Support to SMEs - Increasing Research and Innovation in SMEs and SME Development

Work Package 2

Denmark
Operational Programme ERDF 2007-2013 Innovation and Knowledge

Case Study

Ex post evaluation of Cohesion Policy programmes 2007-2013, focusing on the European Regional Development Fund (ERDF) and the Cohesion Fund (CF)

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Quotation is authorised as long as the source is acknowledged along with the fact that the results are provisional.
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LIST OF ABBREVIATIONS

AIR         Annual Implementation Report
ERDF        European Regional Development Fund
ESF         European Social Fund
EU27        European Union 27
GDP         Gross Domestic Product
GERD        Gross Expenditure on Research & Development
GNP         Gross National Product
ICT         Information and Communication Technology
MA          Managing Authority
NOP         National Operational Programme
OP          Operational Programme
R&D         Research and Development
RDI         Research development and Innovation
RGF         Regional Growth Forum/Fora
ROP         Regional Operational Programme
SMEs        Small & Medium-sized Enterprises
1. EXECUTIVE SUMMARY

1.1. Context and background

The Danish Operational Programme Innovation and Knowledge 2007-13 was developed under the ERDF’s Regional Competitiveness and Employment Objective. It was a national OP applying across the whole of Denmark, closely integrated into a national strategy. It focused primarily on innovation and knowledge transfer, rather than SME support as such.

Danish local government was reformed in the period leading up to 2007 creating regional authorities in North Jutland, Central Jutland, South Denmark, Zealand and the Capital region (including Bornholm, which for ERDF purposes operates as an additional region).

Danish universities were also being amalgamated and were introducing a change in culture, at least for some, encouraging engagement with local communities.

1.1.1. Socio economic context

In formulating the Operational Programme, the assessment by the Danish authorities was that the picture was generally positive and optimistic. Denmark had one of the strongest national economies in the EU, economic growth was relatively high, unemployment and inflation were low and there was a budget and balance of payments surplus. At the same time, regional differences in Denmark were modest by international standards.

The European Innovation Scoreboard for 2007 located Denmark among the innovation leaders, in 5th place. Denmark was ranked first in the Innovation drivers dimension (with indicators such as population with tertiary education, participation in lifelong learning and the broadband penetration rate) and in relation to ‘innovative SMEs co-operating with others’. As with other innovation leaders, Denmark’s position indicates the presence of mature innovation systems.

Business R&D expenditure in Denmark was 1.67% of GDP in 2005 as against an EU average of 1.17% and Public R&D expenditure was 0.76% of GDP compared with an EU average of 0.65%. However, the share of medium-high-tech and high-tech R&D was 84.7% of manufacturing R&D expenditure, while the EU average was 85.2%, reflecting in part Denmark’s relatively restricted levels of activity in classic medium and high-tech manufacturing sectors.

A further area of relative weakness in international comparisons related to the management capacities of enterprises.

Although Denmark was not affected to the same extent as some other EU Member States, the Danish economy was nevertheless hit hard by the economic and financial crisis. It lost 5.7% of real GDP from 2008 to 2009 and consistent economic growth did not return until the last half of 2013. After a collapse in the housing market and with high household indebtedness, business and consumer confidence remained fragile.

1.1.2. The SME sector

Denmark is an economy in which the small firm sector has long had a prominent place, not least because of the role that smaller enterprises have played in its export sector.

In the SME population, micro enterprises represent a noticeably smaller proportion of the total enterprise population (4-5 percentage points) with considerably less employment (10 percentage points) than in the EU as a whole. The proportion of value-added generated by SMEs together was also greater by 5 to 6 percentage points than in the EU as a whole.

A survey of the innovation activities of Danish enterprises had shown that the level of innovation is high in many places in Denmark. Compared with enterprises in the rest of
the world, Danish enterprises consider that they are more active when it comes to user- and price-driven innovation. Far fewer, however, consider that they are among the most active within research- or technology-driven innovation.

Together the data suggest an SME sector that in 2007 was relatively dynamic and innovative, especially in its small and medium-sized segments, where employment and the generation of value-added was relatively concentrated.

1.1.3. Support for SMEs & Innovation

SME and innovation support structures are well established in Denmark. The form of this support in the programming period was largely determined by the 2005 Law on Business Promotion (Lov om Erhvervsfremme), which created five Regional Business Development Centres (’Væksthuse’ – Growth houses in Danish) with an explicit focus on supporting growth. Innovation support was being actively developed during the early stages of the OP, notably as a result of the ‘InnovationDenmark’ Action Plan (2007).

1.1.4. The Strategy for the OP

There was a high degree of integration between national and ERDF strategies and Danish planning was squarely based on the European Council’s wish for the EU Structural Funds to contribute to fulfilment of the ‘Lisbon objectives’ of sustainable growth, competitiveness and employment.

The comprehensive national strategy, promoting Denmark as a significant player in the global economy, – “Progress, Innovation and Cohesion” embodied the results of an extensive research and consultation exercise. A detailed programme of actions was elaborated, forming a major framework of reference in the development of the Danish OPs for the 2007 – 14 period. In addition, Denmark followed parallel debates in the OECD and the study ‘The New Economy: Beyond the Hype’ – OECD (2001) especially. This thinking led to a focus in the Danish OP on four ‘growth sources’ (vaekstkilde), of which three were primarily supported by the ERDF Programme and one was solely supported by a parallel (and associated) ESF Programme. The ERDF OP made use (initially) of 9 policy instruments:

1. **Innovation, knowledge sharing and knowledge building,** supported by 1) developing Regional Innovation Capacity, by improving the collaboration between knowledge institutions and enterprises: 2) interaction on Innovation, strengthening public-private co-operation on innovation and 3) Cluster Relationships.

2. **Establishment and development of new enterprises,** supported by 4) Supply of public and private advice, 5) Financing for entrepreneurs 6) promoting an Enterprise culture.


A further important element in the overall design of the OP in Denmark was the implementation of the programme at the level of Danish regions. 90% of the funds were allocated in this way. A major element here are the Regional Growth Fora (‘Vaekstfora’), which are stakeholder bodies with 21 members appointed by the Regional Councils. Through this system, regional variations on the national OP strategy were developed, including both a development of sectoral priorities and a variation in the types of instrument used.

1.1.5. Monitoring and Assessment

In terms of monitoring and assessing the effects of the intended actions, the Innovation and Knowledge OP defined a series of output, result and impact indicators. Only the output indicators, however, related to the different instruments, as initially defined, suggesting right from the beginning that interaction between instruments under each growth source would lead to common results and impacts.
1.1.6. Allocation of Funds

There was no significant reprogramming of the ERDF funds over the 2007 – 13 period.

Currently, the online project database operated by the Danish authorities shows that 344 ERDF projects were funded for the 2007-13 period and 253 ESF projects. Of the 344 ERDF projects 261 were directed towards the first growth objective ‘Innovation, knowledge sharing & building’, receiving 64% of the allocated budget.

The original OP document identified some nine instruments to be applied within the three Growth Objectives (soon reduced to seven). Subsequently, the distinctions were hardly used at all and were clearly not part of the normal discourse on the Programme. All the data collected are presented in terms of the three growth objectives, which were clearly the prime focus of attention.

There are several reasons for this lack of focus on instruments, but among the more important ones is the fact that the complex nature of instruments promoting advanced innovation systems means that there are several overlaps, such that on occasions the distinctions lose their meaning.

1.2. Evidence on achievements

The system for assessing the achievements of the Innovation & Knowledge OP developed considerably over the programming period and is still undergoing certain changes.

1.2.1. The Performance of the Danish Economy over the Programming Period

One of the impact indicators chosen for the OP was ‘Denmark’s ranking on the list of most innovative countries in the EU’ The Innovation Scoreboard had put Denmark in 5th place in 2007. By 2014, Denmark had improved its position in the Innovation Union Scoreboard, to second place after Sweden and thus continued to rank among the ‘Innovation Leaders’ in the European Union.

However, Denmark’s GNP per head declined by nearly 7% over the period 2007 to 2013 and the number of persons employed fell by over 125,000 or 4.5%. More positively, the number of enterprises reporting innovation improved slightly, both in relation to product and/or process innovation and organisation and/or marketing innovation. These figures show how the OP was battling against adverse headwinds for much of the period over which it was implemented.

A more fundamental problem that has received at lot of attention in Denmark is the country’s productivity performance. Since the mid-1990’s Denmark has had one of the lowest growth rates in GNP per inhabitant of all the OECD countries. The 2014-2020 Structural Funds Operational Programmes for Denmark have improving productivity as a central theme.

1.2.2. The Performance of the Operational Programme

The figures presented in the 2013 Annual Implementation Report show that all the indicators exceeded the targets set at the beginning, some to a considerable extent. Behind these headline indicators a large number of studies on different aspects of the Programme have been conducted and also evaluations of individual projects. A further statistical exercise has identified the real effects of participation in projects supported by the Structural Funds, by comparison with a matched control group. An analysis of 10,000 private enterprises for the period mid-2010 to mid-2013 showed that project participants had created around 4000 full-time jobs over the period and had turnover growth of 19 billion krone (EUR 2.5 billion).

1.2.3. The nature of the Achievements

The scale of the ERDF intervention in Denmark was not large – EU support of EUR 245.1 million over the period. Even in relation to the national investment in R&D (GERD), which was EUR 5.4 billion (2.4% of GDP) at the beginning of the programming period (2006), the amount was not of major significance.
However, national support of business development, development of competences and technology and support for innovation funds together amounted to just under EUR 1 billion and especially in a regional context, the Structural Funds generally have a much larger profile.

1.3. Main findings and conclusions

The alignment of the Danish OP with national and European strategies, its responsiveness to national and local needs, its effective engagement with interest groups in the regions and its integration of ERDF and ESF interventions make it highly coherent and relevant. In addition, the administration and governance of the Operational Programme must be regarded as relatively efficient. The flexible implementation of the OP at the regional level was a major strength in the whole system, allowing a response to local circumstances, based on the knowledge of regional stakeholders.

Overall, the Structural Funds interventions are reported to have involved over 10,000 private enterprises. In the 2013 Implementation Report, the number of firms/institutions/organisations that have become more innovative was given as 3,028, as against a target of 1,000, 3,583 new enterprises had been created (target 900), 4,887 firms had received advice (target 300), loans to enterprise amounted to €23.8m (target €13.4m) and 3,007 firms had reported an increase in ICT use (target 200). Even at this stage, with projects still under way, this represents a substantial achievement.

The most telling evidence here comes from the Monitoring and Effect Assessment exercise, which compared the real performance of some 10,000 enterprises that had been supported by the ERDF with a matched control group that had not received support. Statistically significant differences between the two groups were found, in almost all sectors (the exception being the ‘experience economy’ - tourism and leisure industries), showing better performance in terms of employment (8,300 full-time jobs) and turnover (EUR 2.1 billion) by those that had participated in projects over the 2007-2010 period.

1.3.1. Conclusions

The following are the main conclusions from the case study:

- The Danish Innovation & Knowledge OP focused primarily on innovation and knowledge transfer, rather than SME support as such. This was relevant to Denmark’s development as an ‘innovation leader’ and highly coherent with national and European strategies. It has achieved a good integration with the ESF OP ‘More & Better jobs’.

- The development of cohesion policy in Denmark could be assisted by paying greater attention in the implementation process to the relative effectiveness of different policy instruments.

- Encouraging entrepreneurship and an innovation orientation is not only a matter for enterprises. Knowledge partners and especially universities need to be more adept at facilitating knowledge transfer and in some instances this requires a change in the culture of knowledge institutions.

- While there are considerable advantages to be derived from the implementation of the OP through the six Regional Growth Fora, this structure also causes some difficulties for the deployment of resources and the flow of information.

- There has been considerable development in monitoring and assessment arrangements over the programming period. The Managing Authority has already put in place arrangements to co-ordinate regional evaluation exercises more effectively and to generalise results of evaluations at a regional level. Further development of the Monitoring and Effect Assessment exercise is to be encouraged, including a finer slicing and publication of the data, to throw some light, for instance, on the relative performance of particular types of project/policy instrument.
2. CONTEXT AND BACKGROUND

The Danish Operational Programme Innovation and Knowledge 2007-13 was developed under the ERDF’s Regional Competitiveness and Employment Objective. It was a national OP applying across the whole of Denmark and was closely integrated into a national strategy for promoting an innovative economy. While this provided a national framework, it allowed for a substantial input from regional bodies in its implementation and consequently some important regional variations.

Danish local government was reformed in the period leading up to 2007 and the new structures actually came into effect on 1 January 2007 - the same date as the new EU Structural Funds programming period began. This changed the administrative structure of Denmark, abolishing the former counties, amalgamating communes into larger units and creating five new regions. These are North Jutland, Central Jutland, South Denmark, Zealand and the Capital region (which includes Bornholm, though for ERDF purposes Bornholm operates as an additional region). South Denmark is made up of the southern part of Jutland and the island of Funen. The Zealand region is comprised of those parts of the island of Zealand that are not part of the Capital region, which in turn refers to the former county of Frederiksborg in the north of the island as well as the city of Copenhagen.

At the same time as the reform of administrative units, Danish universities were undergoing significant changes that reduced the number of universities and research institutions from 25 to 8 universities and 4 research institutions and also introduced a change in culture, at least for some of the former institutions. The new structures could be spread over multiple campuses and were encouraged to develop engagement with local communities as well as providing teaching and undertaking research, though some already had a good track record in this respect. Above all, the re-organisation aimed to confirm world-class status through a focusing of resources.

One of the aspects of the OP being a national measure is that some areas (such as the capital) that they had not previously received ERDF funding became eligible. This not only meant that in these areas there was no legacy from previous programming periods to build on, but also that the administrative capacity to implement and monitor the Programme in these areas had to be built up.

2.1. Socio economic context

2.1.1. General economic conditions

In formulating the Operational Programme, the assessment by the Danish authorities of the position of the national economy was that the picture was generally positive and optimistic. This is supported by the data. Denmark had one of the strongest national economies in the EU, economic growth was relatively high, unemployment and inflation were low and there was a budget and balance of payments surplus. At the same time, regional differences in Denmark were modest by international standards, though with a tendency for economic progress to be particularly high in and around the major towns and cities, especially in the Greater Copenhagen area. Problems were noted in the geographically peripheral areas. These had been addressed in previous programming periods and it was agreed that that the peripheral areas should obtain at least the same proportion of Structural Funds resources in the period 2007-2013 as in the preceding period.

The real value of production in Denmark rose by an average of just under 2% a year in the period 1994-2004., although with some significant regional variations. The capital had the highest growth, at approximately 2.5% per year, followed by Central Jutland, South Denmark, Zealand and North Jutland with almost uniform growth. Economic growth on Bornholm was relatively low.

The population of Denmark on 1st January 2007 was 5,447,084. Over the previous decade (1996 – 2006), the total number of people living in the country had risen by just under 4%. This continued over the programming period at around the same rate. By 1st
January 2015 the population had risen to 5,659,715. About a quarter of the population lives in Copenhagen. In general, population growth has been strongest in and around the big cities, with numbers falling in several of the geographically peripheral areas, including several places in North and North-West Jutland, on the medium-sized islands and on Lolland.

