OECD Regional Development Working Papers 2013/21

The case of Oresund (Denmark-Sweden) – Regions and Innovation: Collaborating Across Borders

Claire Nauwelaers,

Karen Maguire,

Giulia Ajmone Marsan

https://dx.doi.org/10.1787/5k3xv0lk8knn-en

OECD

OECD REGIONAL DEVELOPMENT WORKING PAPERS

This series is designed to make available to a wider readership selected studies on regional development issues prepared for use within the OECD. Authorship is usually collective, but principal authors are named. The papers are generally available only in their original language English or French with a summary in the other if available.

The opinions expressed in these papers are the sole responsibility of the author(s) and do not necessarily reflect those of the OECD or the governments of its member countries.

Comment on the series is welcome, and should be sent to either gov.contact@oecd.org or the Public Governance and Territorial Development Directorate, 2, rue André Pascal, 75775 PARIS CEDEX 16, France.

OECD Regional Development Working Papers are published on
http://www.oecd.org/gov/regional/workingpapers

Applications for permission to reproduce or translate all or part of this material should be made to: OECD Publishing, rights@oecd.org or by fax 33 1 45 24 99 30.

© OECD 2013

ABSTRACT

The Oresund is the most well-known example of European cross-border collaboration, building on the metropolitan area around Copenhagen and, across the sound, southern Sweden with the cities of Malmö, Lund and Helsingborg. Cross-border integration intensified following the opening of a fixed-link bridge/tunnel in 2000. Commuting, student flows and cross-border residency have been on the rise in this knowledge-intensive area. Cross-border cluster efforts have had varying degrees of longevity, with Medicon Valley being the most internationally known brand. After hitting a plateau in terms of integration, the area is seeking renewed inspiration for cross-border efforts. This case study is part of the project *Regions and Innovation: Collaborating Across Borders*. A summary of this working paper appears in a report of the same name.

JEL classification: L52, L53, O14, O18, O38, R11, R58

Keywords: regional development, regional growth, innovation, regional innovation, regional innovation strategy, science and technology, cross-border, Denmark, Sweden, Copenhagen, Skåne, Malmö, Oresund

ACKNOWLEDGEMENTS

This case study is part of the OECD project *Regions and Innovation: Collaborating Across Borders*. It is based on a background report prepared by the Oresund team (Magnus Jörgel and Maria Lindbom from the region of Skåne, Sweden; and Jacob Øster and Ann Faber Ginness from the Capital Region of Denmark) with support from Oxford Economics, additional research, and a mission to the cross-border area 15-17 May 2013. Peer reviewers for this mission were from Helsinki-Tallinn, Merle Krigul and Katri-Liis Lepik (Helsinki-Tallinn Euregio NPA) and Jasmine Etelämäki (City of Helsinki), and from Nordregio (Maria Lindqvist and Lise Smed Olsen). This case study was drafted by Claire Nauwelaers (consultant in STI policy) and Karen Maguire (OECD Secretariat) with additional support from Giulia Ajmone Marsan (OECD Secretariat). The team thanks those who participated in the mission interviews, the peer reviewers, and, from the Oresund, Magnus Jörgel, Maria Lindbom and Jakob Øster.

TABLE OF CONTENTS

EXECUTIVE SUMMARY 6

INTRODUCTION 12

CHAPTER 1 THE ORESUND CROSS-BORDER AREA AS A FUNCTIONAL REGION 13

1.1. Spatial definition of the cross-border area 13
1.2. Key economic characteristics of the cross-border area 15
1.3. Innovation potential of the cross-border area 17
1.4. Functionality of the cross-border area 23

CHAPTER 2 DRIVING FORCE AND KEY ACTORS FOR THE ORESUND CROSS-BORDER AREA 26

2.1. Rationale for the establishment of the cross-border area 27
2.2. Role of key actors in cross-border area establishment and evolution 29
2.3. Barriers for cross-border co-operation linked to actors 30

CHAPTER 3 GOVERNANCE OF THE ORESUND CROSS-BORDER AREA 33

3.1. Vision for the cross-border area 33
3.2. Institutionalisation and multi-level governance of cross-border co-operation 34
3.3. Funding for cross-border co-operation 37
3.4. Barriers for cross-border co-operation linked to governance and funding issues 38

CHAPTER 4 THE ORESUND CROSS-BORDER INNOVATION POLICY MIX 40

4.1. Cross-border initiatives and policy instruments 40
4.2. Untapped potential for promoting cross-border innovation synergies 46
4.3. Relevance and effectiveness of the policy mix for cross-border co-operation 50

CHAPTER 5 RECOMMENDATIONS FOR CROSS-BORDER INNOVATION POLICY IN THE ORESUND 51

5.1. Cross-border area 51
5.2. Governance 52
5.3. Innovation policies and instruments 53

NOTES 54

REFERENCES 55

ANNEX A 58

Tables

Table 1.1. Snapshot of the functional region for innovation 13
Table 1.2. Socio-economic overview of the cross-border area 16
Table 1.3. Innovation overview of the cross-border area 18
Table 2.1. Snapshot of the rationale and relevance for cross-border collaboration 27
Table 2.2. Key innovation actors in the cross-border area 30
Table 3.1. Snapshot of the governance characteristics 33
Table 4.1. Cross-border policy instruments in the Oresund 40
Table 4.2. Interreg IV A projects in Oresund focusing on innovation and skills development 42
Table 4.3. Snapshot of the innovation policy approach 50
Table A.1. Obstacles to Oresund cross-border integration (2011) 58

Figures

Figure 1.1. The Oresund cross-border region 14
Figure 1.2. The Oresund cross-border region in the wider Oresund-Kattegat-Skagerrak area 15
Figure 1.3. Newly created enterprises as a proportion of total regional enterprises in Swedish regions (2009) 22
Figure 1.4. The Oresund Integration Index 23

Boxes

Box 1.1. The transformation of the life science sector in the Oresund 19
Box 1.2. MAX IV and the European Spallation Source (ESS): Constructing regional development benefits 21
Box 1.3. Scientific collaboration in biotechnology in the Oresund: Internal and external trends 26
Box 2.1. Medicon Valley Alliance: A flagship cluster in the Oresund strong in networking 28
Box 2.2. The BiELAt Foundation: Connecting entrepreneurs in the cross-border area of the TTR-ELAt 31
Box 2.3. Promoting cross-border student flows: International examples 32
Box 3.1. Vision for the Oresund in 2020 (ORUS) 34
Box 3.2. Helsinki-Tallinn Transport and Planning Scenarios 35
Box 3.3. Cross-border dimension at the heart of the Brainport 2020 Strategy in Southern Netherlands 36
Box 3.4. Good practices in designing and implementing the Interreg A programme in the Oresund . 38
Box 4.1. Clusters in the Oresund 43
Box 4.2. Evaluation of the Oresund Contracts, a joint Swedish-Danish programme 44
Box 4.3. Joint Finnish-Swedish research programme in wood material science and engineering 45
Box 4.4. Orestat, a database to measure the integration of the Oresund region 46
Box 4.5. Innovation vouchers in Ireland and Northern-Ireland (United Kingdom) 47
Box 4.6. Top Technology Clusters and the Cross-border Cluster Stimulation Fund in the TTR-ELAt 47
Box 4.7. Cross-border co-operation between incubators and in start-up support in Helsinki-Tallinn. 49
Box 4.8. Cross-border Business Angel Network (HBAN) in Ireland-Northern Ireland (United Kingdom) 49

