **The Danish Growth Council and the Competitiveness Pool**

The Danish Growth Council gives advice to the government about policies and initiatives able to promote and stimulate economic growth in Denmark and to make it more competitive in the global economy. It is also responsible for promoting co-ordination between national and regional strategies concerning economic growth and business development. The Danish Growth Council focuses on a small set of specific themes per year. The Minister for Business and Growth appoints the 20 members of the Danish Growth Council (the chairman and 19 other members), representing private enterprises, knowledge institutions, local authorities, the six regional growth fora, and labour organisations (unions and employers).

The Danish Growth Council funds projects related to regional competitiveness and employment through a competitive bid to use the set aside of 10% of the EU Structural Funds of Denmark (the Competitiveness Pool). Project applications, which should preferably include more than one Danish region, fulfil themes selected by the Council for that year and are evaluated by a team of experts in consultation with Danish Growth Council representatives. For 2011, these themes were: *i)* spin-off companies as a source of growth and establishment of new business; *ii)* partnership as a source of growth and innovation; and *iii)* enhancing skills and competences in SMEs. In 2010, the selected themes were: *i)* creation of knowledge centres to increase productivity and digitalisation in the construction sector; and *ii)* development of public problem-solving and new welfare technology. In 2009, themes addressed: *i)* favourable conditions for foreign workers in Denmark; and *ii)* improved environment in secondary teaching.

Source: Danish Growth Council
www.danmarksvaekstraad.dk/den_konkurrenceudsatte_pulje.

Going beyond EU-funded cross-regional initiatives for accessing international networks

The same general principles for cross-regional collaboration within Denmark apply to international settings, albeit the barriers to co-operation tend to be greater. Many of the existing international collaborations for Central and Southern Denmark fall in the context of EU-funded INTERREG programmes of different types of territorial co-operation: cross-border (Strand A), trans-national (Strand B) and inter-regional (Strand C). Findings of evaluations among these three strands in Central Europe noted successes in the immaterial effects (knowledge-sharing), and the best results were often achieved in the cross-border strand where larger sums of money and more concrete projects were developed (Hummelbrunner, 2012).

For example, the Region of Southern Denmark, on the border with Germany, is leading the operational INTERREG 4A Programme for cross-border co-operation of the Schleswig-KERN area across the two countries. In the innovation field, there is a project to support stronger co-operation between clusters in Southern Denmark and Schleswig-Holstein and the creation of a framework for sustainable co-operation in the cross-border region within the fields of business, science and education. In addition to the INTERREG 4A Programme, the Region of Southern Denmark has also built a strong strategic partnership with the *land* Schleswig-Holstein that focuses on transforming a peripheral region into a growth region. Another INTERREG Strand A programme, OKS – Öresund-Kattegat-Skagerrak – is viewed as highly relevant by Central Denmark. Among transnational (Strand B programmes) are the Baltic Sea Programme and the North Sea Programme. For the North Sea, during the current programming period, EUR 138 million is devoted to a large number of projects focused on coastal communities, areas in decline, energy efficiency and sustainable development. Partners in the regions only use to a lesser extent the Strand C programmes.

However, the regions need to go beyond the EU-funded programmes to better integrate international networks. Central Denmark has more instruments in its policy mix supporting international collaboration (see Chapter 3), and appears more proactive in seeking out such opportunities. For example, Central Denmark has entered into a strategic partnership agreement with the Shanghai City-Province in China, covering areas such as welfare technology and IT innovation. The region has also formalised partnerships with a series of foreign regions in Hungary, Poland, the Russian Federation, etc. Finally, it is participating in a series of international projects with mainly European partners to influence EU policy, such as through the Conference of Peripheral Maritime Regions of Europe, and EU institutions involved in the North Sea and the Baltic Sea areas. Other opportunities for knowledge exchange occur through participation in the European network EURADA and the EU 2020 Monitoring Platform, as well as Districts of Creativity, a global network of creative and innovative regions. Southern Denmark has some co-operation with foreign regions such as Guangdong (China), Malopolska (Poland) and Olomouch (the Czech Republic).

Central-regional relations, formal and informal mechanisms

There are several vehicles for regional-national collaboration to mutually inform each other’s policies and strategies. As in any country, communication via political parties is one vehicle for central-regional co-ordination. There are also annual negotiations for the regional economy between all regions and the central government, supported by the Danish Association of Regions. The relationship between the RGFs and the national level is, from the outset, based on political and financial sponsorship. The 2005 Business Development Act created the new partnership organisations, defined their tasks and their policy instruments, and designed the funding arrangements for their activities which include a significant element of state transfers (21% in 2009).[20] The Danish Growth Council has as a task to promote (not require) co-ordination between the National Growth Strategy and the regional business development strategies (see Box 2.5). The council includes the presidents of each RGF. The council would therefore seem a relevant forum for understanding how each region contributes to national growth, but it is not clear the council has made the most of this opportunity to do so.

In addition, two features of Danish regional policy can be seen as vertical co-ordination between the national and regional levels. Both venues of vertical co-ordination provide a framework for regional action. They prescribe particular policy instruments and project types, while still leaving the RGFs free to decide how to structure their programmes.

- **Strategic co-ordination** takes place through the so-called partnership agreements between government and each of the six RGF. The process is managed by the Ministry of Business and Growth but involves other ministries as well. There has been growing acceptance of this instrument of vertical co-ordination for regional development activities by departments of central government outside of the sponsoring ministry. The case of the partnership agreements thus neatly demonstrates the possible links between vertical and horizontal co-ordination processes in a relatively small policy network. The existence of strategic co-ordination also can be useful for quick decision making, such as in Denmark and other countries like Sweden where plans and actors were in place for deployment of stimulus packages.

- **Implementation co-ordination** takes place within the Structural Funds programmes in which the Danish Business Authority plays a pivotal part. It produces nationwide, cross-regional programmes and ensures that individual projects comply with national and European regulations. In the current programming period, this has pushed for larger and more complex projects and reduced the scope for direct grant-aid for productive investments and physical infrastructure (Halkier, 2007; 2011a).

Partnership agreements: building strategic national-regional co-ordination

Instituted with the 2007 reforms, these partnership agreements increasingly facilitate inter-governmental dialogue but do not have any budgetary implications. Co-ordinated by the Ministry of Business and Growth, these short documents are mainly political statements describing a concrete co-operation project or a process of further dialogue that may clarify co-operation possibilities. The partnership agreements are made within the existing economic and administrative frames. They therefore do not make any direct binding economic commitments where ministries allocate funds through competitive procedures. Agreements include both a general political commitment to shared goals and specific undertakings that the two sides will attempt to progress. This mechanism was introduced after the RGF had been established as part of the so-called globalisation strategy of national government to secure compatibility between the globalisation strategy of central government and regional strategies for economic development.