With unemployment in 2006 at 5.4%, Denmark had a relatively low level compared with the rest of the EU, albeit with considerable regional variations. North Jutland had unemployment that was consistently 2 percentage points above the national average for much of the preceding decade and Bornholm had seen unemployment range around the 10% level over the same period.

Participation in the workforce in Denmark was high - over 76%. This was one of the highest participation rates in the EU, and is largely be attributed to a relatively high participation rate among women (73.5% against approximately 79.5% for men).

Denmark had, however, been moving down the international league tables in terms of the proportion of the population completing higher education. On the other side, Denmark had a high proportion of the workforce taking part in job-related continuing education and, furthermore, the average time spent by those participating in adult and continuing education was relatively high1.

2.1.2. Competitiveness

The Global Competitiveness Report for 2006/2007 issued by the World Economic Forum ranked Denmark as 4th in the Global Competitiveness Index after Switzerland, Finland and Sweden. Denmark scored well in relation to institutions, infrastructure, health and education, though less well in relation to its high taxes and inflexibility in salary levels.

Specifically, in relation to innovation, the European Innovation Scoreboard for 20072 placed Denmark among the innovation leaders, in 5th place with an index of 0.61 (as against 0.73 for Sweden the leading Member State). The innovation leaders are among the best performers in all 5 dimensions of the index. Denmark was ranked first in the Innovation drivers dimension (with indicators such as population with tertiary education, participation in lifelong learning and the broadband penetration rate) and 5th in Innovation & entrepreneurship in Intellectual property, while falling behind (14th position) in relation both to knowledge creation and applications (high technology exports, sales of new-to-market products and employment in medium to high-tech manufacturing). Interestingly, in view of the policy instruments applied, Denmark came top in relation to ‘innovative SMEs co-operating with others’. More generally, however, as was commented in the Report, the innovation leaders had a relatively even and strong performance across all five dimensions of innovation, tending to indicate mature innovation systems.

The European Innovation Scoreboard for 2007 also shows that Business R&D expenditure in Denmark was 1.67% of GDP in 2005 as against an EU average of 1.17% and Public R&D expenditure was 0.76% of GDP as against an EU average of 0.65%. However, the share of medium-high-tech and high-tech R&D was 84.7% of manufacturing R&D expenditure, while the EU average was 85.2%, reflecting in part Denmark’s relatively restricted levels of activity in classic medium and high-tech manufacturing sectors. To some extent, this is off-set by high-value services and, for instance by Danish agriculture, which remains a relatively a significant factor across Denmark, especially in many peripheral areas and which is among the most high-tech and efficient agricultural sectors in the world.

The Community Innovation Statistics, published by Eurostat (2007), placed Denmark in 4th place for European enterprises engaged in innovation activity. Based on the Community Innovation Survey for 2004, 57.7% of enterprises in industry were said to be engaged in innovation activity and 46.0% of service sector enterprises. This compared

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2 PRO INNO Europe paper № 6 European Innovation Scoreboard 2007
with an EU-27 average of 41.5% and 37.0% respectively. Of those enterprises reporting innovation activity, 47.7% introduced new or improved products to the market, as against an EU-27 average of 35.9%.

An area of relative weakness in international comparisons related to the management capacities of enterprises. An OECD analysis had placed Denmark behind the best countries in terms of management competences - 17th out of the 27 OECD countries in this area. Denmark performs particularly badly in terms of the quality of management training and the proportion of female managers, although there was a better performance with ‘flexible forms of organisation’, where Denmark had 6th place. The ability of the Danish workforce to adjust to new challenges is also assessed to be limited.3

2.1.3. Developments over the Programming Period

While more consideration will be given in Chapter 4 to the performance of the Danish economy over the programming period, it is also useful at this point to provide an overview of some of the developments, since these affected the implementation of the OP.

Although Denmark was not affected to the same extent as some other EU Member States, nevertheless, the Danish economy was hit hard by the economic and financial crisis. After a long consumption-driven upswing, Denmark's economy began slowing in 2007 with the end of a housing boom. It then lost 5.7% of real GDP from 2008 to 2009. Real GDP did grow by 1.4% in 2010 and 1.1% in 2011, but it dropped again by 0.4% in 2012 and property prices slumped about 20 percent in 2013, undermining consumer confidence and demand.

Economic growth did return in the last half of 2013, after five quarters of negative growth, but with household indebtedness still more than 275% of gross disposable income at that point, the recovery was still fragile and improvements only got under way towards the end of 2013.4

In the 4th quarter of 2013, Danish SMEs had positive expectations because of an increase in orders and because growth in the SME sector was expected to respond to increases in domestic demand and in exports. At the same time, employment remained still sluggish, with overall levels about 10% lower than in 2008. After the crisis companies focused more on reducing costs, increasing productivity and outsourcing secondary activities. This led to jobless growth.5

While at the beginning of the programming period, overall unemployment was not really an issue, the sharp rise with the recession to about 6% in 2010-13 (two-thirds EU average EU) brought unemployment back as a challenge. The dramatic change in the unemployment situation is evident in the chart below.

4 2014 SBA Fact Sheet for Denmark
5 ibid
Overall, the main effect of the economic crisis, as far as the implementation of the OP was concerned, was on business confidence and hence the take-up and exploitation of the support available. It will be seen that the strategy as such did not change, but the course of its implementation was certainly affected and the pace with which the targeted beneficiaries could respond.

2.2. **Industrial fabric and SMEs**

2.2.1. Introduction

The industrial structure of Denmark was judged by the national authorities to have some significant differences within a relatively common framework. In the decade before the beginning of the programming period, all the regions experienced a fall in employment in agriculture, fisheries and raw material extraction and the same applied to the manufacturing industries in most regions, with the exception of iron and metal, which saw a slight increase on Bornholm and in Central Jutland. Business services had experienced the strongest growth in employment in all the regions, and highest of all in the Capital region, which was already over-represented in this sector and in finance. Zealand has a relatively large number of persons employed within building and construction. Bornholm and North Jutland have relatively large numbers of persons employed in the primary industries and in the food-processing industry. Central Jutland has a relatively large number of persons employed in the wood-based and furniture industry and, together with North Jutland and South Denmark, is over-represented in the iron and metal industry.

In 2006, Denmark’s gross domestic expenditure on R&D (GERD) was 2.43% of GDP, above the OECD average of 2.26%. Business performed 67% of R&D (and funded 60% in 2005). The interaction between government and industry in science and innovation differs depending on the indicator – cross-funding of R&D is low, but a relatively high 30% of large firms collaborate with higher education institutions. Denmark also had a high venture capital intensity of 0.16%, well above the average.

Generally speaking, the relatively knowledge-intensive industries in Denmark are concentrated in the major urban areas and in certain sectors, while the more traditional industries dominate in the more sparsely populated areas.

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6 OECD (2011)
Between 1997 and 2003 private research and development increased by just over 65% at national level. Progress was made in all regions but was strongest in North Jutland, which saw a threefold increase, and Central Jutland, where the level of activity doubled.

A survey of the innovation activities of Danish enterprises had shown that the level of innovation\(^7\) is high in many places in Denmark. In each of the five regions there are urban areas where the innovation level within specific areas is virtually as high as in the Capital region. Examples include Odense and the Triangular Region of South Denmark, Aarhus and the Herning area in Central Jutland, and the Aalborg area in North Jutland.

Compared with enterprises in the rest of the world, Danish enterprises consider that they are among the more active in their respective branches when it comes to user- and price-driven innovation. Far fewer, however, consider that they are among the most active within research- or technology-driven innovation. This was to be an important consideration in shaping the Danish OP.

### 2.2.2. The SME Sector

In general terms, Denmark is an economy in which the small firm sector has long had a prominent place, not least because of the role that smaller enterprises have played in the export sector of an economy, where trading necessarily has a substantial presence.

More specifically, there are particular characteristics of the SME sector in Denmark. The basic statistics are as follows:

**Table 1. Structural Indicators on Enterprise Population 2007**

<table>
<thead>
<tr>
<th>Category</th>
<th>No of SMEs</th>
<th>%</th>
<th>No. Employed</th>
<th>%</th>
<th>Value-added</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>184,556</td>
<td>87.0</td>
<td>358,017</td>
<td>19.7</td>
<td>22.7</td>
</tr>
<tr>
<td>Small</td>
<td>22,823</td>
<td>10.8</td>
<td>450,174</td>
<td>24.8</td>
<td>21.8</td>
</tr>
<tr>
<td>Medium</td>
<td>4,027</td>
<td>1.9</td>
<td>385,472</td>
<td>21.2</td>
<td>20.0</td>
</tr>
<tr>
<td>Large</td>
<td>723</td>
<td>0.3</td>
<td>624,733</td>
<td>34.4</td>
<td>35.5</td>
</tr>
<tr>
<td>Total</td>
<td>212,129</td>
<td>100.0</td>
<td>1,818,396</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: OECD SMEs, Entrepreneurship and Innovation

It can be seen that there is an SME population in which micro enterprises represent a noticeably smaller proportion of the total enterprise population (4-5 percentage points) with considerably less employment (10 percentage points) than in the EU as a whole. Small enterprises make up most of the difference in enterprise numbers and together with medium-sized enterprises the difference in the proportions of employment, when compared to the EU as a whole. The proportion of value-added generated by SMEs together was also greater by 5 to 6 percentage points than in the EU as a whole. Together the data suggest an SME sector that in 2007 was relatively dynamic, especially in its small and medium-sized segments, where employment and the generation of value-added was relatively concentrated.

In terms of geographical distribution, the Capital region has relatively more large enterprises than the others, but the big disparities lie not among the regions but at municipal level. The peripheral areas have markedly more enterprises with fewer than five employees, while the lion’s share of large enterprises is found in municipalities around the capital.

For purposes of comparison with other OPs the distribution of Danish SMEs in terms of four levels of technological intensity is presented in the tables below:

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\(^7\) Center for Forskningsanalyse [Research Analysis Centre]. (2002) Innovationsstatistik [Innovation statistics]
Table 2. Distribution of SME population by four levels of technological intensity

<table>
<thead>
<tr>
<th>Techn. Intensity</th>
<th>Size class (employees)</th>
<th>Nº SMEs (2008)</th>
<th>0-9</th>
<th>10-49</th>
<th>50-249</th>
<th>Total SMEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low/nil</td>
<td></td>
<td>166,899</td>
<td>79%</td>
<td></td>
<td>11%</td>
<td>2%</td>
</tr>
<tr>
<td>Medium low</td>
<td></td>
<td>2,152</td>
<td>1%</td>
<td></td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Medium high</td>
<td></td>
<td>1,368</td>
<td>1%</td>
<td></td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>10,323</td>
<td>5%</td>
<td></td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>180,742</td>
<td>85%</td>
<td></td>
<td>12%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Source: CSIL elaboration of EC data

This table suggests that although some 12,000 Danish enterprises (6% of the total) can be classified as having a high technological intensity at the beginning of the programming period, on the basis of a methodology that categorises enterprises according to intramural R&D expenditure of the business enterprise sector (BERD), the bulk of the number of SMEs fell into the ‘Very low/nil’ category, with a restricted presence in the middle ground.

The European Innovation Scoreboard for 2007 shows that Business R&D expenditure in Denmark was 1.67% of GDP in 2005 as against an EU average of 1.17% and Public R&D expenditure was 0.76% of GDP as against an EU average of 0.65%. However, the Scoreboard also shows that the share of medium-high-tech and high-tech R&D was 84.7% of manufacturing R&D expenditure against an EU average of 85.2%. This reflects in part Denmark’s relatively restricted levels of activity in classic medium and high-tech manufacturing sectors. To some extent, this is off-set by high-value services and, for instance, by Danish agriculture, which is among the most high-tech and efficient in the world.

Another consideration is that the categorisation used above is based on an overview of industries as defined by NACE categories, which tend to reflect traditional distinctions. One of the interesting developments in Danish industrial structure is the growth of activities that cut across traditional categories.

The OECD study on regional innovation in central and southern Denmark – OECD (2012) – notes that early attention and investment on the green energy sector in Denmark has made Denmark ‘one of the hot spots for green energies at a global scale’. In 2008, 55,000 people were working in the energy and environment resource area and Denmark enjoyed important export strengths in this area (nearly 10% of exports in 2010). Denmark also has one of the highest patent shares in renewable energies in the EU. Behind these figures lie differing strengths in particular regions. Central Denmark, OECD (2012) points out, has strengths in wind, biomass and district heating, while Southern Denmark is strong in energy efficiency, (mechatronics, energy systems and production techniques) and offshore energy.

Similarly, welfare technology – technologies associated with health and care services – has generated considerable interest in policy discussions across the Nordic countries, including Denmark, and there is considerable activity in the area, with both national initiatives and elements supporting developments that form part of the OP at a regional level. However, because this new sector cuts across traditional categories, it is difficult to produce statistics on its size or relative economic significance.

A third ‘sector’ mentioned by the OECD study relates to the ‘Experience Economy’ – referring to current and more dynamic conceptions of the tourism and leisure industries. These account for around 10% of Danish employment and value-added, though activities are concentrated in the Copenhagen area, Aarhus and the eastern part of Jutland, though with some innovative developments that are more widely distributed. Related industries,

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such as those in the creative sector are part of the broader development of the Experience Economy.

Finally, the food sector, building on a very efficient agricultural industry with various forms of processing and distribution, is counter-acting a long-term decline in employment in agriculture-related industries in rural areas, including through establishing stronger links with tourism and the Experience Economy.

It will be seen that drawing on local strengths, these sectors have a significant presence in the strategies developed at a regional level in the implementation of the OP.

Overall, the picture of the SME sector in Denmark is of a relatively dynamic sector with strengths in small and medium-sized enterprises in particular, a good record on innovation particularly as a result of responding to clients’ needs. The explanation for these strengths lies both in longstanding capacities developed as a result of the need in a small country for even relatively small enterprises to be able to compete in international markets and a readiness, because of the social attitudes of the country, to explore responses to major social and environmental challenges and take a lead in developing new products in areas such as alternative energy and healthcare.

2.3. **Policy Mix**

The principal instruments supporting SMEs and promoting innovation are the responsibility of two different ministries – respectively, the ministry formerly known as the Ministry of Economic and Business Affairs and the Ministry of Science, Technology and Innovation.

Given the close integration in Denmark of national strategies and those developed under the Structural Funds, the instruments available under national initiatives, as they were implemented and developed regionally had an important effect in shaping the implementation of the OP, both in terms of determining the resources and facilities that were available for use and development through OP projects and also in influencing the thinking about the way that the instruments deployed under the OP were used. The fact, for instance, that SME support already had a strong focus on promoting growth helped shape those measures under the OP.

2.3.1. **SME Support**

The Danish Business Authority (Erhvervsstyrelsen) is the government business support Agency responsible for developing, running and coordinating initiatives that aim to promote the growth of Danish entrepreneurs and enterprises.

An explicit focus on growth was already developed in the mid-00’s in an attempt to create a strong business promotion system benefitting enterprises and entrepreneurs with the ambition and potential to grow. High-growth enterprises were seen to be more likely to survive hard times and to help create new jobs, so it was considered crucial to generate growth in a greater number of enterprises.