EXECUTIVE SUMMARY

Strengths, weaknesses, opportunities and threats for innovation policy in the cross-border area

Strengths/assets	Weaknesses/barriers
• Enhanced internal accessibility after the bridge opening and increased integration • International airport serving the whole area • Strong endowments in universities, S&T capacities, resources and skills • High level of innovation, strong clusters in life science (Medicon Valley) and cleantech • Infrastructure for start-ups and entrepreneurs • Long history of cross-border co-operation • Linguistic and cultural proximity • Legitimacy, stability and political endorsement with the Oresund Committee • Cross-border vision with ORUS • More strategic use of European Territorial Co-operation (Interreg) funding than in many other cross-border areas, innovation focus in 2014-20 • Regional and cross-border development strategies with a strong focus on innovation • Numerous cross-border initiatives • Area branding • Presence of cross-border policy intelligence tools (Orestat, Oresund Institute, etc.)	• Stagnating to declining integration post crisis • Termination of significant cross-border initiatives (Oresund University, Oresund Science Region) • Regulatory obstacles for cross-border labour market integration • Imbalance in economic power of the two sides in their national context (stronger in Denmark) • Imbalance in political commitment and citizen identity on the two sides of the border (stronger in Skåne) • Relatively weak national interest and support for cross-border co-operation generally and for innovation • Growing regional imbalances between the core and periphery of the Oresund • Insufficient private sector involvement in strategy and policy development • Dependence on European Territorial Co-operation (Interreg) funding sources (not conducive to private sector participation in the past) • Insufficient level of venture capital sources for the entire cross-border area
Opportunities	**Threats**
• Joining forces for accessing EU competitive funds (e.g. getting Knowledge and Innovation Communities [KIC] and large knowledge-based investments) • Large scientific infrastructures such as the ESS as assets for the Oresund international brand • Opportunities in the strong health sector, facilitating cross-border patient mobility • Cross-border perspective in respective national innovation instruments • Additional connections in the cross-border area (metro from Copenhagen to Malmö in the south and tunnel/bridge from Helsingør to Helsingborg in the north) • Further co-operation with neighbouring regions (Oslo-Hamburg corridor), better integration in global hubs	• Common labour shortages leading to increased competition between the two sides for external talent • Stronger global competitors in life sciences (a key sector of the Oresund) and other fields • Delocalisation or job cuts of key multinationals (recent examples of AstraZeneca and Nokia) • Future funding difficulties for cross-border data and statistics (Orestat)

The Oresund, the most widely publicised model of cross-border integration in the European Union, is in need of a new chapter for its collaboration. The bi-national Swedish-Danish region has a long history of cross-border interactions and co-operation. The opening of a bridge between the two countries in 2000 gave a strong boost to the integration process, which was years in the making. More than ten years after the symbolic bridge opening, the integration process of the Oresund is losing steam, having reached its peak of integration just before the crisis. An increased emphasis on cross-border innovation could be the new driver of cross-border co-operation, with policy efforts that contribute to a positive sum game for both sides.

The profile and relevance of the Oresund cross-border area for innovation

In the Oresund area, many pre-conditions for a functional region are present. Physical internal accessibility, thanks to the Oresund Bridge, and external accessibility, thanks to Kastrup Airport, are both excellent. Efforts to build an "Oresund identity" in a culturally and linguistically similar but still diversified population stand high on the political agenda, albeit the sense of an Oresund identity appears to be much higher on the Swedish side. Both sides of the sound share similar levels of development and present profiles of increasingly knowledge-based economies, with strong universities and innovative companies. Regional strategies across the area share many similar economic development priorities for high-tech areas in life science, ICT, material science and clean technology.

The economic centre of gravity of the Oresund, which is part of the wider Baltic Sea region, is on the Danish side. With a core around the Copenhagen-Malmö-Lund hub, the respective parts of the Oresund Region cover a more important share of the Danish (49%) than the Swedish (11%) economy. Over two-thirds of the 3.8 million inhabitants of the Oresund are on the Danish side. Including the Danish Capital Region naturally reinforces the strengths of the cross-border area, but creates internal tensions in Denmark when it looks east to Sweden instead of west to the Jutland peninsula. The Oresund has a core-periphery configuration, as most of the population, economic growth and activity are concentrated in the central area of the Oresund, in direct proximity of the bridge. The Danish Capital Region has the highest GDP per capita (and Zealand the lowest at 60% that of the Capital Region), but the Swedish side of the sound, Skåne (81% of the Capital Region GDP per capita), is growing at a faster rate. The Oresund is further nested in the wider Oresund-Kattegat-Skagerrak border region, and in the Baltic Sea macro-region.

Economic and innovation assets of the Oresund are important but the region still faces threats. Although specialised in services, the Oresund still has a sizeable manufacturing sector in Skåne and Zealand. The region as a whole, and especially its urban core, has a highly educated population (35% of the overall workforce has a tertiary education, above the average of OECD peer knowledge hubs regions at 31%). GDP growth and productivity are, however, not as impressive in a Nordic context. GDP growth has been much lower on the Danish side of the Oresund. Ageing, labour force shortages and growing international competition for its key industries are common challenges throughout the Oresund. Its specialisation in high-tech industries depends on a few large companies, and their strategic decisions have significant economic impacts on the region. New firm creation dynamics in the Oresund are better than their national contexts (according to Orestat, in 2009, 26% of all new businesses in Denmark and Sweden were launched in the Oresund Region), but not as high in a wider comparison.

The Oresund Region is a technology hub with excellent innovation potential, world-class scientific infrastructure and a good environment for start-ups. The Oresund accounts for a large share of total Swedish and Danish R&D: its R&D expenditure (4.9% of GDP), mainly of private origin (73%), outperforms national figures. The Oresund has a critical mass of workers in high-technology sectors among its already well-educated labour force. The bi-national region is characterised by a concentration of research-intensive multinational companies, innovative SMEs, and leading higher education and research institutions, specialised in life science and ICT. Pharmaceuticals and electro-medical equipment are its

most important high-tech specialisations. Large infrastructure adds to the scientific potential and high-tech image of the region: two large scientific facilities for materials science research are being built, MAX IV and the European Spallation Source (ESS). Their reach extends much further than the cross-border region, but efforts are devoted to stimulate spillovers from the new infrastructure to regional companies. They are also giving a reason for the Danish side to look towards its "little brother", Skåne, where the facilities are located. Several incubators and other initiatives exist on both sides of the straight to support start-ups in knowledge-based activities.

According to the *Oresund Integration Index*, labour market integration increased until 2008 and then stagnated, but the index does not capture knowledge and innovation flows. Labour market integration, which is commuting flows mainly from Sweden (of both Swedes and Danish nationals) to Denmark, jumped after the bridge opened. Until 2008, differences in salaries (higher in Denmark), housing prices (higher in Denmark) and unemployment rates (higher in Skåne) had driven these mobility patterns. Subsequently, the narrowing in housing price differentials, combined with growing unemployment on the Danish side, explain the slight decline in labour and housing market integration. Regulatory, tax and other policy obstacles remain that impede cross-border mobility. There is also an influx of students, more so from Sweden to Denmark, but this flow is hampered by differences in university rules and tuition fee structures. Visa regulations for non-EU citizens are reported to be an obstacle for the cross-border mobility of highly skilled, non-EU workers. The Oresund Committee, comprised of regional and local authorities, lobbies national authorities to resolve the barriers to cross-border integration, in particular the differences in taxation and social security systems. With respect to knowledge and innovation, evidence in the life science sector, for example, shows increased intra-Oresund scientific co-operation over time.