A first advance was to have regions and national government sharing the same general goals for supporting growth, which is now achieved. When first introduced, the partnership agreements were viewed with some scepticism by many regions as additional and unexpected interference in their own strategy development processes (Larsen, 2011; Halkier, 2011b). The agreement development process initially began with regional submissions of project "wish lists", which the relevant ministry would accept or reject. Over time, they have become more focused on dialogue. In 2011, the Ministry of Economic and Business Affairs (now the Ministry of Business and Growth) organised a "speed dating" approach to bring together a wider range of ministries and to discuss in greater detail possible joint action before finalising any agreements through more bureaucratic procedures. They nevertheless remain relatively "light" documents of mutual intent (see Table 2.1).

The use of the instruments has been described by public actors as a "journey" with increasingly positive feedback at both levels of government. The regions view these agreements as a way to open the door for a discussion of funding in the future that initially was perceived as more top-down. The Ministry of Science, Innovation and Higher Education has seized the opportunity of these agreements to promote its national agenda with regions. Other ministries have been less proactive in engaging in dialogue with the regions.

Table 2.1. **Partnership agreements: Central and Southern Denmark (2010)**

Central Denmark	Southern Denmark
Action plans in the following areas (**both regions**): – Education and labour supply – Improving conditions for new growth businesses – Innovation and knowledge transfer – Branding and marketing of Denmark – Green growth – Evaluation and impact measurement of regional efforts for growth and business development – Cross-border co-operation (Southern Denmark) – Digitalisation (Central Denmark)	
Special focus on key initiatives: – Risk capital: government fund of DKK 150 million for western Denmark (includes Central Denmark Region) – Increasing efficiency through ICT: closer co-operation between national and regional programmes to promote SME innovation and use of ICT in business processes. – Increasing interaction between educational institutions and firms: national and regional efforts will increase the number of training places/internships for students (primarily vocational education); support talent attraction for high-skilled labour (supported by a government initiative to allow additional international upper secondary education in the region); both seek to strengthen technical and natural science education in the region. – Focus on the food industry: both will support regional high-quality food products; work to develop an integrated competence centre for fishery in Thyborøn; the development of food-related education and competence building in the sector; integrating the food industry in “the experience-based economy”. – Establishing a Centre for Coastal Tourism: a Knowledge Centre for Coastal Tourism will be established in Hvide Sande (a western coastal town) in collaboration with the neighbouring regions.	**Special focus on key initiatives:** – Welfare technologies and public-private innovation: including a new regionally sponsored Innovation Centre for User Involvement; strategic partnership with Export Council – Better access to venture capital in western Denmark: government fund of DKK 150 million that the region will promote; region set aside DKK 50 million for venture capital in welfare technology and services (an additional DKK 25 million added by region since then) – Cross-border research and education: closer university co-operation between Southern Denmark and Schleswig-Holstein region in Germany, government will look into cross-border with Germany for several regions – Strengthening green offshore energy: both Growth Forum and government to support centres in Funen Island in western Denmark; boosting of science skills with focus on lean energy cluster (Growth Forum allocated DKK 40 million); working with National Centre for Nature, Technology and Health, need to attract highly educated foreign workers

Source: Regions of Central and Southern Denmark.

Informal co-ordination patterns have started to emerge as a result of the annual political partnership agreements.[21] The Ministry of Science, Technology and Innovation – most often through the Agency for Science, Technology and Innovation – has taken advantage of the opportunity to collaborate with regions, both at the strategic level and for programme implementation, to maximise impact of national funds. Within the limits of the overall partnership agreement between the government and the RGF, a further agreement is entered with the Danish Council for Technology and Innovation and the RGF to ensure co-ordination, coherence and synergy between the national and regional innovation efforts. There are also examples of collaboration with specific ministries in relation to the strategic focus areas in an RGF's strategy.

Consideration could be given to promoting other areas of regional development not in the explicit domain of regions. In the case of the partnership agreements with the RGF, given the innovation focus, the scope for many new areas is more limited. However, other forms of inter-governmental contracting with the regions may be possible, and in some cases could include a major city in the form of a tri-partite agreement. For example, underinvestment in the country's infrastructure has been identified as a barrier to growth (OECD, 2009). Regional development plans (RUP, broader than the regional business plans – see Chapter 3), for example, cover issues of infrastructure. There are other major growth drivers that are essentially beyond the control of regions, such as secondary and tertiary education (albeit regions can develop specific regional programmes) that can be subject to such agreements.

Many OECD countries use contracts that promote relationship building since this is a core part of the dialogue between levels of government. However, when the funds are to support regional development, including supporting clusters and regional innovation systems, it is not always clear upfront from the national, or even regional level, what the best solutions are. This is why the concept of relational contracting is used. The regional level generally has better information about what is needed to support specific regional needs. At the same time, national government has the resources that need to be used efficiently and effectively, and a perspective on what is taking place in other Danish regions as well as globally. Relational contracts serve to build capacity and engage both parties. Much of the benefit of the learning is in the nature of the discussion about the needs of the region and how to best support them. Unlike a general call for proposals, whereby the national government evaluates the responses, relational contracting is more interactive. It serves as a vehicle for managing a relationship that involves information sharing over time.

There are a number of OECD examples that could be considered by Denmark as the partnership agreements continue to evolve (see OECD, 2007b). In France, the *Contrats Plan État-Region* have been used for several cycles as a framework (now seven years) for joint action to support regional development. They also promote alignment with regions for clusters supported by national policy (*systèmes de productifs locaux* and the *pôles de compétitivité*). In Italy, the *Accordi di Programma Quadro* support joint action, sometimes with a timeframe for projects up to ten years, that can cover a wide range of regional development issues including enterprise support for innovation and human capital. In Spain, *convenios* are used on both a bilateral and multilateral basis. The fact that such multilateral *convenios* are public ensures a high level of transparency (Box 2.6).

Box 2.6. **Contracting procedures: the case of France and Italy**

Contracts can be used in the context of different governance frameworks (from unitary to federal countries). Analytical reasoning based on contract theories reveals a continuum of contracting logic that ranges from "transactional" (co-ordination problems can be stated *ex ante*, before the signature of the agreement and the arrangement between the parties states the reciprocal duties of each of them) to "relational" (parties commit to co-operate *ex post* after the signing of the contract and design a "governance mechanism" for that purpose). The "optimal" type of contract is highly dependent upon the purpose of the co-ordination between the parties, upon the resulting nature of the co-ordination process to be managed, and upon the implementation context (constitutional framework that organises the relationship among levels of government).

In France the *Contrat de Projet État-Region* (CPER) is the primary mechanism for regional planning and development. First, CPERs are signed between the central government (the regional prefect) and the head of the regional council (an elected official). Other regional actors, such as associations and firms, also play a notable role in the process of preparing the regional strategic plan. Second, CPERs include a territorial component that consists of specific sub-contracts. Although they address different issues, these contracts nonetheless belong to a single framework – that of the state-region planning contracts. A third element related to all aspects of CPER, and not just to the "territorial" dimension, is that these CPERs are co-funding and, strictly speaking, not delegation contracts. Thus, parties agree upon the realisation of a certain number of tasks and the way these tasks will be funded.