In 2005, the Law on Business Promotion (Lov om Erhvervsfremme) was adopted creating a new structure for the support of Danish businesses. In spite of various changes of government and significant shifts in business conditions as a result of the financial crisis, the law is still the basis for Danish SME support, although with some minor subsequent amendments. A new Law on the Promotion of businesses and regional development came into force in February 2014.

As a result of the 2005 Law, five Regional Business Development Centres (‘Væksthuse’ – Growth Houses in Danish), were set up in connection with the local government reform in

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2007. With a Centre in each of the new Regions\(^{10}\), their role was to make it easier for entrepreneurs and enterprises to obtain professional help to grow. The Centres were formed by local governments and organised as independent commercial foundations, offering enterprises with growth potential the possibility of obtaining an identification of their individual problems and a mapping of their growth opportunities. The mapping leads on to the development of a growth plan and – if relevant - referral to public or private support schemes.

The Business Development Centres work with local business offices, a network of knowledge institutions and private advisers and a series of other actors specialising in different aspects of business promotion (intellectual property, design, exports, etc.) to ensure that enterprises can benefit from one single business service system. The offices apply a ‘no wrong door policy’.

In addition, the Centres act as local coordinators for a large number of national, regional and municipal programmes targeted at enterprises and entrepreneurs, such as ‘Early Warning’ and ‘Capital through Consultancy’ (Kapital gennem rådgivning). The Early Warning scheme is designed to ensure that crisis-hit enterprises obtain professional, impartial consultancy and ‘sparring’ partnerships as quickly as possible. Capital through Consultancy, on the other hand, is a nationwide initiative focusing on growth enterprises, with the aim of improving their access to capital. Participating enterprises take part in a learning process with a coach who helps them understand the opportunities that their business has of accessing capital.

A portal called ‘Virk Startvækst’ (‘Act on Startgrowth’) provides a single entry to comprehensive business information, advice and tools for businesses in all stages of their life cycle. As part of the ‘Virk Startvækst’ portal, a site called vækstguiden.dk (the Growth Guide) provides businesses with useful information in the following four areas: 1) Financial Support, 2) Loans & Financing, 3) Advice and 4) Collaboration & Networks. The ‘Rådgiverbørsen.dk’ (Consultants’ Exchange) is a website providing a virtual meeting place for private-sector consultants and enterprises. Entrepreneurs can search the profiles of consulting firms or upload specific jobs for which consultants can compete.

The Danish system, therefore, can be seen to provide a range of integrated support services to enterprises that are delivered regionally and encourage enterprises to grow.

2.3.2. Innovation Promotion

Innovation policy during the programming period under consideration has been the responsibility of the Ministry of Science, Technology and Innovation, which has tasked the Danish Council for Technology and Innovation (DCTI), together with the Danish Agency for Science, Technology and Innovation, with establishing a framework for innovation policies in Denmark and also with realising a large part of these policies, with a view to achieving the best possible societal impact\(^{11}\).

The basis for this framework was derived from the Danish government’s globalisation strategy from April 2006 and the globalisation agreement of November 2006 entered into by the government, the Danish Social Liberal Party, the Social Democratic Party and Danish People’s Party. This agreement and its implementation through the annual state budget created a strong framework with broad political support for innovation and knowledge dissemination initiatives.

In developing this framework, the DCTI was able to build on a substantial legacy from earlier developments, as well as developing new initiatives. The instruments under consideration were also being applied within a broader context defined by the active development of innovation support over many years by a range of institutions. The Danish Technological Institute (DTI), for instance, is a well-established, not-for-profit institution that has a substantial track-record in developing and disseminating research-

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\(^{10}\) Bornholm shared a ‘Væksthus’ with the Capital Copenhagen.

\(^{11}\) The Danish Agency for Science Technology & Innovation 2007  InnovationDenmark 2007-2010 - The Danish Council for Technology and Innovation’s Action Plan for More Innovation and Effective Knowledge Dissemination
and technologically-based knowledge and supporting its business applications. This is largely delivered through consultancy and standardisation services. Similarly, the Danish Patent and Trademark Office has been active over a number of years in helping enterprises to manage and commercially exploit their intellectual property. This has been achieved through direct services and online support and also by working with regional business support agencies, such as the Growth. And, of course, the universities have frequently co-operated with enterprises on a bi-lateral basis.

Denmark also has a long tradition of networking and co-operation between enterprises – one of the strengths apparent in Denmark’s 2007 position in the European Innovation Scoreboard, noted above. This networking tradition developed over time into cluster strategies that are a prominent feature of the Innovation and Knowledge Operational Programme, as will be seen in Chapter 3.

At this stage, however, it is more a matter of noting that the DCTI had a strong foundation for further developing innovation policy instruments. In its Action Plan, entitled ‘InnovationDenmark’ published in 2007\(^{12}\), the DCTI listed the following as the most important instruments available to it in its new initiative:

<table>
<thead>
<tr>
<th>Innovation Instruments available to the Danish Authorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Innovation and research projects among several academic and research institutions and enterprises (innovation consortia)</td>
</tr>
<tr>
<td>• The approved technological service institutes</td>
</tr>
<tr>
<td>• Innovation and research networks among one or several academic and research institutions and many enterprises (high-technology networks, regional technology centres and ICT competency centres)</td>
</tr>
<tr>
<td>• Innovation pilot initiative and the Industrial PhD initiative</td>
</tr>
<tr>
<td>• Proof of Concept and technology transfer projects</td>
</tr>
<tr>
<td>• Innovation incubators</td>
</tr>
</tbody>
</table>

There are nine technological service institutes, which specialise in the transfer of knowledge from the laboratory into commercial applications. They specialise in different areas of research and technical application and mainly provide consultancy services on a commercial basis, although they are not-for-profit organisations.

The Innovation and research networks developed into the Innovation Networks Programme that has assisted clusters and networks based on technologies and disciplines, usually defined (at least initially) at a regional level. This helped to put enterprises with complementary interests in touch with each other and assisted with contacts with research institutes and experts and with project development. As will be seen, this model is close to that employed by the OP.

Innovation pilots provide funds to hire an academic to work in an enterprise for a period of 6 months to a year.

The Proof of Concept Programme supports technology transfer offices in universities to enable them to assist the move from research to commercial application.

The Innovation Incubators Programme supports research-based businesses, providing risk capital and incubation support. It often involves spin-outs. Each region has at least one innovation incubator.

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\(^{12}\) ibid
There are also parallel initiatives that are relevant that were provided by other ministries. The Ministry of Business and Growth, for instance, provided access to venture capital through the Vaekstfonden (Growth Fund) and the Business Innovation Fund offered grants and guarantees to enterprises, especially in the environmental and welfare areas and where elements of restructuring or re-purposing were present.

2.3.3. Conclusions

The overall perspective presented by the Danish authorities at the beginning of the programming period was one based on an optimistic assessment of the situation of the Danish economy and its innovative potential. Overall, the aim was to maintain Denmark at the forefront of EU (and global) economic performance. In pursuing this, the intention was not so much to address major problems, but rather to build on strengths and ensure an effective response to the challenges of the global economy, notably by working on those areas where performance was not as strong as in others. Areas to be addressed included:

- Adapting to more knowledge-based and innovative production
- Correcting under-performance in research- or technology-driven innovation (as opposed to user- and price-driven innovation)
- Diversifying the concentration of knowledge resources beyond existing sectors and areas
- Boosting the number of growth entrepreneurs
- Addressing weaknesses in management competences
- Reversing the decline in the proportion of the population completing higher education courses, while maintaining strengths in vocational and continuing education
- Counteracting potential decline in the participation rate with an aging population

Note that employment creation was not initially an objective for the Innovation & Knowledge OP, though it became more of a consideration with the impact of the crisis.

In addition, certain issues were identified as needing particular attention, notably the situation in peripheral areas, where it was necessary to ensure greater interaction with the large towns and cities, for example by building bridges between knowledge and educational institutions in the towns and cities and enterprises in the peripheral areas.

The aim was to ensure that the peripheral areas would obtain at least the same proportion of Structural Fund resources in 2007-2013 as in the preceding period.

There were also social and environmental objectives, but the aim was very much to integrate the pursuit of these objectives as horizontal themes within the overall objectives of the Danish strategy.
3. ERDF STRATEGY ON SMES

The Danish planning for the OP in the period 2007-2013 began with the European Council’s wish for the EU Structural Funds to contribute to fulfilment of the ‘Lisbon objectives’ of sustainable growth, competitiveness and employment and the proposal that the programmes receiving assistance from the Structural Funds should be targeted at investments in knowledge, innovation, research capacity, and better general education and vocational training.

Innovation and knowledge are at the heart of the OP as plainly stated in its title and in referring to innovation, Danish policy makes use of a definition that is used both by the OECD and the EU:

‘Innovation is the implementation of a new or significantly improved product (merchandise or service), process, marketing method or important organisational change. Innovations are the result of conscious planning and activities aimed at improving the products, processes, sales and marketing or organisation of an enterprise. Innovation can be based on new know-how and technology, but it can also be a combination of, or new utilisation of, existing know-how and technology.’

In other words, the Danish conception of the innovation at the heart of its intervention strategy was relatively broad, essentially encompassing any change that improves the productivity and welfare in the Danish economy.

3.1. Intervention logic

3.1.1. National Strategy

In April 2006, the Danish Government presented a comprehensive strategy for Denmark in the global economy – “Progress, Innovation and Cohesion". This strategy embodied the results of an extensive research and consultation exercise under the supervision of the Danish Globalisation Council, an advisory body chaired by the Prime Minister and with high level representatives from key sections of Danish society - from industrial organisations, companies, trade unions and the education and research community.

The key perspective of this strategy was that, if Denmark was to continue to be one of the wealthiest countries in the world, characterised by strong social cohesion, it had to have the ambition to be a significant player in the global economy. Success at this level would increase prosperity and ensure better jobs, bring efficiency gains and productivity growth and also give consumers access to a wider product range and at lower prices. But a globalisation strategy also required changes, including extensive reforms in the school system and in higher education, a strengthening of entrepreneurship and research and improvements in the framework conditions for growth and innovation.

In fact, the strategy involved 350 specific initiatives, aiming to allow all parts of society to keep pace with new demands and to encourage such developments as directing research to making companies more innovative, and increasing the contribution of new companies to economic growth – areas of perceived weakness.

Among the reforms proposed were the following:

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Key Elements in Denmark’s Globalisation Strategy

For the university sector: accompanying the restructuring of the universities and research institutes into a smaller number of institutions with more weight internationally, funding mechanisms were changed so that resources would be allocated on the basis of an overall assessment of the actual results and objectives achieved by each institution in terms of the quality of its research, teaching and knowledge dissemination.

Research and development: Reforms intended to improve the quality and efficiency of research spending, included targeting funding at large, long-term and strategic research projects. And in order to improve the innovativeness of Danish companies, more rapid dissemination of public sector research results to the business community was to be achieved by closer relations between companies and universities.

Entrepreneurship: entrepreneurs and small enterprises needed to have accessible and competent advice in centres for new growth businesses. Better access to capital was to be provided by more private venture capital and new financial instruments.

A central objective was that public and private companies and institutions spend a total of at least 3 per cent of GDP on research and development by 2010, in line with one of the actions proposed by the revised Lisbon Strategy.

The globalisation strategy then presented a major framework of reference in the development of the Danish OPs for the 2007 – 14 period and it will be seen that many of the elements of the strategy are echoed in the Innovation and Knowledge OP, to the extent that together they represent a very high degree of integration between the national and ERDF strategies.

The national strategy also influenced the decision to concentrate all the ERDF resources available to Denmark in a single programme with a single priority, although the fact that the ERDF investment represented only 0.03% of GDP also suggested that a concentration of resources was likely to be most effective.

At the same time, the globalisation strategy and supporting policy developments emphasised that the policy orientation needed to reflect the high priority attributed by Danish society to the need for environmental improvements and social cohesion. This was, of course, very much in line with the integrated approach advocated at a European level in the re-launch of the Lisbon Agenda and with EU policy as stated in the 2005 Commission Communication on ‘More Research and Innovation - Investing for Growth and Employment: A Common Approach’15 and the 2006 Communication on ‘A broad-based innovation strategy for the EU’16.

3.1.2. Other influences on the Design of the Operational Programme

The globalisation strategy was informed by debates at a European level, especially those associated with the re-launch of the Lisbon Strategy in 2005 and the Commission Communications on research and innovation in 2005 and 2006 and the development of plans for the Innovation and Knowledge OP also took specific account of this general strategy, plus, of course, the ERDF (and ESF) guidelines and the National Reform Programme.

In addition, Denmark followed parallel debates in the OECD and participated in a series of OECD projects that had an influence on thinking. In particular, the Operational

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16 Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions of 13 September 2006 "Putting knowledge into practice: A broad-based innovation strategy for the EU" COM(2006) 502
Programme document refers to an OECD study "The New Economy: Beyond the Hype" – OECD (2001)\(^{17}\) in this context.

Essentially, this study had sought to identify what of substance remained after the bursting of the dot.com bubble from all the discussion of the ‘new economy’ in the late 1990s and the early 2000s. It showed that there had been underlying changes in the determinants of economic success and that countries with relatively high growth in multi-factor productivity are characterised by performing well in four particular areas:

- human resources,
- innovation,
- ICT
- and entrepreneurship

This thinking had quite an influence on the approach adopted by the Danish authorities, since it seemed to correspond to the areas that had been identified as needing to be addressed in the Danish economy. It featured in Denmark’s National Strategic Reference Framework. Early support for the approach was found in a Danish study\(^{18}\) that showed that the regions that perform well in relation to the four growth sources also tend to experience higher economic growth.

At the core of the strategy proposed for both the Innovation and Knowledge OP and the ‘More & Better Jobs’ OP was a concentration on four ‘growth sources’ (‘vaekstkilde’):

- Innovation, knowledge sharing and knowledge building
- Establishment and development of new enterprises
- Use of new technology
- Developing human resources

These ‘growth sources’ define the central objectives of both OPs.

Essentially, support for developing the first three growth objectives was to be financed from the ERDF while support for the development of human resources was to be financed by ESF. This approach is embodied in the ‘Innovation and Knowledge’ (ERDF) and ‘More and Better Jobs’ (ESF) OPs respectively. In the previous period, there had been comments in evaluations\(^{19}\) that a better integration of ERDF and ESF funding could be achieved. The development of the ERDF and ESF Operational Programmes within a single framework responded to this criticism. Both elements had the same focus on the four growth drivers, though, of course, making use of the different but complementary approaches required by the primary objectives of each Fund. In this way an integrated approach was envisaged in which deliberate synergies were created between the ERDF and ESF instruments in order to maximize impacts within the same strategic and organisational framework.

At the same time, importance was attached to a series of issues, such as environmental improvement, equal opportunities, employment and the balancing of development in peripheral areas, rural districts and towns and cities. Actions in relations to these issues had to be integrated into the Operational Programme as a series of horizontal considerations.

Finally, it should be said that in the overall design of the OP at a national level, there was no targeting of specific industries or sectors, though the authorities did want to take advantage of the provisions in the Regulation on the European Regional Development

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\(^{19}\) For example, the Final Evaluation of the Objective 3 Programme 2000-2006 (European Social Fund)
Fund for slightly broader opportunities relating to the development of sustainable tourism, as long as tourism projects supported one of the four growth drivers. It will also be seen that the targeting of particular industries became a significant feature of developments at a regional level.