Driving force and key actors for the Oresund cross-border area

Achieving greater critical mass is the main rationale for establishing the Oresund. Reaping the benefits of agglomeration economies by creating a larger metropolitan region, with an integrated labour market, serves to overcome the disadvantages of the area's relative peripherality globally. This is a more important problem for Skåne in a Swedish national context, but even Copenhagen on its own is a small city in a global perspective. Expanding the size of the labour market increases the possibility of skills matching for its workers, therefore overcoming border obstacles towards an integrated labour market is a major driving force in building the Oresund. Common drawbacks of metropolitan regions relate to congestion costs as well as higher land and housing prices. The Oresund helps bring the best of both worlds by combining the advantages of the two types of region: metropolitan (Copenhagen) and intermediary (Malmö-Lund).

Exploiting complementarities in knowledge assets is another driving force for the Oresund that has benefits for both sides, although this could be more fully exploited. The bi-national life science cluster is a flagship initiative within the Oresund, supported by the Medicon Valley Alliance (MVA), which contributes to the region's international visibility. While the MVA promotes external linkages to global life science knowledge hubs, the potential for collaboration projects across the border remains under-exploited, in part due to the loss of a key pharmaceutical player on the Swedish side (AstraZeneca). Actors in other sectors, such as food, ICT and cleantech, are also working towards the goal of mobilising their strengths to reap benefits from cross-border collaboration, but lessons should be drawn as to why several previous cross-border cluster associations have essentially reverted back to only one side of the Oresund.

Branding is another goal in the Oresund project. From the mid-1990s, many "O" organisations and initiatives were born to give life to the "Oresund" brand. This has been used for developing an internal identity and networking. It has also helped with international profiling, along with the MVA. Several possible new brand names for the region have been under discussion.

Governance of the Oresund cross-border area

Governance is institutionalised through the Oresund Committee and supported by several public, private and non-profit organisations. The Oresund Committee gathers several regional and local authorities in the area. National authorities (observers until 2006), firms and universities are not members. The committee is supported by a ten-person Secretariat. It is complemented by a number of specialised organisations, such as Oresund Direkt, to support cross-border labour market integration, and the Oresund Institute which carries out studies on the area. Private voluntary initiatives, such as the Oresund Chamber of Commerce and StudentSamarbetet Oresund, also reinforce collaboration. The Oresund Business Council, the former Oresund University and the Oresund Committee represent the bi-national triple helix actors that played key roles in the origin and development of the Oresund as a formal cross-border initiative. The Orestat initiative, a project funded by the European Territorial Co-operation programme, produces cross-border statistics which are useful for strategy development. However, the longevity of this database is threatened by insufficient national support.

The Oresund has a vision but not yet an implemented joint strategy. ORUS is the Regional Development Strategy adopted by the committee in 2010. It includes a long-term vision of the area for 2020 and focuses on four themes, one of them being "knowledge and innovation". This is one step ahead of most other cross-border regions, whereby the strategy is limited to *ad hoc* projects. However, the vision is not accompanied by a developed joint strategy targeting economic development and innovation. Local and regional authorities in the Oresund are involved in joint strategies in the areas of land planning, transport and environment, but not as much in economic development and innovation. The future European Territorial Co-operation programme in 2014-20 will present an opportunity to develop more joint and precise goals and indicators.

Regional and national authorities' commitment to the cross-border area is mixed. Due to the different position of the Swedish and Danish parts of the Oresund in their national context, the commitment towards the cross-border area is unbalanced. There is, broadly speaking, a stronger interest from Skåne than from the Capital Region of Denmark. Interest at the national level is moderate to weak on both sides. In their support to the Oresund, regional authorities face a dilemma between regional growth and cohesion goals. For Sweden, the question is strengthening the area around Malmö and Lund versus the rest of Skåne, albeit the entire region benefits from a stronger Oresund. The dynamics of Denmark result in tensions between Copenhagen-Zealand versus the Jutland, thus politicising national efforts that support the Oresund.

Funding for the Oresund's initiatives is mainly from supra-national sources that also help place cross-border co-operation higher on local, regional and national policy agendas. The Oresund Committee is funded by the Nordic Council of Ministers and local and regional authorities. Public funding for cross-border co-operation projects comes mainly from the European Territorial Co-operation programme (Interreg A), which has been instrumental in establishing the platforms that make the Oresund collaboration stronger, particularly for innovation. The Nordic Council and European Union programmes also support wider cross-border co-operation. Beyond European Territorial Co-operation initiatives specifically targeted at the Oresund, programmes with a larger territorial scope, most notably under the Baltic Sea macro-region programme, are also used to support cross-border co-operation.

The Oresund cross-border innovation policy mix

The main innovation-related cross-border initiatives are platforms funded by successive generations of European Territorial Co-operation (Interreg) projects. Public support for innovation is not based on jointly designed and implemented programmes, but rather takes the form of temporary projects such as cross-border cluster initiatives. Many of these projects stop after the initial public funding

period ends, raising questions of both project quality and sustainability issues. One on-going initiative is the Medicon Valley Alliance, but other cross-border cluster platforms exist, or have existed, in areas such as ICT, food, environment and energy, new materials, and sustainable building. Some clusters only continued on one side of the border after the completion of the project. Another initiative was the Oresund University, which played a key role in developing cross-border projects, notably the cluster platforms. The Oresund University formally closed down in 2010, in part related to problems with national regulations regarding higher education, but certain areas of co-operation continue through a variety of projects.

There is a lack of cross-border policies to match the governance vision. National authorities on both sides of the border do not develop joint policies to support the Oresund initiatives. Despite political declarations, there are few instances (outside of the Nordic Council of Ministers) where national authorities exchange and decide on joint action to support the Oresund. One exception is that Danish national public R&D funding can, in principle, be used for cross-border co-operation, but this is not translated into practice.

There is untapped potential for a better Oresund policy mix for innovation. Regions on both sides are important actors with competences and budgetary resources to promote R&D and innovation. Beyond the existing cluster experiments, there is ground to investigate opportunities for cross-border synergies in other areas (such as merging the two cleantech cluster organisations, the Sustainable Business Hub in Skåne and the Copenhagen Cleantech Cluster). However, given that some prior experiments did not survive, care should be taken in future initiatives to identify actors and projects with a genuine cross-border value-added. Extending the work of business incubators, science parks and start-up support initiatives over the border can also contribute to greater cross-border benefits for both sides. Joint innovative public procurement and open data strategies are further opportunities. Using the two healthcare markets as a source for innovation is another area under consideration, but a challenge given different regulations in the sector. Removing barriers towards patient mobility across borders would reinforce opportunities in healthcare. The work around the new scientific infrastructure can be a catalyser for helping to better align Danish and Swedish innovation-related policies. Finally, a more innovation-driven Oresund would need to be supported by an extension of the coverage of the *Oresund Database* and a deepening of Orestat's work to cover innovation.

Recommendations for cross-border innovation policies in the Oresund

Cross-border area: Continue to remove barriers that limit further integration and build on the Oresund identity and brand

- Continue to remove barriers for cross-border student and labour mobility, the core of the Oresund co-operation, which requires national action.
- Further develop the Oresund internal identity and external brand.
- Expand cross-border statistics and analyses to capture the innovation dimension.

Governance: Ensure the ORUS vision's Action Plan is implemented, with innovation as a priority, cultivating greater engagement from national governments and the private sector

- Transform the ORUS vision and recent Action Plan into a reality with key partners, including universities and industry.
- Place a greater focus on innovation (in a broad sense) among the multiple development visions for the Oresund, including jointly defined priority areas.