The French CPER offers a framework for long-term planning and co-financing of the region, including a number of investments related to science, technology, and innovation. On the other hand, contracts with sub-national entities leave more room for manoeuvre to the sub-national levels of government because these contracts define the projects that the sub-national agents have worked out. However, these projects must still be accepted by the central government. Over time, this top-down conception has seemingly evolved into a more ascending view of contracts based on projects designed by the regions themselves, thus increasing the role and importance of regions.

Box 2.6. **Contracting procedures: the case of France and Italy** (*cont.*)

In Italy, the *Accordi di Programma Quadro* (APQ) operationalise the *Intesa Istituzionale di Programma* (IIP), a broad agreement reached by the central government and the regions or autonomous provinces. It defines the objectives, the sectors, and the areas where the (material and immaterial) infrastructure essential to territorial development should be located. The APQ is signed by the interested region, by the Ministry of Economics and Finance, and by one or more central administrations, depending on the nature and the sector of intervention. In cases where negotiations preceding the signing of the IIP are sufficiently mature, the IIP and the APQ might be signed simultaneously.

The APQ's primary purpose is to co-ordinate the actions of the many public and private agents (vertically or functionally specialised) that are involved in the definition of territorial development policies to achieve greater coherence, quality and speed of intervention. Co-ordination is sought through an *ex ante* process of negotiation of the objectives and the instruments of multi-year territorial policies, as well as of the definition of reciprocal commitments and of a clear schedule. The co-ordination objective is reflected also in the duration of most APQ that stipulate commitments by their signatories over a multi-year period (actions, financing, monitoring and conflict resolution). Indeed, many of the APQ signed thus far envisage commitments through 2015. The APQ are used in all the major sectors of intervention: cultural and human resources, cities and networks, and industrial districts.

Source: OECD (2007), *Linking Regions and Central Governments: Contracts for Regional Development*, OECD Publishing, Paris, *http://dx.doi.org/10.1787/9789264008755-en.*

Regions in Denmark report that one of their main governance-related challenges is overcoming gaps in inter-ministerial co-ordination at central level, which partnership agreements may help address. In the most recent round of agreements, three ministries were actively involved. Agreements can serve to better co-ordinate actions by different central level agencies in a particular region, a concern raised in the regions. One example from Central Denmark was the use of the partnership agreement to promote the merger of Aarhus University (under one ministry) with the engineering college (under a separate ministry). The French and Italian examples both bring together different ministries behind these long-term focused contracts. The Spanish *convenios* tend to be more bilateral and do not address this inter-ministerial co-ordination question.

A range of possible mechanisms for national-regional support of innovation policy exist

National governments use a range of strategies to bring a regional dimension into innovation-related policies. They include: consultation processes, regular dialogue, regional agencies of national governments, agreements/contracts, project co-financing, and national territorial representatives. OECD countries generally report using several of these mechanisms simultaneously, but have rated consultation and dialogue as the most effective (OECD, 2011). As cluster-related policies are a common national innovation policy programme with a regional dimension, countries have developed policies to jointly select and/or co-fund them (OECD, 2007c).

Several of these mechanisms are already used in Denmark. The aforementioned partnership agreements are a way to align intentions and possible independent projects. Co-financing of projects supported by the RGF is another practice, as municipalities and the national government also contribute to regional projects. Applications and development of innovation networks, for example, involve the Ministry of Science, Innovation and Higher Education and the RGF. Both national ministries and regional officials share a responsibility to promote this mutual information sharing.

Consultations and dialogue are promoted by some national ministries. The Ministry of Business and Growth has brought regions together to finance and develop joint national-regional projects, such as evaluation of the Growth Houses. The Ministry of Science, Innovation and Higher Education will, in the consultation for the new national Innovation Strategy, include the development of a joint strategy for national and regional policies on networks and clusters, as well as to co-ordinate the entities initiated at each level. Such a strategy would benefit from jointly accepted mapping exercises to identify the geographic location research and industrial competencies, as well as the associated organisational initiatives. This should also serve a valuable role in helping each region understand its contribution to national goals, informing national government in funding and location decisions, and highlight opportunities for cross-regional initiatives. The United Kingdom's Technology Strategy Board used an alignment procedure for funding to convene national government with regional representatives that resulted in this greater understanding of the different niches across the country (OECD, 2008b).

For STI policy, new mechanisms are being developed to help ensure national-regional alignment in several OECD member countries. In the Netherlands, for example, the Ministry of Economy (which is responsible for both innovation and regional development policy) is a shareholder, together with provinces, in three regional development agencies. In Finland, the Centres for Economic Development, Transport and the Environment (ELY) are national institutions reporting jointly to the Ministry of Employment and the Economy and to the Finnish Funding Agency for Technology and Innovation (Tekes), which work in close co-operation with regional councils on innovation-related programmes. Norway has taken several initiatives to allow for regional participation in joint institutions or in regionalised use of research funds (Box 2.7).

Supporting joint policy intelligence

It makes sense, particularly given the scale of Denmark, to work together on policy intelligence for efficiency and information-sharing. There are already several examples of such efforts, including for impacts of the Growth Houses (shared data analysis), development of better impact and evaluation measurements (use of EU Structural Funds), or for information-sharing and input (participation in evaluations of innovation networks). A number of national level entities (Ministry of Business and Growth; Danish Business Authority; Danish Agency for Science, Technology and Innovation; FORA; Danish Statistics, etc.) could make additional analyses with regional level data, or develop data relevant for regional needs (such as more relevant categories for data given regionally supported clusters). Furthermore, the regions also have their own analysis units, some specific regional data, and a number of regionally funded reports (such as on clusters). The Danish Regions Association can also contribute by promoting harmonisation of some of the data and budgetary practices that facilitate greater cross-regional and inter-governmental policy intelligence-sharing. It could build on the tracking of regional innovation-related statistics as done through the Danish regional statistics portal.[22] In that context, the toolkit developed by the French government to help regions in the development of their regional innovation strategies might be a source of inspiration (Box 2.8).

Inter-departmental co-ordination at central level to create synergies and reduce system complexity

Formal committees in Denmark for inter-ministerial co-ordination to support regional development have proven less effective than proactive measures taken by individual ministries. Per the 2006 Danish Globalisation Strategy, an inter-ministerial committee was charged with co-ordinating regional policy, although this committee was disbanded after the 2011 elections.[23] The new government appointed a ministerial committee for new business and growth politics, but it is too early to make observations about its functioning.[24]

Box 2.7. Norway: multiple programmes and institutions for a regional dimension to STI policy

Norway has cluster-type programmes, similar to those found in many countries, which add an explicit regional dimension to STI policy. But Norway has also developed new practices and institutions to further this regional dimension through joint development and implementation, going beyond mere co-ordination.