3.1.3. Objectives and priorities

The whole orientation of the Innovation and Knowledge OP was to maintain or enhance Denmark’s position in a competitive world economy. Its intention was to enable firms to compete more successfully in a global economy, since innovative firms generally have higher productivity than other firms, while new knowledge, created by research and development, provides the basis for renewal and growth in both the private and public sectors. This link between the emphasis on innovation and the longer-term performance of the economy was very clear in the Danish OP and although these concepts had a similar place in other national and regional strategies, the direct way they were placed at the heart of the Danish formulation has fewer parallels.

The Operational Parts of the Intervention Logic

The characterisation of the four growth sources provided the common themes for the implementation of both the ERDF and the ESF OPs, although, as will be explained shortly, with variations at a regional level.

For the Innovation and Knowledge OP, the initial OP document explains that the Danish authorities envisaged implementing these themes, making use of the following instruments:

<table>
<thead>
<tr>
<th>Policy Instruments used in Implementing the Innovation and Knowledge OP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Innovation, knowledge sharing and knowledge building</strong></td>
</tr>
<tr>
<td>1. <strong>Regional Innovation Capacity</strong>: aims to enhance the innovation capacity of local enterprises and improve their collaboration and interaction with universities, other knowledge institutions in order to enhance technology transfer and strengthen the R&amp;D competence of firms. This then enhances product development, services and production and helps develop user-driven innovation. It includes innovation related start-up facilities and campaigns targeting SMEs.</td>
</tr>
<tr>
<td>2. <strong>Interaction on Innovation</strong>: seeks to strengthen public-private co-operation on innovation and improve interaction between stakeholders at various levels: SMEs and knowledge institutions, SMEs and clusters and between SMEs themselves, with a view to establishing networks and centres of competence.</td>
</tr>
<tr>
<td>3. <strong>Cluster Relationships</strong>: aims to promote networks and the formation of clusters of SMEs in particular, clusters of SME supplier networks. It also supports the analysing of opportunities for creating clusters.</td>
</tr>
<tr>
<td><strong>Establishment and development of new enterprises</strong></td>
</tr>
<tr>
<td>4. <strong>Supply of public and private advice</strong>: aims to ensure that more entrepreneurs survive the first difficult years, but also to make the transfer of businesses (generation shift) easier. This requires access to knowledge, support and advice. Implementation of concrete tools, establishment of incubators and formation of entrepreneur networks with mentors are also part of the instrument. Enterprises either receive consulting services, or are directly given money in order to be able to buy in advice from private consultants. Start-ups with less than 6 months’ activity can get up to 85% of the costs covered, other businesses up to 50%.</td>
</tr>
</tbody>
</table>
| 5. **Financing for entrepreneurs**: Access to finance is a barrier for potential

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20 Article 5(2)(f)
entrepreneurs who could otherwise create growth. This policy instrument aims to
develop new models for loans to SME entrepreneurs and for business transfer. It
also involves early warning systems, access to capital combined with advice and
enhanced provision of information on financing opportunities.

6. **Enterprise culture:** This policy instrument encourage a strong enterprise
culture in schools, so that everyone is offered the possibility to study subjects like
innovation and entrepreneurship as part of their curriculum.

**Use of new technology**

7. **Infrastructure:** This policy instrument focuses both on ICT infrastructure and
infrastructure supporting technology transfer. It was intended to build up regional
and local technology services for SMEs, particularly in areas lacking in commercial
incentives. It included improving technological services or creating faster Internet
connection speeds, strengthening knowledge sharing and user-driven
development environments and developing basic ICT competences by establishing
public meeting places with Internet access.

8. **Digitalisation:** aims to enhance the efficiency and productivity of the public
sector through digitalisation of services for the benefit of citizens and businesses
and to develop public instruments to assist micro and craft enterprises.
Strengthens the use of IT by through networks and advice.

9. **Access to knowledge:** supports the practical application in businesses of new
technologies, especially in SMEs. It promotes collaboration between knowledge
institutions and high-tech companies, develops technology transfer through
analyses and exchange of good practice and strengthens opportunities for SMEs to
have their technologies documented and certified.

A number of comments can be made on aspects of the thinking behind the specification
of these instruments:

- The boosting of regional innovation capacity was intended to take place without
privileging any particular form of innovation. Innovation may occur in different
ways, for instance, on the basis of research and development or as user-driven
innovation resulting from feedback from the enterprises’ customers or co-
operation partners.
- Research and development was not an explicit part of the Danish strategy in that
research and development activities in Denmark largely take place in enterprises
as part of innovation processes and it is this activity that was to be supported.
- The supply of public and private advice, financing for entrepreneurs and an
entrepreneurial culture, under the heading ‘Establishment and development of
new enterprises’ was intended to favour enterprises with the capacity to grow.
- The financing instruments were only available to SMEs.
- It was intended that any projects that aimed to improve business service actions,
would promote a coherent, unified business service system, e.g. by using local
business service units as the point of entry to the action.
- ESF-funded projects promoting entrepreneurship differed from ERDF-funded
projects in this area in that the latter would primarily promote entrepreneur
infrastructure, including business services and financing, while the ESF would
primarily promote enterprise culture and competences in individuals, though there
would be overlaps.
- Promoting the use of new technology was intended to tackle the lack of advanced
ICT exploitation in businesses, the slow increase in productivity and low growth in
peripheral areas.
It should be said that although the main reference under the ‘use of new technology’ was to the improved use of ICT, since this was an obvious source of improved productivity, from the beginning the term was understood in a broader sense, including, for example, materials technology, energy technology, environmental technology and biotechnology as well as ICT, since these were seen as key enabling technologies.

In the first year of the programming period it was decided to merge the ‘Cluster Relationships’ policy instrument (Policy Instrument 3) with ‘Interaction on Innovation’ (Policy Instrument 2) because of a degree of overlap between the two objectives that became apparent in the project proposals that tended to include cluster formation as part of a more general approach to cooperating on Innovation.

Similarly, in the course of 2007, ‘Digitalisation’ (policy instrument 8) was merged with ‘Infrastructure’ (policy instrument 7) given the similarity of their objectives. The change aimed to simplify the programme structure and was made in response to project applications already received that combined the two sets of objectives.

The changes in the structuring of the instruments is interesting, both because they resulted from practical experience on the ground, when it came to designing and implementing projects and also because they both went in the direction of establishing a larger framework in which different elements could reinforce each other.

In fact, more generally, the combination in a package of mutually reinforcing elements is an important feature of most of the instruments listed above, to a greater or lesser extent. In this, the intervention logic responds to an aspect of support identified in the literature review, namely that attention has to be paid to the way that different elements of support – advice, finance, facilities etc. – are combined and interact.

Overall, with the OP’s focus on the promotion of innovation and Denmark’s status as an innovation leader with mature business support systems, the instruments used were inevitably those typically associated with ‘support for innovation’ in the general categorisation of support measures, used in this evaluation, with some ‘support for improving capacities’. A considerable element within the Programme was devoted to addressing information asymmetries, especially by promoting connections between the different agents involved in knowledge generation and exchange, as referred to Uyarra and Ramlogan, (2012). Addressing market failures of this kind was a common objective of both instruments used to pursue Innovation, knowledge sharing and knowledge building, namely the development of regional innovation capacity through links between research institutions and enterprises and cluster development.

However, before exploring these issues further, it is necessary to refer to another important aspect of the overall design of the Danish OP, namely the regional dimension within the national programme.

The regional dimension within the national programme

The structure described so far relates to the framework for the Innovation and Knowledge OP at a national level. However, an important element in the overall design of the OP in Denmark is the variation and flexibility that comes with the implementation of the programme at the level of Danish regions. As has been stated, 90% of the funds are allocated in this way.
Denmark’s five regions have elected Councils which approve the plans and budgets in their area of responsibility – principally the healthcare system and regional economic development. Special provisions are made for Bornholm for ERDF purposes, which otherwise is part of the Capital region. In effect, this makes Bornholm operate as an additional sixth region for economic development purposes. A major element in this area are the Regional Growth Fora (RGF – ‘Vaekstfora’), which are bodies with 21 members appointed by the Regional Councils. They are composed of elected members from the regional and municipal councils, representatives from the business community and from higher education and research institutes and trade unions and are supported by a secretariat, composed of officials from the regional administrations. The role of the RGF is to drive the development and supervision of regional strategies and to contribute to elements of practical implementation, such as the selection of projects. They have become important institutions in the development of policy and practice at a regional level and in the implementation of the Danish Structural Fund programmes, they are designated as intermediate bodies.

Regional business development plans are drawn up by the RGF every three years or so, although the timing is determined by the Fora themselves. These strategies need to take into account national policy and the commitments entered into by the national authorities notably, in the current context, in relation to the Structural Fund Operational Programmes. However, there are important degrees of flexibility within these frameworks, which allow the RGF to tailor their strategy to regional circumstances.

Formally, the RGF only began to operate on the same day as the OP came into effect, though the extent to which the secretariats were able to anticipate their formal launch and the speed with which they articulated their strategies and business development plans depended on various organisational considerations, such as the extent to which the new regions could build on existing working relationships between the former county administrations and the extent of previous experience with administering programmes of different kinds.

The RGF, of course, each articulated their strategies in their own terms and this led to differences in emphasis. The Growth Forum for the Capital, for instance, listed thinking internationally as the first of the six principles at the heart of its strategy and also stressed the process of building on existing strengths, whereas North Jutland talked in terms of developing a new culture and growth model in the region. However, most based their approach around the central themes of the national strategy, including innovation, growth and exploitation of knowledge, competence building, entrepreneurship, co-operation and partnership.

Of greater importance, in terms of differentiating the implementation of the OP at a regional level were the industrial and business dynamics of the regions and the varying
in institutional legacies of earlier policies and practices. So, rather than specifying sectoral priorities at a national level, the approach was to direct support towards locally important sectors or business opportunities at a regional level:

Table 3. The Sectoral Priorities of the Danish Regional Growth Fora

<table>
<thead>
<tr>
<th>Region</th>
<th>Sectoral Priorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Jutland</td>
<td>Tourism, Manufacturing sectors (food, wood &amp; furniture, iron &amp; metal, building materials) and New Growth sectors, such as ICT and energy technology.</td>
</tr>
<tr>
<td>Mid-Jutland</td>
<td>The vision is not particularly targeted at any sectors, but a number of business strengths are mentioned including foodstuffs, wood- &amp; furniture, energy, ICT, metal &amp; production technology, textile &amp; clothing, and ‘knowledge’ services. The action plans 2007-08 and 2009 focus on energy/environment, health &amp; foodstuffs.</td>
</tr>
<tr>
<td>South Denmark</td>
<td>Basis in regional strengths: foodstuffs, mechatronics (strongest regional specialisation), transport &amp; logistics, off-shore. The action plan 2009-10 also stresses welfare technology &amp; service, energy and the experience economy.</td>
</tr>
<tr>
<td>Zealand</td>
<td>The Strategy is targeted at established business strengths and areas that are likely to see future growth, in particular energy &amp; environment, medico, traditional sectors, transport logistics and the experience/tourism sector.</td>
</tr>
<tr>
<td>Capital</td>
<td>Sharp focus on knowledge-intensive sectors dealing with research driven innovation. In addition, existing strongholds are emphasised: IT services, bio-health, medico, business services, telecommunication, financing &amp; insurance, film &amp; TV and tourism.</td>
</tr>
<tr>
<td>Bornholm</td>
<td>Focus on existing clusters. Regional foodstuffs, agriculture, tourism, machinery &amp; engineering, building &amp; construction.</td>
</tr>
</tbody>
</table>

Note that the degree of sectoral emphasis varied between the regions. Some decided to take a more horizontal approach though all identify particular sectors.

Secondly, as has increasingly happened more generally in modern economies, the conception of sectors has become more diffuse, especially as a number of new opportunities have arisen to combine technologies and approaches from different traditional sectors (as defined, for example in NACE codes). In many instances, this different concept of the nature of an ‘industry’ or ‘sector’ has resulted from new approaches to societal challenges. Responses to health and welfare issues, for example, may make use of a range of different products, from specially adapted vehicles to different kinds of medical instrument, together with new and varied forms of software and hardware, all organised making use of new and different forms of social organisation, which sometimes also combine public and private sector inputs. Indeed many instances of social innovation arise precisely from people working outside of and beyond their traditional silos. The same applies to environmental and energy developments and those relating to the experience economy and the creative sector. It will be seen that many of the initiatives under the Innovation and knowledge OP had this transverse character.

Thirdly, the instruments utilised in pursuing regional strategies could vary. The instruments chosen partially depended upon the nature of the objective and particularly the relative importance of the different challenges faced by each region. Some regions felt the need to improve capacities in their enterprises and general population, while others put more emphasis on building relationships between knowledge institutions and enterprises or in developing clusters. Differences also arose because of the institutional endowments of the regions. The extent of the facilities and the strength of organisations providing general enterprise support and the availability of business incubators and technology parks and institutes varied between regions, as did the traditions of the various higher education institutions in terms of the extent and quality of their engagement with the local economy and society. Regions tried to build on strengths and consequently tended to make use of relatively strong existing institutional arrangements or where necessary, devote resources into establishing or developing such arrangements.

All of these considerations added to the variety of the approaches adopted at a regional level. The effects of all this on the implementation of the programme are set out in the following chapter.
Beneficiaries

Applicants for assistance were envisaged as being typically institutions, including public institutions, foundations and participants in networks, public authorities, particularly municipalities and also private businesses, although the Danish Business Development Act prohibits direct aid to private enterprises and this influenced the attitude of the authorities under the ERDF regime too. However, payments to enterprises were possible to support projects that involved elements of research or development, for example improved testing facilities, or if, for instance, an enterprise were to play a co-ordinating role in developing business networks or clusters.

In fact a network could be comprised of various parties with relevant competences and/or requirements, including knowledge or educational institutions, Authorised Technological Service Institutes (GTS), centres of competence, sector organisations, business service centres, local business councils, municipalities, consulting firms or other private enterprises.

The Theory of Change

Implied in the design of the OP at a national level was a certain conception of how the OP would generate its intended effects. First of all, the OP intended to improve the performance of those enterprises in the economy that were capable of introducing innovation and change into their products or operations and also to encourage new enterprises to be created that were also capable of sustained development. In some instances, developments of this kind might be achieved by individual enterprises and the assistance provided by the instruments supporting the establishment and development of new enterprises were intended to work in this way. However, in general, the expectation was that enterprises would develop their internal capacities, both technical and managerial, and their business opportunities by working with other businesses and/or working with knowledge institutions, enterprises higher up the supply chain and, especially in some sectors such as health and welfare, with public organisations. Furthermore, the instrument configuration was such that an integrated set of opportunities could be presented to participants, addressing both technical and business issues.