- Clarify the incentives for national authorities to increase their role in achieving the goals of the Oresund Committee.

- Engage the private sector more actively in strategy and programme development to accompany a greater emphasis on innovation.

Innovation policies and instruments: Align or mainstream cross-border elements in respective national and regional programmes, building on cross-border specialisations and highlighting firm impacts

- Align relevant national and regional innovation policies, and if possible mainstream cross-border participation (making participants from the other region eligible for funding), to ensure funding sources are better adapted to cross-border innovation.

- Develop more detailed knowledge of cross-border resources to support networks and clusters with the greatest cross-border potential, including cleantech and healthcare.

- Prioritise projects and initiatives which are most likely to lead to impacts for firms, including cross-border business incubators, science parks and innovation support services.

INTRODUCTION

The Oresund Region enjoys a long history of cross-border interactions and co-operation. Historically, the Swedish region of Skåne was part of the kingdom of Denmark. Under the 1658 Treaty of Roskilde, territories now included in the Skåne region were transferred from Denmark to Sweden, but Danish remained the official language until the early 19th century. The idea of a bridge across the sound was born at the end of the 19th century. Denmark and Sweden, like other countries in the Nordic space, have a long tradition of intergovernmental co-operation, the Oresund Region being a prime example (Hörnström et al., 2013). A cross-border Council, made up of politicians from both sides, existed back in 1963 and raised the possibility of a bridge and a joint urban area of "Orestad". The decision to build a bridge was fiercely debated before the final decision was reached to go forward in 1991. At that time, the decline of traditional industries and the closure of shipyards as well as car and textile factories had visible effects on unemployment figures on both sides of the sound. A political Committee was formally established for the Oresund in 1993, in anticipation of the bridge, to get the most out of the investment once the bridge opened in 2000.

The Oresund is the most widely publicised flagship model of cross-border European integration. "Borders, bridge and branding" (Hospers, 2006) is a shortcut for the success story. Overcoming border problems thanks to a bridge and with the help of area branding are seen as keys towards the creation of a new, wealth-generating functional region. The opening of the bridge has facilitated the movement of people and goods across the border, in line with the European Union ideal of a space without borders. With the strongly branded Medicon Valley, the value of cross-border science and technology co-operation in high-technology fields, such as life science, has been an important element of the Oresund model.

More than ten years after the symbolic bridge opening, the Oresund is in search of a new chapter for its collaboration. The bridge, while initially the catalyst for greater integration, is no longer sufficient. After integration jumped in the years following the bridge opening, the crisis and changing price differentials have contributed to the current stagnation in integration and cross-border mobility. The *Oresund Integration Index*, capturing various dimensions of the functional area, has slightly declined over the last four years. For politicians, the bridge is now a past achievement, and a new symbolic vision is needed. Some in the area are looking to the new scientific infrastructure in Skåne as one of the catalysers for renewed co-operation. Delocalisation of large multinational companies and an ageing population are common threats to the cross-border region; therefore raising its attractiveness is a common need for both sides of the Oresund.

CHAPTER 1

THE ORESUND CROSS-BORDER AREA AS A FUNCTIONAL REGION

Table 1.1. **Snapshot of the functional region for innovation**

(Oresund in bold)

Characteristic	Specification	Comments
Region settlement patterns	**Metropolitan area** Network of small and medium-sized cities Sparsely populated with small towns	The core of the Oresund is composed of the Capital and Zealand Regions on the Danish side, with Copenhagen as the hub (a relatively small capital in OECD standards). Skåne, on the Swedish side, contains smaller cities, including Malmö, the third largest city in Sweden, and the university town of Lund as well as Helsingborg to the north. The rest of the Oresund Region is composed of small towns and rural areas.
Internal accessibility and flows *(geographic proximity)*	**Strong** Moderate Weak	The Oresund Bridge, combined with efficient train connections, ensures strong internal accessibility between the two main conurbations. External accessibility is strong with a major international airport.
Industrial and knowledge specialisations *(cognitive proximity)*	**Similar with complementarities** Same Different	The two sides of the cross-border region have several areas of common specialisation, such as life science and ICT, with complementary potential in universities and companies.
Socio-cultural context *(social proximity)*	Very similar **Somewhat similar** Different	Danes and Swedes share many common Nordic values, habits and cultural traditions. But business culture differences are reported which create both potential assets but also difficulties for co-operation.
Innovation system interactions	Pervasive **Hub-to-hub** On the border	Most potential for innovation co-operation and complementarity is between the adjacent urban hubs of Copenhagen and Malmö, but smaller size cities also participate in the interactions, particularly Lund and its university/science infrastructure.
Level of innovation development across border	**Balanced, strong** Balanced, weak Unbalanced	Both sides of the Oresund have high living standards and are knowledge and innovation intensive.

1.1. Spatial definition of the cross-border area

The Oresund brings together the Capital and Zealand Regions of Denmark and the southernmost Swedish county of Skåne. The two sides are separated by the Oresund sound, a 20-kilometre wide maritime area with a bridge/tunnel connecting the two sides through fast train and road links. On the Danish side, 2 of the 5 national regions (covering 46 municipalities) are included. The densely-populated Capital Region is the knowledge-intensive national hub. The neighbouring Zealand Region is characterised by a lower population density and less economic and innovation activity. On the Swedish side, Malmö (the regional administrative capital), Helsingborg and Lund are the main cities in the

region of Skåne (33 municipalities), all three being located near or along the sound. The core of the Oresund is on the Copenhagen-Malmö link. A northern fast ferry link over the 4-kilometer wide sound exists as well, between Helsingborg (92 000 inhabitants) and the closest point to Denmark (city of Helsingør) (Figure 1.1).

Figure1.1. **The Oresund cross-border region**

Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

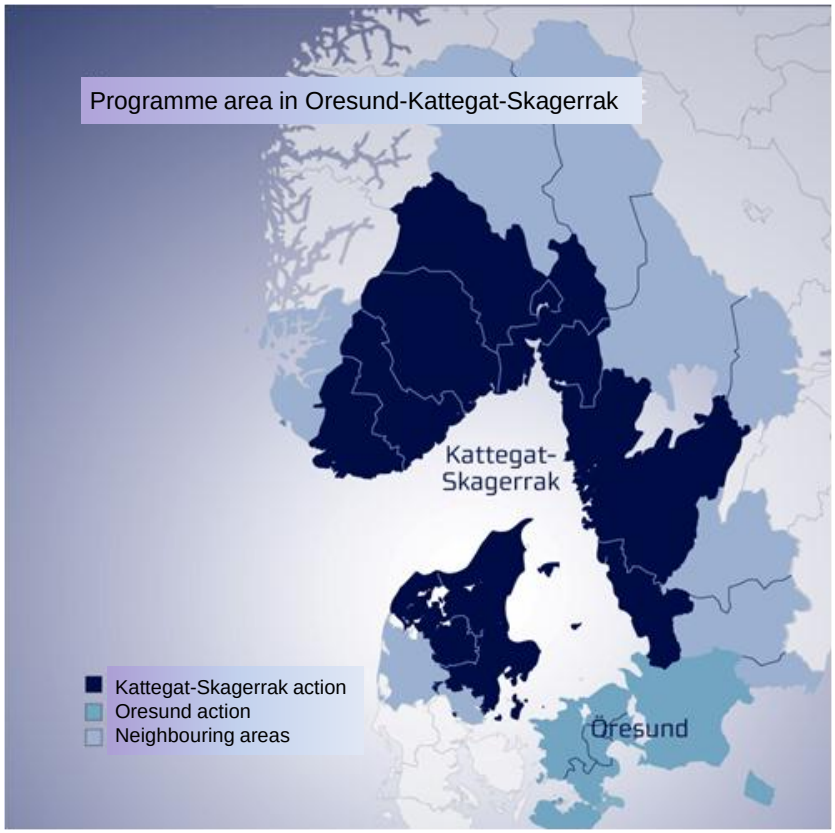
Source: Region Skåne and Capital Region of Denmark (2013), "Background report for the OECD study on cross-border regional innovation policies", January, from Øresundsbron.