Innovation Norway is a creative approach to national-regional co-ordination through joint ownership of a national agency. Launched 1 January 2010, Innovation Norway is 49% co-owned by the county municipalities (regional level). Hence, the regional responsibility for design and funding of Innovation Norway's programme portfolio (covering substantial parts of the innovation policy) will increase.

The Norwegian Programme for Regional R&D and Innovation (VRI) is one of the leading initiatives promoted by the Norwegian Research Council and it aims to promote research and innovation at the regional level in Norway. VRI was launched in 2007 through 2016. Regions have developed strategies and identified priority areas for development and designed instruments to strengthen collaboration and knowledge transfer. VRI initiatives are carried out in partnership with regions that actively support VRI projects and initiatives. VRI also support the establishment of **regional dialogue conferences**, namely meeting places for regional actors to learn about each other and share experiences to develop a common idea on how they could work together. The priority areas selected by regions all over Norway are varied and diversified and cover topics such as: ICT, energy (oil and gas, bio, renewable), food, maritime industry, biotechnology life sciences, electronics, culture and creative industries. Within the framework of VRI, each region has selected business-oriented priority areas and within these areas each region selects a set of instruments that it wishes to use to promote collaboration between companies and research units. The most commonly used instruments by regions are: mobility schemes, competence brokering, active research in companies, networks, pre-project funding, and regional foresight.

SIVA, the Industrial Development Corporation of Norway, was launched in 1968 to develop regional and local industrial clusters by means of the development of infrastructure, investments, knowledge networks and innovation centres. The aim of SIVA is to develop and improve the national infrastructure for innovation through: *i)* real estate; *ii)* innovation; *iii)* industry; and *iv)* internationalisation. SIVA is particularly focused to promote innovation in remote peripheral areas, so as to create economic development in each region in Norway, as well as working with companies outside of Norway. SIVA co-operates closely with Innovation Norway. SIVA has been supporting firms by investing in physical infrastructure, offering risk and financial help, providing access to markets, and mobilising private and public resources. SIVA has promoted the development of business and research incubators, business gardens (an action that aims to stimulate innovation in SMEs and in firms located in peripheral areas), research and science parks and centres of expertise.

Source: The Research Council of Norway, *www.forskningsradet.no/prognett-vri/Home_page/1224529235237*, *www.siva.no.*

Box 2.8. **Regional innovation strategies: toolkit for French regional authorities, 2007**

When applying for Structural Funds, French regions prepare documents on their development strategies and forward them to the European Commission. Brussels often considered that such papers lacked coherence and that the policy analysis could be more robust. The French government therefore decided in 2007 to create a guide that would help regions to assess their strengths and weaknesses and would also improve the decision-making process. The guide was completed in November 2007 after discussion and consultation with several pilot regions. It has now been communicated to all regions. The guide provides an overview of the main factors determining regional growth in modern economies. It describes the overall components of the innovation system and indicates a number of regional indicators to calculate as well as benchmarks to consider. It provides methodological keys for establishing a regional strategy based on the diagnosis. Priorities are selected according to a number of criteria. Programmes are monitored through the use of appropriate indicators and references.

Source: *www.datar.gouv.fr*.

Many OECD countries have instituted inter-ministerial committees to address the multi-dimensional nature of regional development, with varying degrees of success. When such committees are managed by the highest levels of government, above sectoral ministries, they are more likely to have impact. For example, the Austrian Conference on Spatial Planning is managed under the Federal Chancellery. Slovenia has recently instituted a Council for Territorial Balance of Development, chaired by the Prime Minister. If the chairmanship is held by a sectoral ministry, then a rotating chairmanship is another strategy for ensuring greater engagement of different ministries. France's CIADT – *Comité interministériel à l'aménagement et au développement du territoire* – has not only served as a long-term strategy of the government to bring different committees together, it has served additional purposes such as in helping with a crisis recovery strategy. But beyond committees, a wide range of vehicles are used in the OECD for supporting this central level co-ordination in support of regional development policy (Box 2.9). Another example is that of the Finnish Centres of Expertise (CoE) Programme, managed by an inter-ministerial committee administered by the Ministry of Interior's Regional Development Department, to combine a regional approach with an inter-sectoral dimension. Flanders (Belgium) has taken a horizontalisation approach, where innovation has been considered as a policy goal across departments by emphasising creativity, entrepreneurship and innovation, including services and the public sector.

Box 2.9. Inter-sectoral co-ordination for regional development: OECD country strategies

- **Co-ordinating structures such as inter-ministerial committees and commissions.** This is one of the simplest systems for horizontal governance as it is based on the existing government structure. Examples include the Presidential Committee on Regional Development in Korea and the Cabinet Sub-committee on Rural and Regional Policy in Norway.

- **Fully-fledged ministries with broad responsibilities and powers that encompass traditionally separate sectors.** Some positive implications of the concentration of different responsibilities within the same authority include: a more open and coherent view, the concentration of skills and the possibility for a more integrated approach. Specific ministries for regional development were created in Chile, the Czech Republic, Poland the Slovak Republic, and Slovenia.

- **Strategic planning and programming, including agreements, frameworks and instruments.** The formulation and implementation of regional policy programmes and/or spatial planning can provide the impetus and framework for greater central co-ordination and is widely used across OECD countries. Planning and programming have been recognised as policy tools for regional competitiveness policies. In many countries, spatial planning is gradually moving from land-use regulation frameworks towards long-term strategic documents, focusing on the co-ordination of diverse issues and interests across sectors as well as between levels of government. They often incorporate monitoring, feedback and revision mechanisms. Examples include the National Strategic Reference Framework in EU countries, the National Spatial Strategy in Japan, and the Comprehensive National Territorial Plan in Korea.

- **Special units or agencies that provide planning and advisory support to facilitate policy coherence across sectors at the central level.** High-level "special units" have been created in several countries to ensure consistency among sectors. The closer such units or co-ordinators are to a chief executive, the greater the incentives are for co-operation across sectoral ministries. Examples include DATAR (Délégation interministérielle à l'aménagement du territoire et à l'attractivité régionale) which is linked to the Office of the Prime Minister in France and the Austrian Conference on Spatial Planning under the auspices of the Federal Chancellery. Special units under sectoral ministries include, for example, the National and Regional Planning Bureau of the Ministry of Land, Infrastructure, Transport and Tourism in Japan and the Spatial Economic Policy Directorate of the Ministry of Economic Affairs in the Netherlands.

Box 2.9. **Inter-sectoral co-ordination for regional development: OECD country strategies** (*cont.*)

- **Regional ministers.** Ministers must take into consideration the territorial aspects of the programmes and policies of their portfolios. For example, Canada appoints "regional ministers" who have regional responsibilities and represent the interests of their respective regions. Ministers combine their regular (sectoral) portfolio duties with their regional political roles. France and the Netherlands have appointed a minister who represents the interests of the leading region in the country, i.e. the State Secretary for the Development of the Capital Region of Paris and the Minister for Randstad.