Other than the overall framework for the OP which drew on work by the OECD, as has been seen, there is no explicit reference to academic literature supporting the theory of change in Programme documentation and much of the approach was a matter of building on past practical experience. This is understandable given that the literature available on the important elements of co-operation with research institutes and cluster development, both at the time that the OP was being designed and since, is rather diverse and complex and does not provide clear guidance in all the relevant areas. As Edler et al (2013) point out, for instance, in a review of nearly 800 studies of measures to facilitate innovation, there is ‘very limited knowledge of the complex behavioural changes and strategic reactions within organisations’ that interventions promote.

Nonetheless, there is some support for the approach adopted. Important elements in the approach are similar to those listed in Wolleb et al, (2010), including adaptation of the design to the circumstances of more advanced regions and Cunningham et al, (2013) point to the importance of the flexible interplay of different elements within a support package.

There are also a series of pragmatic considerations determining the precise shape of the intervention. As has been seen, the role of the regions in this model was to respond to local circumstances, determining sectoral focus, when appropriate and also providing some flexibility in the relative preponderance of the instruments used.

Delivering an effective implementation of this conception also depended critically on the projects selected under open calls for proposals. It should be explained that in line with Danish practice under the Business Development Act, enterprises did not receive assistance directly under the OP. Projects selected through open calls for proposals in effect established intermediaries, which, for instance, delivered services to enterprises,
supported and encouraged the development of clusters or stronger relationships between enterprises and knowledge institutions or developed facilities and services to encourage the use of new technology. Projects were generally established with several partners coming together to provide the service, usually under a single co-ordinator. Core project groups of this kind might or might not include enterprises. There were also projects proposed by single organisations (such as local authorities) to provide a specific service locally or across a region. The ultimate beneficiaries of the OP were the clients of those providing services through projects. They were mainly enterprises, but might also be other organisations, such as knowledge institutions. In all of this, it was important in implementing the OP through the intermediary organisations that a good alignment be achieved of project objectives with those of the OP, while also allowing free play to the creative capabilities, especially of project co-ordinators, since inspiration plays a part in any form of innovation.

**Monitoring and Assessment**

In terms of monitoring and assessing the effects of the intended actions, the Innovation and Knowledge OP defined a series of output, result and impact indicators. Only the output indicators, however, related to the different instruments, as initially defined, suggesting right from the beginning that interaction between instruments under each growth source would lead to common results and impacts. The indicators set out in the original OP document were as follows:
Table 4. The Indicators Defined for the innovation & Knowledge OP

<table>
<thead>
<tr>
<th>Outputs</th>
<th>Results</th>
<th>Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation, &amp; Knowledge Sharing &amp; Knowledge Building</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Regional Competitiveness</td>
<td>Percentage of participating enterprises/ institutions/ organisations indicating that they have strengthened their innovative competences</td>
<td>Number of enterprises/ institutions/ organisations indicating that they have become more innovative as a result of the European Regional Development Fund action</td>
</tr>
<tr>
<td>- Interaction on Innovation</td>
<td>Number of cooperations on innovation in the projects</td>
<td></td>
</tr>
<tr>
<td>- Cluster relationships</td>
<td>Number of cooperations on innovation in the projects</td>
<td></td>
</tr>
<tr>
<td>Establishing &amp; Developing New Enterprises</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Supply of public &amp; private advice</td>
<td>Number of advice flows</td>
<td>Number of new entrepreneurs as a result of the European Regional Development Fund action</td>
</tr>
<tr>
<td>- Financing for entrepreneurs</td>
<td>Capital for financing entrepreneurs</td>
<td></td>
</tr>
<tr>
<td>- Enterprise culture</td>
<td>Number of enterprise culture flows</td>
<td></td>
</tr>
<tr>
<td>Use of New Technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Infrastructure</td>
<td>Percentage of participating enterprises/ institutions/ organisations which have made services available to users within digitalisation and/or infrastructure</td>
<td>Number of enterprises/ institutions/ organisations stating they have increased their ICT use as a result of the European Regional Development Fund action</td>
</tr>
<tr>
<td>- Digitalisation</td>
<td>Percentage of participating enterprises/ institutions/ organisations which have made services available to users within digitalisation and/or infrastructure</td>
<td></td>
</tr>
<tr>
<td>- Access to knowledge</td>
<td>Percentage of participating enterprises/ institutions/ organisations which have made services available to users within digitalisation and/or infrastructure</td>
<td></td>
</tr>
</tbody>
</table>

These indicators have the merit of providing specific ways of assessing progress, but the anticipated developments also formed part of the globalisation strategy and other national goals. In the Action Plan for More Innovation and Effective Knowledge Dissemination, for instance, the stated ambition is that:

- Denmark would continue to be among those countries in the world where private enterprises research and develop the most.
- Danish enterprises would be among the most innovative in the world.
- Denmark would also be one of the countries which are best at converting new research results and knowledge from the universities and other research and educational institutions into new technologies, processes, products and services.

Critical for achieving these ambitious goals is the perception that access to knowledge, research and development strengthens enterprises’ ability to be more and continually innovative and competitive and to create growth. The central task of Innovation policy is therefore to contribute to removing the barriers that may exist for the free movement of knowledge within society, thereby promoting a more effective ‘knowledge market’,
increasing the dissemination of knowledge and strengthening the innovation potential. This included ensuring that knowledge moves freely across international borders.

3.1.4. Partnership and consultation

One of the strengths of the Danish economy identified by the European Innovation Scoreboard was the ability of enterprises to co-operate with other enterprises and build networks. Building on this strength and promoting partnership and co-operation not only between enterprises, but also between enterprises and education and research institutions and with the authorities at various levels of government and providers of public services, was central to the OP’s strategy.

Behind this approach to partnership lay underlying political and social attitudes. Denmark is a country that is proud of its consensual approach to politics and social issues and it was therefore natural, when the government was developing its globalisation strategy that it should attempt to base this on as broad a consensus as possible and to arrange extensive consultation as the strategy was being formulated.

The Regional Growth Fora, which are answerable to elected Regional Councils are made up of organisations representing the different interest groups in innovation policy, including representatives of enterprises. As well as contributing to the formulation of the regional strategy and advising on-going policy development, the members also participate in project selection panels, advising on the appropriateness of proposals and in reviewing reports on the results of projects, including those based on evaluations. In fact one of the significant developments in all RGF over the programming period has been the growing emphasis on monitoring and evaluation.

Input at the level of individual enterprises was possible at the project level. Most regions have relatively active provision for discussion of project ideas with the secretariats of the RGF, prior to a formal response to a call for proposals. This enables the RGF to ensure that projects are aligned with the objectives that have been set, but also allows new ideas to be introduced and the officials to become aware of the circumstances of particular enterprises or sub-sectors.

Experience at the regional level also feeds back, at least in principle, into national policy via the National Growth Council (Vækstråd), which brings together representatives the regional bodies.

3.2. Implementation and reprogramming

The formulation of the Innovation & Knowledge OP at a national level was undertaken relatively early in the programming period, as a result of earlier preparation and a clear national framework, and was approved by the European Commission on 26th June 2007. Its implementation, however, depended for the most part on the speed with which the Regional Growth Fora could agree their strategies, submit them for review to the National Growth Council (Vækstråd) and, once approved, to publish and evaluate calls for proposals. The Trimester Report of 30th June 2014 shows that budget commitments started in the second quarter of 2008 and that some 35% of the budget had been committed by the end of that year, 50% by the end of 2009, 65% by the end of 2010, 94% by the end of 2012 and close to 100% by the end of the period. Behind these figures, there were some clear regional variations, with a pause in some regions as revised plans were developed three years or so after the initial versions.

3.2.1. Reprogramming

The allocation of funds was undertaken within a stable framework, since there was no significant reprogramming of the ERDF funds over the 2007 – 13 period. However, the 21 A minor reprogramming request in 2011 amended the initial allocation of financial resources. Rather than a 30-20-20% division between the three themes: Innovation, Entrepreneurship and New technology, projects under themes 1 and 3 combined were allowed to take up to 50% of the budget, while the allocation for theme 2 remained unchanged.
economic crisis did affect Denmark like other Member States, and even if it was not to the same extent as in some other cases, there were important economic consequences. Unemployment became a central issue, whereas previously it had figured in planning for the ERDF largely in terms of responding to the needs of peripheral areas. There were no employment indicators, for instance. Given the integrated nature of the ERDF and ESF interventions, however, it was decided that the response to growing unemployment would be made through the ESF component and there was in fact a reprogramming of the ‘More and Better Jobs’ ESF OP.

In addition, within the Innovation & Knowledge OP, actions such as developing clusters or networking and encouraging knowledge transfer from research institutions became more difficult. In challenging economic circumstances, enterprises are less willing to invest in new ventures and tend to concentrate on business essentials. Consequently, interviewees have said, for a few years in the middle of the programming period, encouraging engagement with longer-term developments became more of a challenge.

However, a certain flexibility in the Programme assisted in responding to the difficulties. An instance was reported, for example, of a response within an IT cluster in North Jutland when certain of the members ran into difficulties. Essentially, staff from these firms were taken on by other members. In effect, the cluster was able to effect a restructuring of the local supply industry in a managed and more effective way than would have otherwise been the case.

3.2.2. Overall Allocation of Funds

The main mechanism for implementing the OP was in the form of the projects that were adopted after open calls for proposals. 90% of the ERDF funds are allocated at a regional level in the way that has been described above. However the remaining 10% - the ‘Competitiveness Pool’ are allocated nationally. In this process, the Danish Growth Council has an important role as well as acting as a co-ordinating body for the Growth Fora at a regional Level. The Growth Council is composed of enterprises, knowledge institutions, local authorities, the six regional growth fora, employers and trade unions. Each year the Council decides on key themes and invites proposals that preferably have a cross-regional dimension. These projects are funded through the ‘Competitiveness Pool’.

Currently, the online project database operated by the Danish authorities\(^\text{22}\) shows that 344 ERDF projects were funded for the 2007-13 period and 253 ESF projects\(^\text{23}\). The following provides a breakdown of the number of projects funded under the four Growth Objectives, across the Danish regions and through the national-level ‘Competitiveness Pool’:

\[^{22}\text{http://eustrukturfonde.dk/}\]
\[^{23}\text{Some of these projects, of course were only completed in 2015}\]
Table 5. Danish OP ‘Innovation & Knowledge’ - Number of ERDF Projects by Region & Growth Source

<table>
<thead>
<tr>
<th>Region</th>
<th>European Regional Development Fund</th>
<th></th>
<th></th>
<th>TOTAL ERDF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Innovation, knowledge sharing &amp; building</td>
<td>Establishing &amp; developing new enterprises</td>
<td>Use of new technology</td>
<td></td>
</tr>
<tr>
<td>North Jutland</td>
<td>79</td>
<td>7</td>
<td>7</td>
<td>93</td>
</tr>
<tr>
<td>Mid Jutland</td>
<td>37</td>
<td>11</td>
<td>4</td>
<td>52</td>
</tr>
<tr>
<td>South Denmark</td>
<td>49</td>
<td>6</td>
<td>14</td>
<td>69</td>
</tr>
<tr>
<td>Zealand</td>
<td>41</td>
<td>7</td>
<td>1</td>
<td>49</td>
</tr>
<tr>
<td>Capital region</td>
<td>20</td>
<td>5</td>
<td>2</td>
<td>27</td>
</tr>
<tr>
<td>Bornholm</td>
<td>20</td>
<td>2</td>
<td>13</td>
<td>35</td>
</tr>
<tr>
<td>Competitiveness Pool</td>
<td>15</td>
<td>3</td>
<td>1</td>
<td>19</td>
</tr>
<tr>
<td>TOTAL</td>
<td>261</td>
<td>41</td>
<td>42</td>
<td>344</td>
</tr>
</tbody>
</table>

Source: EU Strukturfonde I Danmark (website)

ERDF Funds did not support the ‘developing human resources’ growth objective. This was only funded by ESF. However, although the ‘developing human resources’ growth objective was the main focus of ESF funding, it also supported projects under the other three headings.

Table 6. Danish OP ‘More & Better Jobs’- Number of ESF Projects by Region & Growth Source

<table>
<thead>
<tr>
<th>Region</th>
<th>European Social Fund</th>
<th></th>
<th></th>
<th>TOTAL ESF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Developing human resources</td>
<td>Innovation, knowledge sharing/building</td>
<td>Establishing &amp; developing new enterprises</td>
<td>Use of new technology</td>
</tr>
<tr>
<td>North Jutland</td>
<td>37</td>
<td>10</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Mid Jutland</td>
<td>25</td>
<td>2</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>South Denmark</td>
<td>29</td>
<td>10</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Zealand</td>
<td>38</td>
<td>7</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Capital region</td>
<td>22</td>
<td>3</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Bornholm</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Competitiveness Pool</td>
<td>11</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>171</td>
<td>37</td>
<td>34</td>
<td>11</td>
</tr>
</tbody>
</table>

Source: EU Strukturfonde I Danmark (website)

In terms of funding, table 7 provides a breakdown of the situation at the end of 2014. This table shows the total amount of both ERDF and ESF funding allocated to projects.
Table 7. Share of ‘Growth Objectives’ of each Region in Total Support from ERDF & ESF

<table>
<thead>
<tr>
<th>Region</th>
<th>Innovation, knowledge sharing/building</th>
<th>Establishing/developing new enterprises</th>
<th>Use of new technology</th>
<th>Developing human resources (only ESF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Jutland</td>
<td>49%</td>
<td>14%</td>
<td>3%</td>
<td>35%</td>
</tr>
<tr>
<td>Mid Jutland</td>
<td>44%</td>
<td>25%</td>
<td>2%</td>
<td>29%</td>
</tr>
<tr>
<td>South Denmark</td>
<td>42%</td>
<td>9%</td>
<td>24%</td>
<td>24%</td>
</tr>
<tr>
<td>Zealand</td>
<td>36%</td>
<td>19%</td>
<td>1%</td>
<td>43%</td>
</tr>
<tr>
<td>Capital</td>
<td>44%</td>
<td>17%</td>
<td>6%</td>
<td>34%</td>
</tr>
<tr>
<td>Bornholm</td>
<td>38%</td>
<td>4%</td>
<td>21%</td>
<td>37%</td>
</tr>
<tr>
<td>Competitiveness Pool</td>
<td>40%</td>
<td>7%</td>
<td>17%</td>
<td>37%</td>
</tr>
</tbody>
</table>

Source: Trimester Report 31 December 2014

In strict terms, table 7 does not correspond to tables above, since it shows the situation at the end of 2014 rather than currently and refers only to 410 projects under the three (ERDF) growth objectives rather than the 426 now entered into the database. However, the data are broadly comparable and the main conclusions to be drawn from all the tables are clear enough.

It is evident that overall, the greatest effort was directed to the Innovation, knowledge sharing and building objective. The latest figures show some 261 projects in this area, supported by ERDF funds and 298, when ESF-supported projects are added in, as opposed to only 83 projects in the other two ‘ERDF areas’ (or 128, including ESF projects in these areas).

In terms of the share of funding, using figures from the end of 2014, some 1564.4 million krone (EUR 209.7m) – 64% of the total allocated to the three ‘ERDF’ growth objectives - were devoted to the Innovation, knowledge sharing and building objective from both the ERDF and the ESF, 533.4 million krone (EUR 71.5m) – 22% - to ‘establishing & developing new enterprises’ and 336.6 million krone (EUR 45.1m) – 14% - to the ‘use of new technology’.