The Oresund has a core-periphery configuration, with two-thirds of its 3.8 million inhabitants in Denmark. The total area of the Oresund is over 21 000 km², almost equally split between the two countries. The Danish part of the Oresund covers around 23% of the territory of Denmark, while its share of Sweden is much smaller (3%). Population density is higher on the Danish side (254 inhabitants per square kilometre compared to 108 on the Swedish side). Most of the population, economic growth and activity are concentrated in the central area of the Oresund, around Copenhagen and Malmö-Lund. The eastern part of Skåne and the Danish Zealand regions are both more rural and more sparsely populated. In both cases, the disparities in population density between the cores and the periphery are growing, and this is expected to be further exacerbated with increasing labour market integration (OECD, 2012a).

The Oresund is nested in the wider Oresund-Kattegat-Skagerrak cross-border area and the Baltic Sea macro-region. The European Territorial Co-operation programme has defined a wider area around the Oresund, which also includes northern parts of Denmark, additional parts of Sweden and some Norwegian counties (Oresund-Kattegat-Skagerrak) (Figure 1.2). As this is not a functional region, the programme is split into two sub-programmes with few mutual connections. The 18-kilometre tunnel for railway and car traffic, under construction between Denmark and Germany (Fehmarn Belt) at the southern

end of the Danish Oresund, will reduce the transport time between Copenhagen and Hamburg and further improve the external connectivity of the entire Oresund to the south. Looking north, there are opportunities for the corridor to extend to Göteborg (Sweden) and Oslo (Norway). On an even larger scale, the Oresund is also part of the Baltic Sea macro-region, which provides opportunities for other types of connections with surrounding countries, notably in terms of participating in joint long-distance communication infrastructure, addressing wider environmental challenges and sharing of large scientific infrastructure.

Figure 1.2. **The Oresund cross-border region in the wider Oresund-Kattegat-Skagerrak area**



Note: This map is for illustrative purposes and is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

Source: www.interreg-oks.eu with English translations.

1.2. Key economic characteristics of the cross-border area

The Oresund area represents a significant share of the two combined national economies, but this share is more important on the Danish side. The Oresund accounts for 27% of the total GDP of Sweden and Denmark combined (Oresund Committee, 2012a). This is a little higher than the share of the area relative to the combined population of the two countries (25%). The Danish side of the Oresund is a more important economic region in its national context than the Swedish side: the former represents 49% of the national GDP, while the share of Skåne in Sweden's GDP is only 11%. This imbalance has important consequences for the governance of the cross-border area (see Chapter 3).

Table 1.2. **Socio-economic overview of the cross-border area**

Variable	Capital Region of Denmark	Region Zealand (Denmark)	Total Danish part of the Oresund	Region Skåne (Sweden)	Oresund
Population (2011)	1.7 million	0.8 million	2.5 million	1.2 million	3.8 million (67% Denmark; 33% Sweden)
Surface (km²) (2011)	2 546	7 217	9 763	11 035	20 800 (47% Denmark; 53% Sweden)
Population density (inhabitants/km²) (2011)	660	113	256	110	178
Main cities	Copenhagen			Malmo, Helsingborg, Lund	
Unemployment rate (2012)	7.8% (2010)	6.7% (2010)	8%	9%	
GDP per capita (USD, PPP, 2009)	46 552	27 938	40 117	32 250	37 703
GDP growth (2000-09)	5.5%	-3.9%	3.4%	13.4%	6.1%

Sources: OECD (2013), *OECD Regional Statistics* (database), http://dx.doi.org/10.1787/region-data-en; Orestat database, www.orestat.se, www.orestat.dk.

GDP growth and productivity as a whole in the Oresund are not impressive in a Nordic context. Between 2000 and 2009, total GDP growth was 6% in the Oresund, lower than the EU27 average (13%), and much lower than in other Nordic capitals such as Stockholm County (30%) or the Helsinki Region (24%). However, GDP growth has been strongest on the Swedish side, with 13.4%, on par with the EU average, as compared with only 3.4% on the Danish side (where Zealand accounted for negative growth at -3.9% and the Capital Region for positive growth of 5.5%). Productivity growth figures (GDP per worker) are somewhat better in EU comparison (5.3% for the Oresund versus 4.2% for the EU27) but still much lower than for Stockholm (19.2%) and Helsinki (16.9%). Productivity growth figures are better on the Danish than on the Swedish side (5.7% versus 4.5%), but much lower for the Zealand Region, which experienced a negative growth rate over the period (Oresund Committee, 2012a).

Specialised in services, the Oresund still has a sizeable manufacturing sector in Skåne and Zealand. Overall, with 78% of jobs in the service sector, the Oresund is a service economy. The share of employment in manufacturing industries is 20% in Skåne and Zealand, but only 11% in the Danish Capital Region. The presence of this manufacturing sector reflects the past industrial tradition of these regions, but today the process of closure and renewal of the industrial base has gone a long way. The new image of Malmö, thanks to its evolution from a region of declining traditional industries towards a host for creative industries, is an asset for the whole cross-border area. In 2013, Malmö ranks fourth among OECD metropolitan areas for patent intensity.[1]

The Oresund, and especially its urban cores, has a highly educated population. The share of the working age population with a higher education degree reaches 35%, a higher figure than the national averages (32% in both countries) (Table 1.3). This share is unequal within the Oresund, with larger rates in the Capital Region and lower and even declining rates in Zealand.

Labour force shortages are a threat for the whole region. Both sides of the sound are characterised by an increased demand for skilled jobs, and labour shortages already exist in the welfare and healthcare sector, education and ICT. Studies show that the actual level of skills availability will be insufficient to meet demands in the future (OECD, 2012a). As a consequence, the development of a fully integrated labour market within the cross-border area, attractive for high-skilled workers, is a key issue. The gap in unemployment rate – a rate that had traditionally been lower on the Danish than on the Swedish side – has narrowed over the last decade.

Ageing is a common challenge throughout the Oresund, one that could also be a source for innovation. The dependency ratio in the Oresund is expected to increase significantly due to growing imbalances in the share of the active versus non-active population (the categories 0-19 year-olds and over 65 are growing faster than the 20-64 category) (Oresund Committee, 2012a). Currently, this dependency ratio is higher on the Danish side, providing an incentive for Swedes to commute to Denmark. Joint innovation efforts in specific fields, like e-health and medicine, may be particularly important to address the common challenge of ageing in an area with intensive public welfare and health services. Ensuring an integrated market for patients will provide incentives for the development of innovative solutions for health and medical problems linked to ageing.[2]

1.3. Innovation potential of the cross-border area[3]

The Oresund area is a technology hub which accounts for a large share of total Swedish and Danish R&D. According to the *Regional Innovation Scoreboard* of the EU, the whole area falls into the category of "innovation leaders" in a European context (European Commission, 2012). In 2010, 43% of private investment in research and development for the whole of Denmark and Sweden originated from the cross-border region (and the share increased from 25% in 1997). The region hosts 37% of the total number of researchers and 30% of patents of the two countries (OECD, 2012a). The comparison with the share of the area in terms of GDP (27%) indicates a larger concentration of R&D activities than economic output of the Oresund's share of the two national economies, implying a need to get more out of its innovation assets.