- **Territorial proofing mechanisms.** Territorial proofing is a mechanism that monitors government policies to prevent them from having a negative impact on certain types of territories. Ideally, proofing should be implemented in the early stages of the policy design process. In addition to the rural proofing system of the United Kingdom and Canada, Korea and Sweden recently introduced a rural proofing mechanism. In Sweden, the rural development strategy was developed in 2009 and every ministry had an assignment to look at their own policy area with a rural perspective. In Finland, the Ministry of Employment and Economy has required sectoral policy makers to clarify their regional strategies and assesses regional impacts (regional proofing) since 2004. Ten key sector ministries must define regional development plans concerning their field of responsibility, which fit into the Regional Development Act guidelines defined by law and the nine regional development targets adopted by the government in 2004.

- **Combining financing and/or creating a consistent and comprehensive budget.** The budgeting system is also a powerful tool for more integrated policy making. Integrating financial tools and programmes can contribute to improve transparency, create synergies across sectors and facilitate accountability and performance monitoring. Mexico grouped together ministerial budgets for rural policies into an official rural budget under the Special Concerted Rural Development Programme. Korea transformed many specific-purpose national grants into general grants, and established the Regional Development Special Account. A block grant was then adopted to give local municipalities the authority to autonomously design projects.

Source: OECD (2010), *Regional Development Policies in OECD Countries*, OECD Publishing, Paris, *http://dx.doi.org/10.178/9789264087255-en.*

With respect to horizontal co-ordination for Danish innovation policy, there are two lead actors. They include the research-driven Ministry of Science, Innovation and Higher Education and associated bodies, and the business-oriented Ministry of Business and Growth and associated agencies.

Moreover, within the regions, the final beneficiaries of the different policy streams (private firms and knowledge institutions) overlap to some extent. A degree of informal co-ordination would seem to exist not just at the political level but also at the more substantial level where innovation, knowledge creation and economic growth take place. The partnership agreements serve as a platform for the two ministries to co-ordinate their activities with each region within this framework. In addition, the two ministries have an agreement on the division of labour and responsibilities with respect to innovation policy issues. But the agreements have also worked as a platform for the regions to address regional challenges where the solutions need action from several ministries, e.g. application for the European Globalisation Fund, or issues important for further regional growth, e.g. testing facilities for large-scale windmills.

Given the challenges for formal co-ordination bodies to achieve the goals, several “bottom-up” initiatives by national ministries or agencies are supporting this inter-departmental co-ordination. The various sector ministries participate in the steering groups of the cluster organisations part of the Innovations Networks Programme run by the Ministry of Science, Innovation and Higher Education. The Ministry of Energy, the Ministry of Food, and the Ministry of Climate and Energy consult the Strategic Research Council. The Ministry of Science, Innovation and Higher Education also co-ordinates its investments in innovation consortia, innovation projects and innovation networks with the funding bodies of the sectoral ministries to avoid double financing of activities and to ensure co-ordination and transparency with respect to concrete activities.

Despite these efforts, the regions still identify insufficient inter-departmental co-ordination at national level as a problem due to system complexity and programme proliferation (see also Figure 3.2 in Chapter 3). For example, Netmatch and REGX are two organisations supported by the two ministries to support innovation networks and cluster organisations respectively. While the tasks of each entity may not overlap, as they are financed by different ministries there is not necessarily a consultation prior to the initiation of a programme. There is some shared representation on respective boards, and more recently meetings of the two to co-ordinate so as to reduce possible duplication and more clearly define the tasks. Efforts to prevent possible overlaps from the beginning could reduce some of the transaction costs associated with rationalisation of activities afterwards, through discussion not only among national ministries, but also between national ministries and regions informing each other of possible initiatives.

Conclusion

Denmark has introduced profound changes in its governance system and laid the groundwork for a more rational management of regional and innovation issues. Regional councils and RGF are evolving to be agents of transformation for their regional economies. This is particularly critical for peripheral regions with sub-optimal conditions for innovation, as is the case with several municipalities in Central and Southern Denmark.

Partnerships have been established with the central government to make the regional/state relationship increasingly productive, supported by the annual partnership agreements. The central government could make more active use of the RGF mechanism to meet both national and regional goals. RGF play an important role in boosting the regional economy, helping to set priorities for investment, and serving as a mechanism for project approval of national programmes. And the agreements are reportedly supporting greater inter-ministerial co-ordination, which is needed to reduce, when possible, unnecessary system complications. Trust-building between the regions and central government, as well as with the municipalities, needs to continue. In that context, more advanced use of contracting procedures between the different levels of government could be a way forward. International experience seems to show that formalised relationships between the regions and the central government can help the regional level to become a driving force in regional policy making. Furthermore, thanks to contracting procedures where there is funding and formal mechanisms, regions can gain further expertise in strategic policy design and national governments get valuable information from regions.

As is common in OECD countries, mechanisms are required to assess the relevance of different regional assets for national goals. Regions outside of the capital in many countries often feel marginalised by their relative remoteness. To support the upcoming new national innovation strategy, as well as other business development policies, commonly accepted mappings of different areas of industrial and research excellence are needed. This serves both to illustrate the regional contribution to national goals, as well as the regional niche on a global scale. It will also serve to identify areas for further co-operation for building critical mass, or complementarity in the regional contributions to national targets. Greater use of harmonised data and budget information, as well as shared policy intelligence between national and regional levels, will further serve these interests.

Funding of regional business and innovation support requires piecing together different funding streams. The influence of EU Structural Funds affects nearly all regional level spending in Denmark. However, the spending rules do impose constraints on the nature of regional action. It is therefore important to focus on simplification and an orientation towards results. This is particularly important given the increasing need to mobilise private sector investment towards regional growth goals.

Key recommendations

- Build on the progress thus far of national-regional partnership agreements to:
  - promote greater inter-ministerial co-ordination at national level with respect to place-based policies for supporting growth, also seeking to reduce programme proliferation in the innovation system when possible;
  - consider establishing more concrete and longer-term commitments with associated funding;
  - address bottlenecks to growth outside of the regional mandate for action.
- For development and implementation of the new national innovation strategy, as well as entrepreneurship policies, and in collaboration with the regions:
  - generate commonly accepted mappings and studies of research and industrial competencies to match the localisation of research with industrial competences when possible and identify the contribution of each region to national goals in an international context;
  - make greater use of bottom-up cross-regional opportunities to build critical mass and support specialisation of clusters in national and international networks;
  - continue to support shared policy intelligence and data analysis between national and regional governments.
- Given the prominence of EU funding rules for regional growth forum spending:
  - identify with regions and the EU opportunities for administrative simplification and flexibility in EU spending rules and/or the Danish interpretation of those rules;
  - use the joint national-regional impact evaluation of Structural Funds to develop best practices for project monitoring and impact.