It can also be seen that there were significant differences between regions in where they allocated resources. All regions (and the national Competitiveness Pool) had many more projects in the Innovation, knowledge sharing and building area than elsewhere, but North Jutland, Mid Jutland, South Denmark and the Capital region put relatively more emphasis on this objective, while South Denmark and Zealand devoted a relatively large share to ‘establishing & developing new enterprises’ and South Denmark and Bornholm to the ‘use of new technology’.

It is also necessary to take into account the absolute amounts of funds allocated to the different regions. North Jutland and South Denmark were the main beneficiaries (over EUR 50 million each) and Bornholm, with its relatively small population, received only a relatively small amount (EUR 7.5 million).

The scale of the projects differed across the regions. Projects in the Capital region (and those supported from the national Competitiveness Pool) had on average around twice the resources of those in the other regions, with the exception of Bornholm, which had a relatively large number of small projects. There was also a tendency for projects in South Denmark to be about 10-15% larger than in North and Mid Jutland and in Zealand.

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24 The total numbers include projects under the three ERDF growth objectives that were funded by the ESF.
3.2.3. The Use of Policy Instruments

The original OP document identified some nine instruments to be applied within the OP and these were soon reduced to seven, as has been explained. Subsequently, the distinctions were hardly used at all and were clearly not part of the normal discourse on the Programme. Those interviewed at all levels often did not recognise the terms used in the original definition of the OP and all the data collected are usually presented in terms of the three growth objectives.

There are several reasons why ‘policy instruments’ do not feature with any degree of prominence in discourse on the implementation of the OP.

First, reference to policy instruments has not been common and certainly not systematic in the requirements for the overall management of Operational Programmes and for their monitoring and evaluation. While clearly reference to instruments has been part of any discussion of Programmes, the main emphasis is on the definition of objectives, the allocation of resources, the formulation of specific projects and the outputs, results and impacts that arise. In this sense policy instruments are part of the black box, a variable tool set from which components can be selected and combined in different ways according to the needs of specific projects.

Secondly, there are pragmatic reasons for not thinking about policy instruments in a structured way. Policy instruments need to be shaped according to the circumstances in which they are to be applied and the precise circumstances of application are not known until they are defined for a particular project. The project level is therefore a critical point in the implementation process and one in relation to which it is not possible to define instruments with great precision prior to decisions on which projects to support. Furthermore, a degree of flexibility, and hence indeterminacy, is essential in the open call process. Calls for proposals will generally want to encourage novel approaches and even creativity and innovation, in the proposals submitted. This implies that it is not appropriate to be too prescriptive about which instruments to use in the planning stage.

The nature of the instruments explains to a significant extent why in Denmark the focus in managing and assessing the OP was on relatively broad objectives rather than on specific instruments. Cluster development, for instance, involves the motivation and organisation of groups of enterprises, large and small, knowledge institutions and often public authorities. It also means addressing weaknesses in cluster members through advice and other forms of support and working on knowledge transfer processes. In this sense cluster support consists of a variable package of services. The clearest distinction is in relations to the forms of support used under the ‘establishing/ developing new enterprises’ growth objective, where individual enterprises are supported. With the instruments used under the other objectives, distinctions are less clear and often it is only possible to talk about real differences at the project level.

3.2.4. The Management of the OP

The management of the Danish OP is distinctive in that the tasks undertaken by the Managing Authority operate at two levels. The Managing Authority as such operates at the national level and is responsible for formulating the OP document, relations with the Commission, the legal and financial aspects, reporting and overall assessment. As has been seen, the actual implementation largely takes place through the regional structures. This system has considerable advantages and makes for a very efficient system overall. Above all, the Regional Growth Fora are much closer to the situation on the ground and are able both to tailor the Programme to local circumstances and to follow up developments more closely. However, at the same time such a system can introduce rigidities into the programme implementation in that once budgets have been allocated, there are political and other pressures not to have them redistributed in the light of developments. Furthermore, the information flows become more complex, so that even though there are regular meetings of those operating at a regional level, interviewees indicated that there was scope for a better exchange of information and for improving the processes for learning from experience.
3.2.5. The Design and Management of Projects

It has already been remarked that the selection of projects is an important stage in the implementation process. The alignment of the aims and objectives of individual projects and their implementation plans with those set out in the OP documentation is particularly critical. Of course, many of those thinking of making proposals do not start with the OP’s objectives and methods in mind. They either have particular projects that they wish to develop that fall into the same general area as those envisaged by the OP or are simply looking for funding and think they may be eligible. The management of the terms of reference and the assessment of proposals received in an important part of these processes and it has already been seen that the Regional Growth Fora are usefully involved in them, but providing advice to those who are thinking of making proposals in the pre-competitive stage is equally important. The Danish authorities and the regional secretariats have a good record in this respect, for example by providing a telephone hotline for accessing advice and having staff available to help steer projects in the right direction.

3.2.6. Targeting

Having the right target audiences is also important for ensuring the effectiveness of OPs. The Innovation & Knowledge OP did not specify particular targets and indeed the nature of the interventions envisaged meant that the targets included a range of different organisations – enterprises, both SMEs and large enterprises, knowledge institutions, public bodies and public service providers in some instances. Nonetheless targeting was implicit in the whole orientation of the OP. The approach adopted could best be described as ‘soft targeting’ in that without excluding anyone explicitly, it encouraged principally those who were capable of growth to become involved.

3.2.7. Problems with Procedures

The OECD study on Danish regional policy – OECD (2012), which is referred to at several points elsewhere in this case study, pointed to problems with Structural Fund rules and procedures in Denmark. The OECD study was based on an extensive programme of interviews with national and regional officials and other stakeholders. Interviews with beneficiaries of ERDF support in the current exercise have also pointed to certain difficulties.

Some of the complaints arise from unrealistic expectations and failure to appreciate the importance of avoiding the undermining of normal commercial processes, for instance in the support given to the semi-commercial activities of universities. Furthermore, there are different perceptions about the nature of the problems. For instance it was argued that as clusters develop they need to involve international partners, but the ERDF framework (in contrast to Horizon 2020) does not facilitate developments in this direction and may even inhibit them. Others, including the Managing Authority, argue that it is not the function of the regional funds to support this type of development, which in any event would be difficult to manage, since the relevant authorities would have no competence outside of the EU. However, the Danish national strategy that formed the basis for the Innovation & Knowledge OP explicitly sought to promote the globalisation of the Danish economy and, it can be argued that at a certain stage in their development, it is natural that clusters have to have international dimensions. This would seem to pose a problem for policy constrained to operate within regional or national frameworks.

There also appear to be growing problems with state aid rules, especially in view of the new state aid guidance, though this mainly applies to the current programming period. Requiring small enterprises to fund 50% of their cluster activities is seen as a significant break on this kind of activity.
4. EVIDENCE ON ACHIEVEMENTS

4.1. Measuring achievements

The system for assessing the achievements of the Innovation & Knowledge OP developed considerably over the programming period and is still undergoing certain changes. The Annual Implementation Reports provide information on developments against the Lisbon categories, especially in relation to completed projects, but there are also evaluations of individual projects and cross-cutting themes, other indicators of the performance of the Danish economy in relevant areas and a significant exercise conducted by the Danish authorities for assessing the impact of the Structural Funds on enterprise turnover and employment. These different elements for assessing achievements of the OP will each be considered in turn, starting with an overview of situation in the Danish economy at the end of the programming period.

4.1.1. The Performance of the Danish Economy over the Programming Period

The Innovation Scoreboard had put Denmark in 5th place in 2007 and one of the impact indicators chosen for the OP was ‘Denmark’s ranking on the list of most innovative countries in the EU’. By 2014, Denmark had improved its position in the Innovation Union Scoreboard, to second place after Sweden and thus continued to rank as an ‘Innovation Leader’. At this very general level at least performance could be judged to be satisfactory.

At a more detailed level, Denmark came first in the set of criteria relating to ‘open, excellent and effective research systems’, for ‘intellectual assets’ and also for ‘linkages & entrepreneurship’ - deeply rooted innovation capabilities of enterprises as they combine in-house innovation with joint activities with other companies or public sector organisations. Denmark came 4th in relation to ‘finance and support’ and ‘economic effects’, 5th for ‘innovators’ – the rate of firms involved in innovation activities, 6th for ‘firm investments in innovation activities’ and in 10th position for ‘human resources’.

This suggests that there had been some clear improvements since 2007, with first place in ‘open, excellent and effective research systems’ and ‘intellectual assets’ being added to ‘linkages & entrepreneurship’ – an area in which Denmark has long had strengths. There was also some improvement in position in relation to the rate of firms involved in innovation activities and investment in innovation activities. The issues in the human resources area, however, continued to be a relative weakness for the Danish economy.

Denmark was successful therefore in achieving one of its main objectives, namely to maintain its competitive position in the global economy.

However, behind the headlines and Denmark’s relative success, there are a series of issues where the picture is more mixed.

Table 8. Gross National Product 2007 – 2013 (million Danish Krone)

<table>
<thead>
<tr>
<th>GNP (million Danish Krone)</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,878,249</td>
<td>1,864,764</td>
<td>1,769,886</td>
<td>1,798,649</td>
<td>1,819,372</td>
<td>1,807,451</td>
<td>1,798,663</td>
</tr>
<tr>
<td>GNP per person (thousand Krone)</td>
<td>344</td>
<td>339</td>
<td>320</td>
<td>324</td>
<td>327</td>
<td>323</td>
<td>320</td>
</tr>
</tbody>
</table>

Source Danmarks Statistik

Denmark’s GNP per head declined by nearly 7% over the period 2007 to 2013 and the number of persons employed fell by over 125,000 or 4.5%.

Table 9. Persons employed 2007 - 2013

<table>
<thead>
<tr>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,877,336</td>
<td>2,910,290</td>
<td>2,823,448</td>
<td>2,758,406</td>
<td>2,756,432</td>
<td>2,748,484</td>
<td>2,748,805</td>
</tr>
</tbody>
</table>

Source Danmarks Statistik
More positively, the number of enterprises reporting innovation improved slightly, both in relation to product and/or process innovation and organisation and/or marketing innovation.

**Table 10. Proportion of Enterprises Reporting Innovation**

<table>
<thead>
<tr>
<th>Type of Innovation</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product and/or process innovation</td>
<td>28</td>
<td>30</td>
<td>31</td>
<td>35</td>
<td>31</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Organisation and/or marketing innovation</td>
<td>36</td>
<td>34</td>
<td>35</td>
<td>38</td>
<td>36</td>
<td>37</td>
<td>39</td>
</tr>
</tbody>
</table>

Source Danmarks Statistik

Private sector expenditure on research and development within enterprises also rose from 1.6% of GNP in 2007 to 2.1% in 2009 after which it remained at 2.0 % until 2013.

**Table 11. Proportion of Innovative Enterprises with Innovation Partners of Various Types**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprises within concerns</td>
<td>16</td>
<td>11</td>
<td>12</td>
<td>10</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>Suppliers of machines, equipment materials, components &amp; software etc..</td>
<td>33</td>
<td>23</td>
<td>23</td>
<td>21</td>
<td>25</td>
<td>19</td>
</tr>
<tr>
<td>Clients</td>
<td>26</td>
<td>19</td>
<td>20</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clients in private sector</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clients in public sector</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competitors &amp; other enterprises from the same industry</td>
<td>14</td>
<td>9</td>
<td>10</td>
<td>8</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Recognised technological service institutes (GTS)</td>
<td>16</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Private R&amp;D enterprises, e.g. consultants, private laboratories &amp; research institutions</td>
<td>17</td>
<td>11</td>
<td>12</td>
<td>10</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Enterprises in other industries, other than clients &amp; suppliers</td>
<td>2</td>
<td>8</td>
<td>8</td>
<td>6</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>Universities, other Higher Education institutions</td>
<td>14</td>
<td>8</td>
<td>10</td>
<td>7</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Public research institutions</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Public service providers (hospitals, schools, (day-care centres, defence))</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Source Danmarks Statistik

However, again behind the headline figures, there were some less positive developments. Table 11 above provides survey figures on the innovation partners of Danish innovative enterprises. It shows a fairly general decline in the proportion of enterprises with partners of various kinds, with the possible exception of those enterprises that have clients as innovation partners. Similarly the proportion of innovative enterprises working with foreign partners appears to have declined (Table 12).
Table 12. Proportion of Innovative Enterprises with Foreign Partners

<table>
<thead>
<tr>
<th>Type of Partner</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danish partner</td>
<td>40</td>
<td>30</td>
<td>29</td>
<td>27</td>
<td>29</td>
</tr>
<tr>
<td>Foreign partner (total)</td>
<td>25</td>
<td>17</td>
<td>18</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>Partner from EU</td>
<td>22</td>
<td>15</td>
<td>16</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Partner from USA</td>
<td>9</td>
<td>4</td>
<td>7</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Partner from China/India</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Partner from other countries</td>
<td>6</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Source Danmarks Statistik

The interpretation of these figures over a relatively short period is not straightforward. There may be some cause for concern, if the figures continue to show a decline in networking activity, since this is the basis for a lot of innovative developments in a world where products and services are increasingly complex assemblies of many component parts. However, these figures also show how the OP was battling against adverse headwinds for much of the period over which it was implemented, suggesting that its countervailing role was more significant than might otherwise be perceived.

A more fundamental problem that has received a lot of attention in Denmark is the country’s productivity performance. Since the mid-1990’s Denmark has had one of the lowest growth rates in GNP per inhabitant of all the OECD countries. Over the period 2001 – 2011, Danish productivity increased by an average of 0.75% annually, while the OECD average rose by 1.7%.

In 2012, the Danish government established a Productivity Commission which stated in its report ‘Denmark’s Productivity – where are the problems’ 25 that weak productivity growth is mainly a result of low growth in the private service sector that targets the home market, but that there is also scope for improvement in many other sectors. It was thought that the limited size of the Danish home market, a low degree of internationalisation and the low proportion of highly educated employees in the service sector were to blame. Although the productivity in the manufacturing sector is closer to that of other European countries, productivity could be increased by 15%, corresponding to 35 billion DKr annually, if the level of automation was increased to mirror that of the most automated countries. As a result of this analysis, the 2014-2020 Structural Funds Operational Programmes for Denmark have improving productivity as a central theme, and as a significant condition for strengthening the Danish economy and fulfilling the EU 2020 goals of intelligent, sustainable and inclusive growth.

4.1.2. The Performance of the Operational Programme

Against the background of adverse conditions in the Danish and European economy, the Managing Authority has reported some positive results in terms of the indicators chosen at the beginning of the OP.