R&D investments in the Oresund, mainly of private origin, largely exceed a share of 3% of GDP. Sweden and Denmark are among the few EU countries with an intensity of R&D expenditures exceeding 3% of GDP (3.4% and 3.1% respectively in 2010), thus exceeding the Barcelona target set to develop the EU as a knowledge-based economy. With a rate of 4.9% of GDP,[4] the Oresund Region outperforms the national figures on this indicator. The share of R&D expenditure conducted by firms is around three-fourths on each side of the Oresund, putting the cross-border region at the top of the list of EU regions (Table 1.3).

Table 1.3. **Innovation overview of the cross-border area**

Variable	Oresund	Denmark	Capital Region of Denmark	Region Zealand	Sweden	Region Skåne (Sweden)	OECD peer average: Knowledge and tech hubs*
Tertiary educational attainment (as a % of labour force) (2010, 2008 for OECD peer average)	35	32	39	26	32	33	31
R&D personnel (as a % of total employment) (2009)	--	3.1	5.2	2.7	2.6	2.7 (South Sweden)	2.7
Share of employment in high-tech manufacturing (2008) over total manufacturing employment (%)	--	39	48	44	43	43 (South Sweden)	49
Share of employment in knowledge-intensive services over total service employment (2008) (%)	--	59	63	57	63	62 (South Sweden)	57
Total R&D expenditure as a % of GDP (2009)	4.9 (South Sweden)	3.1	5.3	4.0	3.4	4.7 (South Sweden)	3.9
Business R&D expenditure as a % of GDP (2009)	3.6	2.2	3.8	3.4	2.5	3.5 (South Sweden)	--
Share of R&D by private sector (%)	73%	71%	72%	85%	73%	74%	--
PCT patents per million inhabitants (2008-10 average)	315	207	339	323	309	425	260

Note: Peer regions average: average of the clusters "Knowledge and technology hubs". For further information see Ajmone Marsan and Maguire (2011). * EU regions only, for R&D expenditure and personnel variables.

Source: Eurostat; OECD (2013), *OECD Regional Statistics* (database), http://dx.doi.org/10.1787/region-data-en; Orestat database, www.orestat.se, www.orestat.dk.

The Oresund has a critical mass of workers in high-technology activities but is less specialised in these sectors than Copenhagen (on its own) or Stockholm. The absolute number of workers active in knowledge-intensive services is higher in the Oresund (100 000 workers) than in the respective capital regions (Stockholm with 86 000 workers and the Danish Capital Region with 54 000 workers). The specialisation rate of the Oresund in high-tech products and services within its bi-national context is, at 1.3, above national averages. However the Oresund's specialisation rate in these activities is lower than the capital cities' rates: 5% compared to 7.8% in Stockholm and 6.3% in Copenhagen. The Oresund is nevertheless among leading EU regions with respect to the share of high-tech services in the economy (ranked 19th in 2011).

The Oresund is characterised by a concentration of research-intensive multinational companies, innovative SMEs, and leading higher education and research institutions, specialised in life science and ICT. Both sides of the sound host a large potential in the life science and ICT sectors. This opens the opportunity for cross-border efforts to reap greater value-added from complementary assets and expertise within these broad fields. In the life science sector, totalling 55 000 employees in the Oresund Region, the majority of large pharmaceutical and biotech firms are located on the Danish side. There are also excellent

research facilities at the University of Lund (notably the Biomedical Centre and its flagship Stem Cell Centre) and the University of Copenhagen (the International Research Centre in Molecular Biology BRIC). Danish universities are strong in white, blue and green biotech areas. Skåne hosts a number of university spin-offs or local sub-units of global biotech companies. This gives rise to complementarities where academic research in Sweden serves the needs of private R&D in Danish firms (Hansen, 2013). The Danish side is specialised in pharmaceuticals, while Skåne is stronger in medicine technology. The important transformation of this industry over the last decade has led to changing configurations, with delocalisation of production functions form large companies (like AstraZeneca moving recently from Skåne to the Göteborg area) and the creation of new dedicated biotechnology firms (Box 1.1). The ICT sector, with 100 000 employees, is another important sector in the Oresund. Copenhagen is strong in financial ICT and Lund-Malmö in mobile phone development.

Box 1.1. **The transformation of the life science sector in the Oresund**

The Oresund region is host to a large number of firms (large and small) and scientists involved in life sciences. In 2008, 60% of Scandinavian pharmaceutical companies were located in the cross-border region, also home to 11 universities and 26 hospitals. There are approximately 150 firms in the region, 20 are large pharmaceutical or medical technology firms and 130 are dedicated biotechnology firms. Between 1998 and 2008, 100 new biotechnology and medical technology companies were created in the region. The distribution of companies (especially big pharma) and venture capital investors is skewed in favour of the Danish side of the Oresund, while for public research capacity, the situation is more balanced. There is a strong tradition of co-operation between firms, universities and hospitals.

The life science sector has undergone major transformation in the last decades:

- In the 1970s and 1980s, the sector was dominated by larger pharmaceutical companies (big pharma) covering the entire value chain and producing a few bio-based drugs. During the 1990s, much more diversified applications of biotechnology emerged and led to the establishment of small dedicated biotechnology firms, often in close connection with public research, and with financial support from the large pharmaceutical companies.

- Since the late 1990s, there have been an increasing number of production facility closures by the large companies, and a concentration on basic research activities, both for large and small companies, increasingly on early stage developments in highly specialised niches. The growing complexity of the industry and greater specialisation of firms have led to a need for stronger global connections to other bioregions. Actors involved in the early stage of the biotechnology value chain need to be part of international research communities.

Source: Asheim, B. and J. Moodysson (2008), "The life science cluster of Medicon Valley, Scandinavia", mimeo, CIRCLE, University of Lund.

The sectoral strengths in the Oresund are as follows:

- **The bulk of the life science sector is on the Danish side.** Greater Copenhagen and Greater Stockholm are the most specialised regions in life science in the Baltic Sea region, and Malmö comes in third. According to a survey of life science companies in the Baltic Sea, those companies located in Greater Copenhagen and Malmö are the ones that most clearly acknowledge the concentration of such companies in their region. However, there are more than 60% in Greater Copenhagen that declare that this concentration impacts on their performance, compared to only 27% in Malmö (Blohm Graversen and Rosted, 2010).

- **High-tech industrial sectors:** Pharmaceuticals and electro-medical equipment are the most important high-tech specialisations in the Oresund. Figures collected by Orestat point to a

specific potential for the Oresund within its bi-national context. Fields where the Oresund economy is much more specialised[5] than the national economies are, by decreasing order of importance: pharmaceuticals (with a higher specialisation rate than that of Stockholm); X-ray equipment and electro-medical and electrotherapeutic equipment; magnetic and optical media; and optical instruments and photo equipment.

- **Knowledge-based services:** The Oresund is highly specialised in R&D activities in social sciences and natural sciences (the latter being a very strong specialisation on the Swedish side). In addition, the Capital Region of Denmark is specialised in a great number of knowledge-intensive services such as: TV programmes, communication and telecommunication, and information services.