Notes

1. See, for example, Cooke and Morgan (1993) and Halkier and Danson (1997).

2. See, for example, Regeringen (2004), Indenrigs- og Sundhedsministeriet (2004), Økonomi- og Erhvervsministeriet (2005).

3. The main function of the designated peripheral areas is a political commitment to devote at least 35% of expenditure on regional development projects (including both ERDF and ESF) for the benefit of the designated peripheral areas in which only around 10% of the Danish population lives.

4. There is one for each of the three regions in the Jutland Peninsula and one for Zealand including the Zealand Region and Capital Region.

5. In 2008, the regions' operational expenditure amounted to approximately DKK 87 billion of which municipal co-financing constitutes approximately DKK 18 billion, and overall regional development spending was DKK 2.3 billion (Danish Regions, 2008).

6. For example, 86% of respondents said that complex and bureaucratic application process limited the usefulness of EU funding; 71% of respondents found that prohibitive and disproportionate control and auditing processes were also a challenge; 68% said that restrictive and inflexible administrative and reporting procedures were also getting in the way of access and efficiency; and 72% said that the financial management of EU Structural Funds is too complex and 59% said that the overall administration was too complex. Furthermore, the administrative burden deters third-sector organisations, universities and SMEs from applying for EU funding for the first (*sic*) to some extent according to 46% and a great extent for 48% respondents.

7. Per the Prime Minister's address to the European Parliament 18 February 2012, "The only sustainable future for our social market economies is to embrace change and increase competitiveness. The essential basis for that is stability that fosters growth, and opportunity that maximizes innovation." (Danish Prime Minister's Office, 2012)

8. These four areas are: *i)* strengthening co-operation between companies and knowledge institutions; *ii)* increasing the number of highly educated in enterprises; *iii)* increasing commercialisation of public research; and *iv)* strengthening the GTS (Advanced Technology Groups) network and their technological service delivery to companies.

9. The former Ministry of Science, Technology and Innovation now also oversees higher education since the 2011 elections.

10. As stated in the Innovation Denmark Action Plan, "it is of great economic significance that this knowledge is increasingly being exploited by Danish business through effective knowledge dissemination".

11. New name of the Ministry of Economic and Business Affairs after the elections in 2011.

12. The autonomous Council for Strategic Research decides how to prioritise the DKK 960 million earmarked for strategic research. Likewise, it is the board members of the Advanced Technology Foundation that administer the yearly budget of DKK 600 million dedicated to the development of new and advanced technologies. And the Council for Technology and Innovation administers a large number of programmes to promote technology diffusion, with a budget of DKK 1.091 billion in 2011.

13. Funds for basic research are divided among the universities on the basis of a historic distribution. But a new funding model is about to be introduced in which a small (but increasing) part of the basic funding is allocated among universities on the basis of their results. The new funding models have the following weights: 45% = number of students, 20% = amount of external research funding, 25% based on research excellence (bibliometrics), 10% = number of PhDs awarded. The first step towards an introduction of this new model was taken in 2010 where DKK 100 million was distributed according to results. It is agreed that future growth in funding for basic research should be distributed according to this new model.

14. Its budget for 2011 is DKK 960 million. Its main target groups are universities (only 5% of the funds are disbursed to companies). The choice of these areas is determined by societal challenges facing Denmark. The prioritised areas in 2011 are: *i)* sustainable energy and environment; *ii)* individuals, disease and society; *iii)* health, food and welfare; *iv)* transport and infrastructure; *v)* strategic growth technologies; and *vi)* education and creativity.

15. The government has announced that it intends to merge the Council for Strategic Research and the Council for Technology and Innovation for

greater coherence at national level, which would also help regional innovation system actors.

16. In 2010, the Council for Strategic Research together with the Council for Technology and Innovation initiated SPIR (Strategic Platforms for Innovation and Research) which focus on public-private partnerships. A budget of DKK 70 million was devoted to this programme in 2011.

17. The preparation of their meetings through elaborate systems of administrative and political committees has to some extent moved the formal meetings of growth fora away from strategic debates and towards a more approval role, because consensual positions on strategies, initiatives and individual projects have been achieved well in advance (Larsen, 2011). However, there are some initiatives such as in Southern Denmark where RGF members have participated in retreats to reflect about upcoming strategies away from their administrative role.

18. For more information, see Økonomi- og Erhvervsministeriet og Kommunernes Landsforening (2011).

19. See note "Mapping of the cross-regional collaborations of the growth fora" 31-08-2011; Case No. 07/2743; Document No. 34256/11; prepared by Danske Regioner.

20. Per Danske Regioner (2010).

21. See also Halkier (2011b).

22. See *http://www.regionalt.erhvervsstyrelsen.dk/regional_statistikbank* .

23. The last two annual meetings of the committee covered themes such as the development challenges of outermost regions, and the previous year impacts of the crisis for employment.

24. The Minister of Business and Growth is the chairman of the committee. Other members include: the Minister of Economic Affairs and the Interior; the Minister of Finance; the Minister of Science, Innovation and Higher Education; the Minister of Taxation; the Minister of Housing, Urban and Rural Affairs; the Minister of Employment; the Minister of Food, Agriculture and Fisheries; the Minister of Climate, Energy and Building; the Minister for Trade and Investment; the Minister of Health; the Minister of the Environment; and the Minister of Culture. Other relevant ministers are included when it concerns their respective areas.

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Annex 2.A1

Table 2.A1.1. **Danish STI policies and regional dimensions**

Sources of funding	Annual budget (2010)		Purpose	Regional dimension (if any)
Danish Ministry of Science, Innovation and Higher Education			University basic funding is allocated to the three main objectives – education, research and other purposes.	(No explicit regional dimension) Funds for research are granted to the universities on the basis of a historic distribution results. A new funding model is about to be introduced where funding is allocated based on results.
Basic funding for universities		Millions DKK	The council is responsible for awarding funding for Danish research within prioritised and thematically delimited areas determined by the Danish Parliament.	(No explicit regional dimension) Funding for strategic research is based on application. Strategic research projects are subject to special quality criteria. The council assesses the quality of applications on the basis of the relevance, potential impact and quality of the research.
	Education	5.767		
	Research	7.290		
	Other purposes, etc.	1.063		
	Total basic funding	14.120		
Strategic Research Council	DKK 1.1 billion (2010)			

Table 2.A1.1. **Danish STI policies and regional dimensions** (*cont.*)