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Table 13. Performance of the OP against Indicators - 2013

<table>
<thead>
<tr>
<th>Instruments</th>
<th>Indicator</th>
<th>Target</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation, &amp; Knowledge Sharing</td>
<td>Firms/institutions/ organisations that have become more innovative</td>
<td>1,000</td>
<td>3,028</td>
</tr>
<tr>
<td>Establishing &amp; Developing New Enterprises</td>
<td>New entrepreneurs created</td>
<td>900</td>
<td>3,583</td>
</tr>
<tr>
<td>Supply of public &amp; private advice</td>
<td>Firms receiving advice</td>
<td>300</td>
<td>4,887</td>
</tr>
<tr>
<td>Financing for entrepreneurs</td>
<td>Loans to enterprises</td>
<td>€13.4m</td>
<td>€23.8m</td>
</tr>
<tr>
<td>Enterprise culture</td>
<td>Initiatives to stimulate enterprise culture</td>
<td>300</td>
<td>504</td>
</tr>
<tr>
<td>Use of New Technology</td>
<td>Firms/institutions/organisations increasing ICT use</td>
<td>200</td>
<td>3,007</td>
</tr>
</tbody>
</table>

Source: Annual Implementation Report 2013

All the indicators exceeded the targets set at the beginning, some to a considerable extent, though it may be thought that the initial targets were not that ambitious. Note that the reported results only provide indications of the performance of particular instruments in relation to the objective of ‘Establishing & Developing New Enterprises’. The other results are reported at the level of an overall growth objective – ‘Innovation, & Knowledge Sharing’ and ‘Use of new technology’.

It has also been seen that although the original OP envisaged that Innovation, & Knowledge Sharing would take up at least 50% of the available ERDF funds and that ‘Establishing & Developing New Enterprises’ would have at least 20%, in fact rather more funds were used for the first objective than anticipated and formally the target of 20% for enterprise support was not reached. However, the Annual Implementation Report commented that a number of the projects falling under the other growth objectives had elements of enterprise support within them and so, in practice the 20% target had been met.

There was also a commitment to devote at least 35% of the two Programmes (ERDF and ESF) to peripheral areas. While the proportion of ERDF funding going to these areas just fell below this figure, together the two Programmes devoted 36% and fulfilled this objective.

Behind these headline indicators a large number of studies on different aspects of the Programme or of both the ERDF and ESF Programmes have been conducted and also evaluations of individual projects. These have revealed more detailed results.

Halfway through the programme period – in the summer of 2009 – a thematic evaluation of the Danish 2007-13 Structural Funds was conducted by the consultancy firm COWI-evaluation (2009)26, focusing on the relationship between the objectives of the Structural Fund programmes and the regional strategies for business development. On the basis of this and related evidence, the Annual Implementation Report for 2013 reported that 3 of the 6 regions have a very high degree of coherence with the focus areas of the OP and the other 3 a high degree.

One possible area where certainly complexities arose at an implementation level was in relation to the differing practice with regard to the timeframes for the strategies and action plans of the six Growth Fora. In fact, each Forum operates according its own individual timeframe. Their starting points were all the same, but subsequently, they have applied quite different strategic processes. Most have chosen to let existing strategies remain in place for a certain period after the appointment of a new Growth Forum as a result of regional elections in 2009 (North Jutland, South Denmark, Zealand, Capital and Bornholm).

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Furthermore, the Regional Growth Fora have all developed assessment systems, although at different rates and with different elements. South Denmark for instance has its own model with distinctive features. All projects have mid-term and ex post evaluations and the success of projects is assessed using an ‘effect model’ in which the effects generated are assessed in relation to the cost of the project and the time over which the effects are realised. Partially as a result of these developments on the ground, it was decided nationally that from the beginning of 2011 all applicants for support would be obliged to state objectives, success criteria and indicators for activities, outputs and results in order to establish what has happened in individual projects. These have to include the indicators used for the OP as a whole.

As a result of this work, there is a considerable amount of detailed evidence generated on specific projects and the Growth Fora secretariats and the RGF themselves have been able to learn from this evidence. However, for the 2007-13 period there has been no systematic way of drawing it all together at a national level. The Managing Authority has acknowledged that an opportunity to obtain some valuable insights has been lost here and in fact a new regime for the current programming period will implement a national framework for evaluations that will allow information to be aggregated from the work conducted at a regional level. As far as the 2007-13 period is concerned, however, the evaluation has only been able to draw on a limited amount of the information available at a project level.

Partially to fill this gap in information and to be able to report on developments more systematically a further statistical exercise has been developed that has a number of interesting features. It is referred to in Danish as ‘Fact-based monitoring and effect assessment’ (‘Faktabaseret monitoring og effektvurdering’). Working with the six Regional Growth Fora and Danmarks Statistik, the Danish Business Authority has developed a tool that is intended to assist the regular monitoring of the performance of the enterprises that have participated in Structural Funds actions. Each enterprise in Denmark has a unique identification number, so it is possible, working with the Danish Statistical Office, to go beyond effects identified by participants in project reports to examine the real effects generated based on accounts, taxation records etc. although of course at an anonymised aggregate level. Initially the effects of support on the turnover and employment of assisted enterprises were examined.

The first Monitoring and Effect Assessment exercise of this kind looked at the 258 projects that were initiated in the period 2007 to 2009. These projects were grouped into seven cross-regional areas: 1) energy, climate & environment, 2) health and welfare, 3) foodstuffs, 4) tourism, 5) creative businesses and design 6) horizontal actions promoting innovation, business development and entrepreneurship and 7) training and competence development. The projects had identified about 12,500 private enterprises who had participated in projects, of which data were available on around 9,000. For those for which data were available, performance over the period from mid-2010 to mid-2013 was examined. A control group was also established, consisting of enterprises that had not received any Structural Fund support, but that otherwise resembled those supported in terms of location, size, sector, age and development historically.

The analysis showed that the Structural Funds (ERDF and ESF) had a positive effect on participants’ full-time employment levels in six out of the seven areas (3 years after the intervention) and that in the same six areas this effect was greater than in the control group (and statistically significant at the 5% level). For example, enterprises from the energy, climate and environment area that had participated in Structural Fund projects experienced a 56% increase in employment compared with a 41% increase in the control group.

Similarly, participation in Structural Fund projects had a positive (and statistically significant) effect on turnover growth in four out of the seven areas (after 3 years).

The exercise was subsequently repeated covering the 563 projects taking place up to 2014. These reported involvement of some 38,271 enterprises, although this involved some double counting. Eliminating this and focusing on the 355 projects which had started in the period 2007 to 2010, the analysis examined results from around 10,000
private enterprises for the period from mid-2010 to mid-2013. This showed that project participants had created around 4000 full-time jobs over the period and had turnover growth of 19 billion krone (EUR 2.5 billion). An estimate of the effects of Structural Fund support as compared with the performance of the control group of non-participants was that after the third year in the period considered, 8,300 full-time jobs had been created and turnover was some 16 billion krone higher (EUR 2.1 billion) than would otherwise have been the case.

Other data have also been generated by this exercise, for instance on the size distribution of participating enterprises. The roughly 10,000 enterprises associated with projects which had started in the period 2007 to 2010 fell into the following size categories:


<table>
<thead>
<tr>
<th>Size Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro (0-9 employed)</td>
<td>55%</td>
</tr>
<tr>
<td>Small (10-49 employed)</td>
<td>33%</td>
</tr>
<tr>
<td>Medium (50 – 249 employed)</td>
<td>10%</td>
</tr>
<tr>
<td>Large (250 or more employed)</td>
<td>2%</td>
</tr>
</tbody>
</table>

Source: Danish Business Authority Presentation ‘Faktabaseret monitorering og effektvurdering af strukturfondsindsatsen i 2007-2013’

The exercise is to be followed up subsequently and it is already planned to examine the effects on productivity of participation in Structural Fund projects. It may also be possible to slice the data differently, including separating out the effects of ERDF-funded projects from those supported by the ESF. Existing data are already made available to the regions, so that there is analysis of the effects of the region’s own projects, but only some of this has been made available in published form.

In general, the methodology applied appears to be very robust, making use of both the privileged access to data and the expertise of the national statistics agency. In particular, issues relating to the adequacy of the reported performances and the comparability of control groups have been convincingly addressed. However, the interpretation of the data derived from this exercise is not entirely straightforward. A clear difference is shown between the performance of enterprises participating in projects supported by the Structural Funds and those that did not participate. However, it is not known if the earlier performance of participating enterprises has been taken into account and the direction of causality is not established. It could be that enterprises that perform well have been attracted to Structural Fund projects. Nonetheless a clear association between participation and performance has been established and this exercise is providing a much more solidly-based analysis than alternatives that rely on results and impacts reported by projects. It should therefore be regarded as good practice to be examined further as a methodology that could have wider application.

4.2. Characteristics of the Beneficiaries

Reflecting the Danish position on direct aid to enterprises, set out in the Business Development Act, no part of the Innovation & Knowledge OP supported enterprises directly. Furthermore, a characteristic of the OP is that only 41 of the 344 ERDF projects were devoted to ‘establishing & developing new enterprises’ and these accounted for under 20% of the budget. It was these projects which primarily provided indirect support to individual SMEs or entrepreneurs. In contrast, the bulk of the interventions were targeted either at collaboration between enterprises and knowledge institutions or at networks composed of a variety of organisations - SMEs, but also larger enterprises, universities and research institutes, public authorities and public agencies. The aim was to apply the triple (or quadruple) helix model in which enterprises, knowledge institutions public bodies and in some instances user interests work and interact with each other. Of course, the aim at the end of the day was to make enterprises and the economy more innovative and to support them in contributing to growth, but simply to focus on the assisted SMEs gives a wrong impression of an approach that sought to strengthen the
mechanisms for knowledge transfer and the co-operation necessary to take ideas to market effectively.

Having said that, the Monitoring and Effect Assessment exercise identified 38,271 enterprises that had been involved in projects, although the analysis so far has focused on the 10,000 that were involved in projects that began before the end of 2010. 2% of these were large enterprises, but otherwise the size distribution is set out in Table 14 above. Clearly small and medium-size enterprises were more involved than their share in the population as a whole would indicate, but this reflects the ‘soft’ targeting on enterprises that have the capacity to grow. Furthermore, it should be said, the nature of the instruments used and especially the support for cluster development means that more enterprises are continuously being drawn into the networks as the clusters develop.

Of those receiving assistance, under the ‘establishing & developing new enterprises’ objective, some 4,887 enterprises were reported to have received advice up to the end of 2013, loans of €23.8m were provided and there had been 504 initiatives to promote enterprise and entrepreneurship.

The sectoral distribution of the enterprises supported under all the growth objectives is difficult to determine in a meaningful sense. Much of the activity, as has been seen, was focused on new areas, such as energy and the environment, health and welfare etc. which cut across traditional categories.

It is also difficult to assess the numbers of the different kinds of organisations involved. The 2013 Annual Implementation Report states that just over 10,000 firms/institutions/organisations were involved in actions under the growth objective ‘Innovation, & Knowledge Sharing’, but it is not clear at what level nor what the representation of the different kinds of organisation was. There is even less information available about the participation in the other actions.

4.3. Basic Considerations in Assessing the Achievements

The scale of the ERDF intervention in Denmark was not large. It has been said that the amount corresponded to 0.03% of GDP and therefore could not be expected to have had a discernible effect on growth. Even in relation to the national investment in R&D (GERD), which was 2.4% of GDP at the beginning of the programming period, the amount was not of major significance. However, in terms of the funds available to the regions for economic development purposes, the Structural Funds generally have a much larger profile, amounting to between 1/3 and ½ of their budget and having a major influence on the way that regional strategies have been developed. Overall, EU support of EUR 245.1 million over the period can be compared with national support (business development, development of competences and technology and support for innovation) of just under EUR 1 billion. The ERDF intervention was of some relative significance therefore.

The effects of the economic crisis have also to be taken into account. The impact on business confidence was particularly significant, since it undermined the effectiveness of the instruments that required a creative and optimistic perspective on potential developments. This effect has been confirmed in interviews with participants, though accounts of the effects of enthusiasm and positive thinking are also part of this picture.

The economic crisis, however, did not force a change in strategy. The OP continued to focus on innovation and knowledge development and transfer and the overall direction of the OP was maintained as originally planned. Given that so much of it was directed towards building capacities and competences, it represented an important investment in social capital that may be expected to provide long-term returns.

Even in the shorter-term, however, the Monitoring and Effect Assessment exercise showed that supported enterprises created jobs at a time when the control group was reducing employment and their turnover also grew faster than that of the control group. Future analysis will also provide information on differences in productivity growth. Data
available at a regional level from this exercise\textsuperscript{27} show that in the sectors targeted by the regional strategy, growth in value added and exports were also evident.

Behind these overall results, there were varying degrees of success at a project level. As has been commented already, there is no systematic way of comparing results at this level, but indications have been provided by those interviewed. Reference to this is made in the next section.

4.4.  \textit{Mechanisms and behavioural changes}

4.4.1.  Developing the capacity of enterprises and other beneficiaries

The intended changes in the capacities and behaviour of enterprises and their partners as a result of participation in the OP were defined, first of all, by the three themes at the heart of the OP (supported by human resources changes promoted by the ESF Programmes). Reflecting these themes, the overall aim was to exploit knowledge through more innovation, encourage entrepreneurship and promote the take-up of new technology, especially ICT. More specific changes were defined by the instruments deployed. Here, although promoting knowledge transfer and cluster development were the main instruments in all regions, some made a relatively large use of ‘Establishing & Developing New Enterprises’ and ‘the Use of New Technology’.

South Denmark allocated 24\% of its Structural Funds allocation to New Technology use, although the secretariat in South Denmark suggested that sometimes this was only a matter of emphasis in the pursuit of similar objectives. The bulk of the Danish interventions, therefore, focused less on developing the internal capacities of enterprises and more on developing their relationships with other enterprises, with research institutes and other partners as part of an implementation of the triple helix model.

It is striking that the strategy implemented in Denmark was able to rely on a very sound SME and innovation support structure built up over many years, and in addition a well-established culture of co-operation between enterprises. This meant that the OP could largely concentrate on the more complex tasks of encouraging knowledge transfer and co-operation between cluster members in order to establish a stronger market position.

In practice, the improving the capacity for co-operation could take different forms. Promoting collaboration and interaction with universities could involve developing the commercial application of ideas generated in a university, but could also take the form of placing young university graduates in enterprises to help the latter understand what the university could offer and assist them to build links with the appropriate departments and staff. In the cluster projects, the aim was to increase the strengths of cluster members and their contributions to the cluster’s overall development, for instance, by mapping relative strengths and addressing weakness identified directly with advice and support, identifying, and improving the management of, the intellectual assets of small enterprises and using these to strengthen the market position of the cluster as a whole or by developing marketing campaigns with all the key cluster members. One of the strengths, in fact, of the approach to cluster development in many of the projects using this instrument was precisely the flexibility that they had to respond to perceived weaknesses in the contributions of cluster members.

Even the promotion of new technology tended to concentrate on getting enterprises or local communities to make use of new facilities rather than directly building capabilities in individual enterprises, although this also happened as a result of these projects. In this sense, the key mechanisms of new technology projects tended to be characterised by the development of facilities and promoting the capabilities of local communities, especially those in peripheral areas, rather than developing the competences of individual enterprises,

\textsuperscript{27} For example Syddansk Vaekstforum 2013 \textit{Strukturfonds-projekter I Syddanmark}
There were, however, other mechanisms at play in the instruments used. ‘Establishing & Developing New Enterprises’ made use of instruments that are closer to those conventionally used in SME support, although even here the emphasis was on identifying enterprises that were capable of growth and providing support that allowed these enterprises – both start-ups and established enterprises – to overcome challenges encountered on the growth path. Mid Jutland in particular had a relatively large allocation under this heading – 25% of the total Structural Funds support available. This difference from other regions is explained partially by the aim of diversifying and strengthening the SME base in that region in response to local circumstances, but also by the presence of a relatively strong set of SME support institutions, and particularly a Business Development Centre (Vaeksthus), in the region that could play a significant role in promoting regional development.