- **The more peripheral parts of the Oresund:** They are also specialised in pharmaceuticals. High specialisation rates in a variety of high-tech products and services are found in the Danish Capital Region and in the south-western part of Skåne (Malmö-Lund area). In regions outside this core, the only specialisation is in pharmaceuticals.

These specialisations depend on a few large companies that have been downsizing in the cross-border region. Recent major closures and job cuts in large companies such as AstraZeneca in Skåne and Nokia in Copenhagen are not reflected in the above figures. The Oresund specialisation is therefore vulnerable as the picture can change according to relocation or restructuring decisions of large multinational companies. The buildings left empty by the two big companies have been transformed into science parks and incubators in the two regions (Medicon Village and Nokia Bridge respectively).

Large infrastructure adds to the scientific potential of the region. Both the Swedish and the Danish sides of the Oresund benefit from an excellent endowment in public research capacities. These endowments are going to be further expanded in the coming years when two large scientific infrastructure for materials science research will have been built, MAX IV and the European Spallation Source (ESS), both in Lund (Box 1.2). Co-operation between Denmark and Sweden was essential for winning the competition for the ESS. Given the high degree of specialisation, the wide spectrum of applications and the underlying wide multinational co-operation for the ESS, this infrastructure will attract researchers from around the world, further contributing to the high-tech image of the Oresund and its integration in global networks. In other regions, large scientific facilities mostly benefit academic scientists. Policy makers in the Oresund have developed several programmes to stimulate spillovers to companies, covering various activities: construction, maintenance, research and research exploitation.

New firm creation dynamism is an asset to be further developed in the region. Europe in general, and Nordic countries in particular, do not display impressive rates of new firm creation. However, new firm creation dynamics in the Oresund are better than their national situations. On the Swedish side, Skåne, with a rate of 11.8 new firms per 1 000 residents, is the most dynamic county after Stockholm (15.3%, 2010 data, see also Figure 1.3, using a different indicator). The rate is somewhat lower in the Capital Region of Denmark: 9.8 new firms per 1 000 residents. The change of industrial structure in Malmö with a growing segment of IT-driven creative industries is an asset to the whole region for reinforcing a dynamic start-up environment. Several public and private initiatives are at play on both sides of the sound, to support new entrepreneurs and start-ups, which contribute to a dynamic environment for new firm creation (see Chapter 2).

Box 1.2. **MAX IV and the European Spallation Source (ESS): Constructing regional development benefits**

MAX-lab is a national laboratory operated jointly by the Swedish Research Council and Lund University. The fourth generation of this infrastructure is under construction in Lund. MAX-lab supports distinct research areas: accelerator physics research based on the use of synchrotron radiation and nuclear physics using energetic electrons. Time at the facility will be shared between groups working within these fields. The laboratory is an international forum: nearly half of the scientists working at the laboratory will be from foreign countries. The MAX IV project was agreed in 2009 and construction started at the site in 2010. Its budget amounts to EUR 330 million, and it will host around 2 000 researchers when in full operation.

The **European Spallation Source (ESS)** is a partnership of 17 European countries committed to the goal of collectively building and operating the world's leading facility for research using neutrons. The ESS will produce neutrons that will be used in parallel experiments to foster major advances from ageing and health, materials technology for sustainable and renewable energy, to experiments in quantum physics, biomaterials and nano-science. The ESS will be located in Lund, the data management facility will be located in the Copenhagen area, and it will be funded and operated by the 17 partner European countries. More than 300 researchers from 11 countries have taken part in the 15-year planning process. The ESS is expected to become operational in 2019. Its construction budget is EUR 1.5 billion and it is designed to host 4 000 researchers.

The two research facilities will provide complementary research opportunities at the intersection of several scientific domains (material science, physics, medicine, chemistry, biology and engineering) having a wide range of applications, thus constituting a unique asset for research and innovation development of the Oresund region.

Several projects aim at connecting these facilities to regional development goals:

- The 2010-12 **TITA** project (carried out by the Swedish side), aimed to enhance the regional impacts of the ESS/MAX IV through various activities. They included: relocation support; marketing; meeting point; foresight; the ESS and MAX IV as an innovation catalyst for trade and industry; the ESS and MAX IV, a growth factor for local and regional businesses; urban planning and transport infrastructure; a land availability register; and the pilot study for competence supply needs. It was decided at the end of the project to appoint an Industrial Liaison Officer to support business opportunities with the ESS and MAX IV. A similar project focusing on gains on both sides of the sound is under preparation for the next Interreg period, and the Danish Växtmotor project is aiming at a similar goal.

- **Växtmotor** (the ESS and MAX IV as growth engines for the Capital Region of Denmark) is a project co-funded by the EU Regional Development Fund and the Capital Region of Denmark. It is designed to help the Capital Region of Denmark to exploit the growth potential related to the establishment of the ESS and MAX IV in Lund and the XFEL in Hamburg. The project will use the facilities as growth engines to strengthen the research and innovation capacity at universities and companies and to increase the region's ability to attract international labour and R&D departments. Specifically, the project aims to: *i)* establish a joint research and contact data base to facilitate foreign researcher's crew and employment in the Capital Region and highlight the barriers for living in and working on opposite sides of the Oresund; *ii)* develop information packages about the Capital Region as a research destination for researchers and companies; *iii)* analyse which physical facilities should be offered to foreign companies that might locate in relation to the ESS and MAX IV; *iv)* build networks between companies, research institutions and the research facilities; *v)* develop teaching packages to high schools and study programmes at universities; and *vi)* help Danish companies win commercial contracts for the construction and operation of the facilities.

- The 2011-13 Interreg IV project **Cluster for Accelerator Technology** (CATE) aims to enhance the benefits of the construction of those infrastructures and facilitate knowledge transfer and spillovers in the region. Its footprint extends to other parts of Sweden, the whole of Denmark and Norway. The project is led by universities and aims to develop the competences in the field of accelerator technology in order to give companies the necessary capacities to win contracts for the construction and maintenance of research facilities that demand advanced accelerator technology equipment. Motivation for the project was to acquire contracts with CERN in the short term, and with the ESS in the future. In this project, the Oresund universities invite existing companies in the region to participate in *ad hoc* seminars or courses and competence development programmes in the field of accelerator technology.

Box 1.2. **MAX IV and European Spallation Source (ESS): Constructing regional development benefits** (*cont.*)