Sources of funding	Annual budget (2010)	Purpose	Regional dimension (if any)
Danish Council for Independent Research	Approximately DKK 1.4 billion (2010)	The Danish Council for Independent Research (DFF) supports individual researchers and research groups that contribute to the advancement of excellence in Danish research.	(No explicit regional dimension) Funds are awarded through open competition. The funds are not earmarked politically for specific research purposes, but are granted to individual researchers who – by virtue of their qualifications and expertise – are seeking to implement their own original research ideas of a high standard. The council thus funds all types of research, such as basic and applied research.
The Danish National Research Foundation	DKK 415 million (2010)	The foundation works to strengthen Danish basic research within all research fields. The foundation's primary working method is to set up and fund research centres of highest international standing – so-called centres of excellence – for longer periods of time.	(No explicit regional dimension) The Centre of Excellence (CoE) Programme is the key funding mechanism. Top researchers with the most ambitious ideas are awarded a CoE through fierce competition involving a two-stage application process. Centres may be established within or across all fields of research. A total of 77 centres of excellence have been established so far.
Danish National Advanced Technology Foundation (*Højteknologifonden*)	DKK 509 million (2010) The foundation will have a base capital of DKK 16 billion by 2012. The interest earned from the base capital will yield DKK 600 million to be invested in public-private research projects each year.	The Danish National Advanced Technology Foundation offers grants in the form of co-funding for high-technology research and innovation initiatives and projects.	(No explicit regional dimension) The Danish National Advanced Technology Foundation supports selected fields and technologically advanced projects or consortiums, which have a range of participants that will contribute financially.

Table 2.A1.1. **Danish STI policies and regional dimensions** (*cont.*)

Sources of funding	Annual budget (2010)	Purpose	Regional dimension (if any)
Danish National Advanced Technology Foundation (*Højteknologifonden*) (*cont.*)			Funds are awarded through open competition. Each initiative or project must meet three criteria: – obvious commercial potential; – technology transfer; – collaboration between public sector research institutions and private sector companies.
The Danish Council for Technology and Innovation	The Danish Council for Technology and Innovation administers a number of initiatives of which the purposes are to promote innovation and dissemination of knowledge between knowledge institutions and enterprises. The different initiatives are briefly introduced below		
Innovation Consortia	DKK 92 million (2010)	The purpose of the consortia is for the parties to jointly develop knowledge or technologies that benefit not only individual companies, but also entire industries within the Danish business community.	(No explicit regional dimension) The only criteria are that innovation consortia should consist of at least two companies: a research institution and advisory/knowledge dissemination party. Collaboration should be agreed for a duration of between two and four years.

Table 2.A1.1. **Danish STI policies and regional dimensions** (*cont.*)

Sources of funding	Annual budget (2010)	Purpose	Regional dimension (if any)
Approved Technological Service	DKK 379.5 million (2010) distributed among nine GTS-institutes	The nine authorised technological service institutes (GTS institutes) have a special obligation in bringing knowledge from labs to business. Each institute has its own technology profile and varies in terms of size and field of research. They are all not-for-profit organisations.	(No explicit regional dimension) The Ministry of Science, Innovation and Higher Education approves a business as a GTS institute. Approval is valid for three years and grants access to negotiate a "performance contract" with the ministry. Funding through the performance contracts represent about 10% of the nine institutes' total revenue. The nine institutes employ a staff of about 3 500 and generate annual revenue of DKK 3.4 billion. The lion's share of revenue comes from selling knowledge and services on a commercial basis.
Industrial PhD	The programme grants a wage subsidy up to DKK 522 000 over a three-year period to a private company in order to co-fund the salary for the Industrial PhD. In the period 2002-2010 a total of 800 Industrial PhDs were awarded to companies across the country.	An Industrial PhD project is a business-oriented PhD. The research project is conducted in co-operation between a private company, an Industrial PhD student and a university.	(No explicit regional dimension) Industrial PhD projects are awarded through open competition based on research excellence. In the years 2002-2010, the Central Denmark Region and Southern Denmark Region accounted for respectively 15% and 9% of the total number of Industrial PhDs granted. The Capital Region of Denmark accounted for close to 70% of the Industrial PhDs.

Table 2.A1.1. **Danish STI policies and regional dimensions** (*cont.*)

Sources of funding	Annual budget (2010)	Purpose	Regional dimension (if any)
Knowledge Pilot (*Videnpiloter*)	SMEs can receive a wage subsidy of DKK 12 500 per month if they hire an academic (knowledge pilot) for a period of 6-12 months. A total grant amount of DKK 12.1 million was distributed in 2009.	The purpose is to strengthen innovation capacity in SMEs.	The Knowledge Pilot Programme has an implicit regional dimension, since it is aimed at SMEs that have no experience with academic workers. The only criterion is that the academic should carry out a specific development project for the company.
Knowledge voucher (*Videnkupon*)	Up to DKK 100 000 in subsidy to SMEs wanting to procure knowledge services from publicly funded research organisations. A total budget of DKK 32 million (2010).	The knowledge vouchers for small and medium-size businesses are to promote the collaboration between SMEs and knowledge institutions with the purpose of enhancing the innovation and development activities in the SMEs.	The knowledge voucher has an implicit regional dimension, since the programme is aimed at SMEs who have no experience with academic workers and since the regional "Growth Houses" (regional business links) are responsible for promoting the knowledge voucher programme to enterprises.
Danish innovation networks	Each year the Ministry of STI supports innovation networks with approximately DKK 75 million. A similar amount of co-funding is required from businesses, knowledge institutions, regions, etc.	The innovation networks offer access to a broad overview on the latest science results and innovation trends within their respective fields of expertise. Each network employs on average four to five people who support businesses and researchers in developing joint innovation projects.	The innovation network initiative has a clear regional dimension. Each network operates on a national basis, but the networks are located all over Denmark according to regional clusters and strongholds. Close to half of the 22 networks are anchored in the Southern and Central Denmark Regions.

Table 2.A1.1. **Danish STI policies and regional dimensions** (*cont.*)

Sources of funding	Annual budget (2010)	Purpose	Regional dimension (if any)
Proof of Concept funding		The aim of the Proof of Concept schemes is to support the commercialisation of inventions. The schemes bridge the gap between grant-funded research at public research institutions and initial product development by innovation consortia or private investors.	The programme does not have an explicit regional dimension but is divided geographically. Funds are awarded through two regional consortia, one involving research institutions west of the Great Belt and one involving research institutions east of the Great Belt.
Open funds	DKK 20 million (2010)	An open pool to support projects, which the existing programmes and means do not cover.	(No explicit regional dimension) The purpose of the open funds is to strengthen the collaboration between knowledge institutions and companies on innovation and the dissemination of knowledge to benefit the business community. Projects must support wider application in other companies to be eligible for support.
SPIR – strategic platforms for innovations and research	DKK 70 million (2011)	The objective of SPIR is to create a dynamic and integrated public-private partnership in research and innovation for promoting growth and prosperity.	(No explicit regional dimension) In 2011 there was a call for “intelligent welfare technology solutions”. Consortia of researchers and businesses can apply for funding for research and innovation of high international standard, aiming at new ICT-based solutions within welfare areas of significant societal importance.