4.4.2. Issues in the Implementation of the Changes Envisaged

It has been mentioned that a critical stage in the implementation of the Programme by the regions and national authorities was in the selection of the projects to be supported. Effort was put into aligning projects with the priorities of the Regional Growth Fora and the areas highlighted at a national level, prior to applications being received and the Growth Fora played a part in selecting projects.

Many of the projects were relatively complex, especially but not only those promoting cluster development. The projects promoting co-operation between knowledge institutions and enterprises could have various dimensions, including working on direct technological co-operation, providing support through the development of testing facilities and developing schemes to support spin-outs, encouraging entrepreneurship by graduates and placing graduates in small enterprises.

The context in which these projects were implemented was very important. Some universities, such as Aalborg in North Jutland have a long tradition of engaging with the region’s industry and communities and not only have research links with enterprises, but have developed problem-oriented teaching programmes for engineering, where students learn engineering principles by applying them to real life problems encountered in enterprises. The university reforms at the beginning of the programming period allowed scope for the development of such relationships by other universities and it was reported in interviews that the distributed locations of the new university formations had assisted the process of establishing links with local industry. Positive effects were also reported along the lines indicated by Cunningham and Ramlogan’s (2012) - stimulation of learning processes and the enhancement of skills levels. However, industry representatives and project participants interviewed also complained that there were problems in the relationships between some universities and enterprises. There was a need to address an academic culture, in which there was a lack of understanding of business and entrepreneurship and in which career progression depended on an individual’s publications record much more than any contribution to real world developments. It was commented that encouraging entrepreneurship should not only be restricted to those seeking to establish or develop an enterprise, it was also necessary in academic institutions (and in public administrations).

A similar consideration applied in the context of cluster promotion. All those interviewed who were involved in or supported clusters referred to the triple helix model and the need to encourage interaction between enterprises, knowledge institutions and public bodies, but it was clear that the model was applied in different ways. Partially this was a matter of the sectoral focus and the legacy of earlier developments, in some cases going back to the 1980s, but it was also a matter of regional traditions in building clusters and the relative maturity of the relationships between cluster members. As pointed out by Rosenfeld (2002) and Swann et al, (1998), clusters have a lifecycle just like many enterprises, consisting of embryonic, growth, maturity and decay stages. Some cluster initiatives were at a relatively early stage, where it was a matter of universities taking an active role in trying to prompt developments in the enterprise population, combatting the underinvestment in knowledge and technology identified as a significant role by Uyarra and Ramlogan (2012). In others, public organisations were playing an important part, for instance in health and welfare clusters where public service providers were attempting to
stimulate the development of new solutions in a group of suppliers. Among the most mature clusters, however, the enterprise members were clearly in the lead, although still working closely with knowledge institutions and public authorities. In some cases large enterprises were significant members of the cluster, stimulating innovative solutions among potential suppliers.

All the successful clusters interviewed had a range of support activities as part of their projects. Typically a core team undertook a series of promotional activities, aiming to get in contact with potential members and explain the benefits of working with the cluster. Mapping exercises and other ways of characterising the different potential contributions of the various actual and potential members are also common and also activities by the core team designed to bring out and build on the competences of the members. Allowing sufficient resources of core team members to undertake this one-to-one work was also considered to be a critical factor. Work on analysis of markets and marketing actions were also common. A key consideration with successful clusters also appeared to be the inspirational leadership of the cluster team, generating enthusiasm and commitment, especially in difficult economic circumstances. Some, notably the Cleantech cluster (now known as ‘Clean’), had embarked on a series of mergers, particularly with similar clusters in other regions and are now seeking international connections and members and are involved in a series of international projects. This posed some problems in the period when the cluster was supported by the ERDF, since it is not envisaged that the funding would be spent outside of Denmark. Given that developing a global dimension to projects of this kind would seem to be in line with the globalisation strategy that underlay the OP, the rules that exclude this type of development would appear to be a constraint on a significant element in promoting innovation and competitiveness.

Overall, the characterisation of the cluster instrument is complex and multi-faceted, as are the success factors, but central to it are a significant element of competence building and a strong core team. An important consideration in the future is the extent to which enterprises can be persuaded to invest in projects of this kind before they see the benefits. Private investment in ERDF projects amounted to 22.7% of the total funds according to the Trimester report for 31st December 2014. New guidance on state aid being applied in the current programming period, which requires 50% funding by enterprises participating in cluster project, is likely to mean that the viability of the schemes is brought into question.

Previous explanation of the implementation of the OP has shown how flexibility in the development of regional strategies and action plans is an important feature of the Danish system. An important part of this flexibility has been in the selection of appropriate projects so that they are in line with the regional strategy and implementation plans. It was noticeable in our discussions with the authorities at various levels that the role of policy instruments in this process was perceived as operating with several degrees of freedom. Essentially the focus was first on the growth objectives as interpreted at the regional level, then on the project formulation and ultimately on the outputs generated and the results and impacts. Although a broad set of instruments had been designated in this process, in practice they represented a tool box from which particular projects could select the most appropriate implements for the particular tasks undertaken.

The benefit for enterprises of these measures was partially improved access to markets (especially through cluster projects), but more generally improved technological processes and enhanced competences to manage complex business relationships, for example through the better management of intellectual assets.
5. MAIN FINDINGS AND CONCLUSIONS

The Danish Innovation & Knowledge OP, with its clear emphasis on Innovation and the exploitation of Knowledge, was conceived by building on a well-developed national strategy with a wide degree of political and social support, though this strategy was itself highly influenced by European debates and the stress on Innovation and the Knowledge Economy to be found in common positions agreed around the revised Lisbon Agenda.

Initially Denmark started from a strong economic position and the agreed approach was not so much a matter of addressing deficiencies in the main variables of national economic performance, in that, for instance, employment creation was not even an objective, it was more a question of considering how to adjust the Danish economy to longer-term challenges and especially those posed for a trading nation by the phenomenon of globalisation.

The implementation of almost all of the Danish OP (90%) by the six regional authorities, assisted by Regional Growth Fora, allowed decisions to be made very close to the ground by the authorities and interest groups with a good knowledge of local circumstances. It also allowed flexibility to respond to differing sectoral priorities and to address deficiencies in relation to regional support requirements.

ERDF interventions and those supported by ESF were integrated at all levels, with an appropriate degree of flexibility in funding arrangements within a framework designed to ensure avoidance of double funding and observance of the respective rules.

Overall, then, the Danish OP has to be assessed as scoring highly in terms of the evaluation criteria of relevance and coherence.

In addition, the administration and governance of the Operational Programme must be regarded as relatively efficient, given its early start, its basis in national consensus, its clear division of responsibilities between the national and regional level, the active involvement of stakeholder representatives and the development of a strategic, legal, monitoring and reporting function for the national Managing Authority. That is not to say that the structure does not generate certain problems. With six or seven implementing bodies (if the national level projects are included), there are issues with the flow of information on developments on the ground, some inflexibilities that make a budget re-attribution difficult once the initial allocations of the regions have been agreed and problems with keeping pace with the development of monitoring and evaluation systems at a regional level. This latter problem has been recognised by the Managing Authority and is being addressed during the current programming period.

The flexible implementation of the OP at the regional level was a major strength in the whole system, allowing the OP to be adapted to the relative strengths of the SME and innovation support infrastructure across the regions. Generally Denmark has an impressive endowment in this area and this has allowed all the regions to concentrate on instruments for building regional innovation capacity and developing clusters. In this respect Denmark illustrates the approach of a mature ‘innovation leader’ applying policy instruments that are appropriate to this stage of development and anticipating the smart specialisation approach of the ERDF in the 2014-20 period.

The role of the Regional Growth Fora and their secretariats in providing guidance and ultimately selecting projects that aligned well with regional priorities was a major factor in ensuring a consistent implementation of the OP as a whole. It has been noted that in this process the main focus of those concerned was on the overall growth objectives and their regional expression, the specific objectives of projects and their implementation plans and the arrangements for reporting and monitoring of outputs, results and eventually impacts rather than on policy instruments as such. The choice of policy instruments and their particular components was made largely at a project level from a range of items in a fairly rich menu.
A relatively successful part of managing the processes of implementation relates to the targeting of the SME beneficiaries of the OP. It was not necessary to have explicit targeting, for example on SMEs with an established growth track record. Instead a soft targeting of enterprises willing to seek growth was achieved through the design of the available support.

Possibly less successful was the targeting of the other participants in projects. None of the interventions targeted SMEs directly and exclusively. All projects targeted intermediaries or groups of partners, though some of these were co-ordinated by enterprises. Many were co-ordinated by universities or knowledge institutions, but evidence from interviews suggests that these were not necessarily organisations that were most orientated to achieving success. There is clearly a difference in the culture of the different universities and some are better orientated to working with enterprises and developing effective knowledge transfer than others. This is evidently a matter that has to be considered on a project by project basis, but it is important to learn from experience in this area.

The effectiveness of the OP has to be judged by the results and impacts generated. The relative scale of the intervention has to be taken into account here and the fact that the ERDF funds only amounted to 0.03 % of Danish GDP must affect expectations in terms of impacts on the growth of the Danish economy.

Overall, the Structural Funds interventions are reported to have involved over 10,000 private enterprises. Denmark improved its position in the Innovation Union Scoreboard from 5th place to 2nd and had already exceeded targets by a large margin for all of its chosen indicators by 2013. At this stage, with projects still under way, this represented a substantial achievement.

More worrying is the fact that Denmark appears not to have reversed a long term tendency to under-perform in productivity comparisons with other developed economies an issue that is now central to the strategy adopted for the ERDF OP in the current programming period.

A fair assessment of the effectiveness of the OP, however, does have to take the headwinds generated by the recession into account and the most telling evidence here comes from the Monitoring and Effect Assessment exercise, showing better performance in terms of employment (8,300 full-time jobs) and turnover (EUR 2.1 billion) by those enterprises that had participated in Structural Fund projects over the 2007-2010 period than in enterprises making up a matched control group. Follow-up exercises are to be undertaken and the exercise as a whole may be regarded as good practice to be taken up more widely across Europe. However, more immediately, it may be said that this exercise provided evidence of a clear, even if relatively modest, benefit from the intervention.

The longer term benefits from the interventions come from the effects of the building of capacities and competencies that formed a central part of the activities of many projects. Unfortunately it is not possible to benefit from the extensive evaluation work that has been undertaken on these projects at a regional level, except in as far as the results of this work have informed the analysis of those that have been interviewed. As has been noted, the Managing Authority has developed a more systematic approach to aggregating the lessons of these evaluations that is being applied in the current programming period.

Some themes do emerge, however, from the assessments that have been undertaken and the interviews with those actively engaged in projects. There is clearly scope to learn more from the different experiences of those involved in knowledge transfer and co-operation between enterprises and knowledge institutions. While many projects worked well, the cultural differences between the partners and their respective motivations caused difficulties in others. More needs to be learned about successful co-operation between these partners in the specific circumstances of particular regions and specific institutions. This is particularly important given that, while Danish enterprises perform relatively well in terms of responding to market pressures to innovate and of co-operating effectively with other enterprises, one of the weaknesses identified at the beginning of the period was the relatively poor use of R&D, as a basis for innovation.
Similarly, it is clear that the experience of cluster development was very rich, but also quite diversified in terms of the dynamics in the application of the triple (or quadruple) helix model. To some extent, this depended on the relative development of the clusters in the different regions, with some of the most developed and dynamic clearly being driven by their enterprise members, but the Programme as a whole could benefit from analysis of the varying experiences of the different cluster projects, where initially it appears that dedicating sufficient resources to allow core team members to undertake one-to-one work with cluster members was a critical factor and inspirational leadership of the cluster team, generating enthusiasm and commitment, made a big difference especially in difficult economic circumstances.

Overall, a major conclusion of the case study is that the assessment of the effectiveness of the OP has to be that its results and impacts appear to have been significant and that this is likely to become even more apparent over time.

In terms of the efficiency of the general administration of the OP, several issues have been raised in interviews and from other sources that need some response. These may be explained in the following terms:

- There continue to be complaints about the complexity of ERDF interventions and procedures, including reporting requirements and it is suggested that this may deter the involvement of some enterprises. This reflects a situation also identified in the OECD study – OECD (2012). National measures in Denmark are perceived to require less complicated applications and to have speedier responses, suggesting that the problem lies in ERDF-specific procedures.

- There is a particular problem in ERDF rules, and their implementation in Denmark, that inhibit the development of international contacts and partnerships. These are an important part especially of the development of clusters and the constraints appear to be at odds with a strategy based on addressing the challenge of globalisation. It is pointed out that the rules of Horizon 2020 make accommodating international partners easier.

- The new guidelines on state aid that have been recently introduced, which are understood to require enterprises to contribute 50% of the eligible costs of their participation in cluster projects, may inhibit the future involvement of enterprises in cluster developments.

- The categories for reporting expenditure under the ERDF have proved to be problematic and may give misleading results. Frequently they do not reflect adequately the types of action that are being undertaken and some measures have elements that relate to more than one category. This inhibits developing an accurate account of the allocation of resources.

5.1. Conclusions

The following are the main conclusions from the case study:

- The Danish Innovation & Knowledge OP focused primarily on innovation and knowledge transfer, rather than SME support as such. This was relevant to Denmark’s development as an ‘innovation leader’ and highly coherent with national and European strategies. It has achieved a good integration with the ESF OP ‘More & Better jobs’.

- Overall, the Innovation & Knowledge OP has been implemented efficiently and has been effective in achieving its initial goals. Further results and impacts are to be expected as the ongoing effects of the actions make their mark.

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28 More specifically, the codes for the priority theme dimension
The development of cohesion policy in Denmark could be assisted by paying greater attention in the implementation process to the relative effectiveness of different policy instruments. While it is not necessary to be prescriptive, a process of policy learning from the experience particularly of the instruments used to support the ‘Innovation, & Knowledge Sharing’ growth objective could inform the future development of innovation policy and help to strengthen the evidence-based approach to policy formation.

Encouraging entrepreneurship and an innovation orientation is not only a matter for enterprises. Knowledge partners and especially universities need to be more adept at facilitating knowledge transfer and in some instances this requires a change in the culture of knowledge institutions. Good practice undoubtedly exists, but there needs to be more attention to identifying it and promoting its uptake more generally among knowledge institutions.

While there are considerable advantages to be derived from the implementation of the OP through the six Regional Growth Fora, this structure also causes some difficulties for the deployment of resources and the flow of information, especially about lessons learned locally from experience with projects. This is largely a matter of developing practice in the relationships between the Growth Fora.

There has been considerable development in monitoring and assessment arrangements over the programming period. The Managing Authority has already put in place arrangements to co-ordinate regional evaluation exercises more effectively and to generalise results of evaluations at a regional level. Further development of the Monitoring and Effect Assessment exercise is to be encouraged, including a finer slicing and publication of the data, to throw some light, for instance, on the relative performance of particular types of project/policy instrument.
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