Table 2.A1.1. **Danish STI policies and regional dimensions** (*cont.*)

Sources of funding	Annual budget (2010)	Purpose	Regional dimension (if any)
Innovation incubators: Incubation and pre-seed funding for early-stage technology ventures	The six innovation incubators administer a total yearly grant amount of approximately DKK 200 million	The six so-called ”innovation incubators” are a unique combination of government-backed pre-seed capital, science park and venture company. The innovation incubators provide pre-seed funding and function as host and mentor for new high-risk business ideas – from the first tentative steps to a viable enterprise.	The innovation incubators have a strong regional dimension. The six innovation incubators are located at HEIs throughout the country – three of the six innovation incubators are located in the Central and Southern Denmark Regions.
Danish Ministry of Business and Growth	The Ministry of Business and Growth is responsible for a number of policy areas which are important for the general business environment, including business regulation, intellectual property rights, competition policy, the financial sector, etc. The ministry is also responsible for the Danish Growth Council and a new (2009) policy initiative called the Business Innovation Fund (*Fornyelsesfonden*).		
The Business Innovation Fund (*Fornyelsesfonden*)	DKK 760 million for 2010-2012	The aim of the Business Innovation Fund is to promote growth, employment and export by supporting innovation and market maturation within green growth and welfare as well as providing support for change-over to exploit new business and growth opportunities in less favoured areas of the country.	(A strong regional dimension) The Business Innovation Fund offers financial support through loans and economic guarantees for projects that contribute to creating new business and growth opportunities in less favoured geographical areas of Denmark. These are areas with unemployment significantly above the national average, or where it is extremely difficult for the unemployed labour to find new employment.

Table 2.A1.1. **Danish STI policies and regional dimensions** (*cont.*)

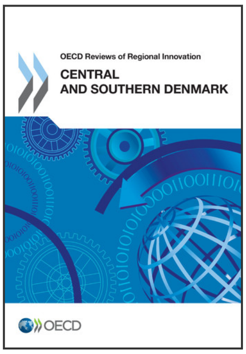
Sources of funding	Annual budget (2010)	Purpose	Regional dimension (if any)
The Danish Growth Council (*Konkurrenceudsatte midler*)	DKK 50 million (2010) The funds originate from the EU Structural Funds, while the Danish government contributes up to 25% of budgeted costs for approved projects. Note that 90% of Structural Funds are spent by the regional growth fora across the country and that Denmark is the country with the highest share of Structural Funds dedicated to innovation.	The Danish Growth Council has as a special task to promote co-ordination between the national growth strategy and the regional business development strategies set by the regional growth fora to contribute to an effective and continuous process enhancing growth and business development in all parts of Denmark.	(A strong regional dimension) In 2011 there was a call for projects under the theme "Strengthening the growth competencies of SMEs", with a special focus on spin-offs and partnerships. While project applications must show national significance, the purpose of the funds is to support the strengthening of regional competitiveness.
Danish Ministry of Finance			
The Public Welfare Technology Foundation (*Anvendt Borgernær Teknologi-fonden*)	A total budget of DKK 3 billion from 2009 to 2015, with yearly investments of DKK 500 million.	The Public Welfare Technology Foundation supports the development of innovative, labour-saving technologies and intelligent reorganisation of service delivery processes with the goal to increase productivity, efficiency and working conditions in the public sector, and provide the choice of more flexible, user-centred services to citizens.	(No explicit regional dimension) The Public Welfare Technology Fund grants support to two types of projects: demonstrational projects, for tests of newly developed technology; and implementation projects, for already existing technology. Funds are distributed in open competition. Both types of project focus on application potential or capacity for wider implementation nationally within the public sector.

Table 2.A1.1. **Danish STI policies and regional dimensions** (*cont.*)

Sources of funding	Annual budget (2010)	Purpose	Regional dimension (if any)
Danish Energy Agency	The agency is responsible for the whole chain of tasks linked to the production, transport and utilisation of energy, and the impact on the climate. The task is to ensure the legal and political framework for reliable, affordable and clean supply of energy in Denmark. The agency is also responsible for Energy-technological Development and Demonstration Programme (*Energiteknologisk Udviklings- og Demonstrationsprogram*) and Green Labs DK.		
Energy-technology Development and Demonstration Programme (*Energiteknologisk Udviklings- og Demonstrationsprogram*)	DKK 400 million (2011)	The Energy-technological Development and Demonstration Programme promotes new climate-friendly energy technology that increases supply and realises the business potential in the Danish energy sector.	(No explicit regional dimension) Funds are awarded to projects on the basis of an application. Applicants can be private enterprises, public organisations or research institutions. Projects must focus on development, research or demonstration of energy-oriented technology. For development and demonstration projects an own-contribution of 50% is expected.
Green Labs DK	DKK 210 million over the years 2010 to 2012.	Green Labs DK is a support scheme focusing on the establishment of large-scale test facilities for the demonstration of new climate technologies.	(No explicit regional dimension) Funds are awarded on the basis of an application in open competition. Special attention is given to public-private collaboration and international involvement.
Ministry of Food, Agriculture and Fisheries	The agency is responsible for the whole chain of tasks linked to the production, transport and utilisation of energy, and the impact on the climate. The task is to ensure the legal and political framework for reliable, affordable and clean supply of energy in Denmark. The agency is also responsible for the Energy-technological Development and Demonstration Programme.		

Table 2.A1.1. **Danish STI policies and regional dimensions** (*cont.*)

Sources of funding	Annual budget (2010)	Purpose	Regional dimension (if any)
Investment-scheme for food processing companies (*Investering i nye teknologier til forarbejdning af fødevarer*)	DKK 120 million over the years 2010 to 2012.	The purpose of the investment-scheme is to support the development of new technology for food processing in order to strengthen growth and productivity in Danish food industries and agriculture.	(No explicit regional dimension) The scheme has an implicit regional dimension through its focus on rural districts and development of industries working with agricultural products. Applications are selected based on its commercial potential, technological novelty and growth opportunities.
Green Development and Demonstration Programme (*Grønt Udviklings- og Demonstrationsprogram*)	Approximately DKK 600 million over the years 2010 to 2012. 90% of the funds each year are earmarked for projects with budgets over DKK 3 million.	The purpose of the programme is to support the development of competitive and sustainable food and non-food production within ecology.	(No explicit regional dimension) Funds are distributed through open competition, where projects are prioritised based on their focus on applied research, development of prototypes, knowledge-sharing activities and commercial potential.
Danish Environmental Protection Agency			
Subsidy for Environmentally efficient technology (*Tilskudsordning til miljøeffektiv teknologi*)	DKK 64.3 million in 2010 and 2011.	The purpose of the subsidy is to support the development, test and demonstration of environment technology, which otherwise would not have been developed.	(No explicit regional dimension) Funds are distributed on the basis of the project's relevance to the strategy of the Danish EPA, the novelty of the technology and the potential for environmental improvements. Private companies, research institutions, public and private organisations are all eligible to receive the subsidy.



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