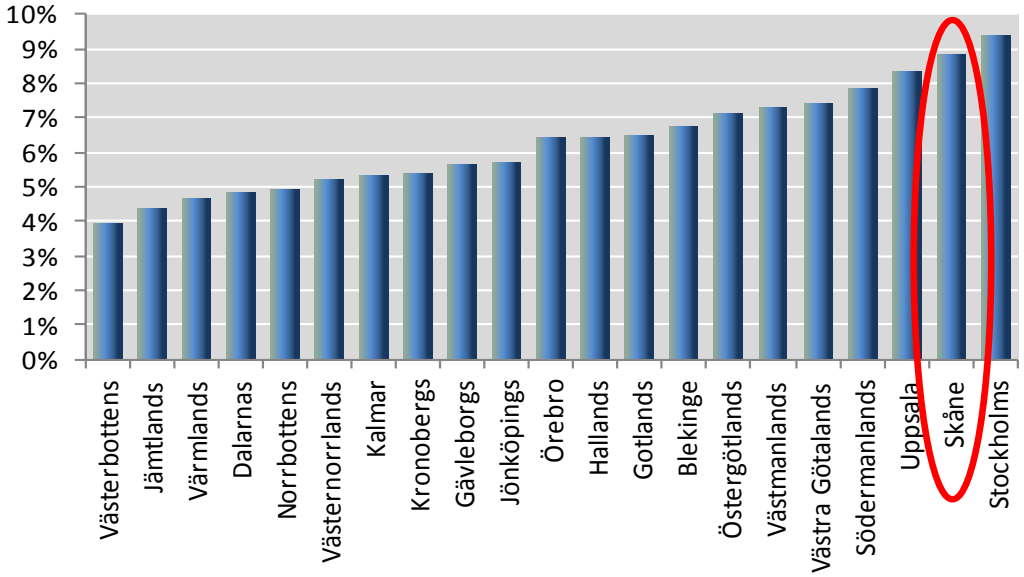
- The **Oresund Materials Innovation Community** (OMIC) is another Interreg IV project, aiming at developing the system of innovation in materials science to create the conditions for making the region a world-leading material science centre, based on the exploitation of opportunities offered by the ESS and MAX IV. The project is mainly targeted at academia, with a focus on education planning. The project includes: community building, regional branding, mapping of competences, the provision of network seminars for the affiliated companies in the science parks, etc.

- **Science Link** aims at fostering the use of these new facilities, as well as large research infrastructure in Germany, by industries in the wider Baltic Sea region (and is partially funded by the Baltic Sea programme). The project designs a model to upgrade participation of industry in scientific infrastructure, which is jointly funded by the participating regions. The model is tested on companies and results in proposals for a financing scheme of the infrastructure.

The Big Science Secretariat in Denmark has been established to support Danish companies and research institutions to reap the benefits of the Danish public contribution to big science infrastructure such as the ESS and MAX IV.

Sources: www.ess-scandinavia.eu; www.maxlab.lu.se; www.Oresund.org/materials; www.vaekstmotor.dk/english; Denmark Capital Region and Region of Skåne (2013), "Cross-border regional innovation policies, background report to the OECD study, Oresund", January.

Figure 1.3. **Newly created enterprises as a proportion of total regional enterprises in Swedish regions (2009)**



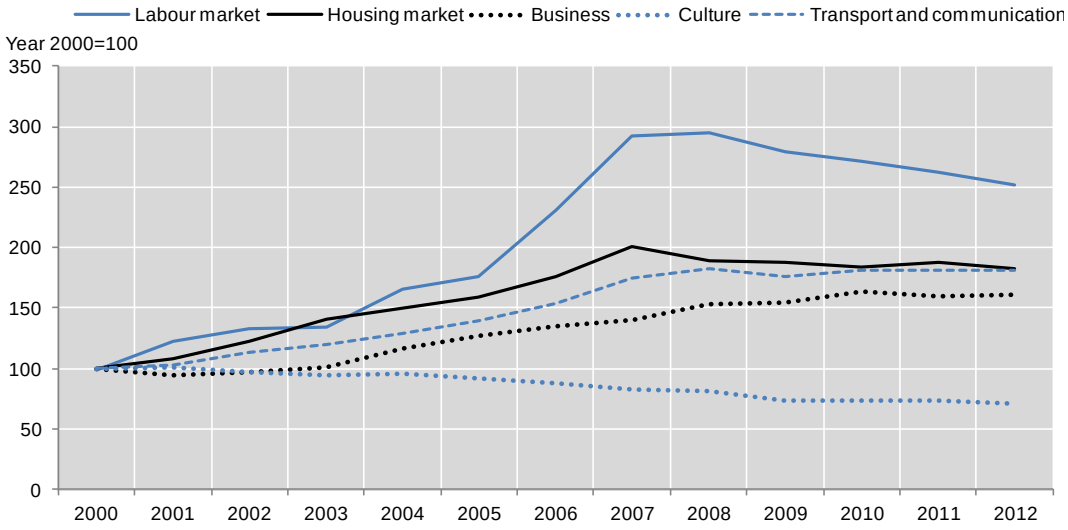
Source: Tillväxtanalys database, as cited in OECD (2012), *OECD Territorial Reviews: Skåne, Sweden 2012*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264177741-en.

1.4. Functionality of the cross-border area

Overall integration trends in the Oresund were positive until 2007-08, after which stagnation is visible. The *Oresund Integration Index* gathers into one composite index several sub-indexes, measuring cross-border integration in five fields: labour market, transport and communication, housing market, business, and culture (Figure 1.4, see also Chapter 4). The overall index evolved from 100 in 2000 when the bridge opened to 180 in 2007, and then declined somewhat to 170 by 2012. This decline is visible in all five areas of integration. Cultural integration shows a constant decline since 2000, but this trend as reflected in the statistics is driven in part by a decrease in cross-sound viewing of television programmes.

Labour market integration, measured by commuting – mainly from Sweden to Denmark – rose considerably after the bridge opening but has slightly declined post-crisis. The strongest increase in the overall Oresund integration after 2000 is in the labour market: the year 2008 saw a peak in commuting, with 20 000 commuters (compared to 3 000 in 1999). Commuter flows are mainly from Sweden to Denmark (96% of the Oresund commuters live in Sweden and work in Denmark), but half of the commuting is done by Danes residing in Sweden. The factors behind this trend have evolved over time. After the bridge opened, and until 2008, differences in salaries (higher in Denmark), housing prices (higher in Denmark) and unemployment rates (higher in Skåne) drove this commuting pattern. Many Danes settled in Sweden to take advantage of cheaper housing, while retaining their job in Denmark, where the economy was booming. In addition, Swedes were attracted to work in Denmark to fill labour shortages, while keeping their residence in Skåne. When the crisis hit in 2008, integration therefore stopped growing as housing prices in Copenhagen started to decline, while real estate prices were on the rise in Malmö, therefore some of the cross-border commuting Danes returned to Denmark. Fluctuations in currency exchange rates, as well as the resulting relative price differentials, also influence these cross-border flows.[6] Increased cross-border mobility helps decrease mental barriers since most Swedes and Danes living in the core of the cross-border area, even if not commuting themselves, get to know nationals that have worked on the other side of the straight. National regulations are obstacles to the development of a fully integrated cross-border labour market for high-skilled personnel. In addition, visa requirements for non-EU citizens further hinder cross-border mobility.

Figure 1.4. **The Oresund Integration Index**



Source: Oresund Committee (2013), *Oresund Integration Index 2012.*

Commuting is concentrated in south-west Skåne (Malmö-Lund) and greater Copenhagen. Commuters are concentrated in the transport and communications sectors (the airport is a major employer with a large catchment area), and also in wholesale and retail. The rate of commuters declines sharply as distance to the Oresund bridge increases. There is also some commuting between Helsingborg and Helsingør in the north, using the ferry connection. Despite the joint train service system between Denmark and Sweden, the more distant areas of the Oresund (eastern Skåne and Zealand) experience higher geographical barriers for both internal and external linkages.

Regulatory, tax and policy obstacles continue to impede cross-border mobility. In addition to the above-mentioned problem concerning visas for foreigners, commuting workers and students, as well as employers hiring people from the other side of the border, all face barriers linked to inconsistencies and non-alignment between the national legislations (see Annex A):

- discrepancies in tax, social insurance and pension regulations
- lack of transparency on respective rules and legislations
- incomplete recognition of education and grades achieved
- higher costs for postal and phone services with international rather than domestic pricing.

Traffic in the Oresund has followed a similar pattern to commuter trends. A marked increase in the traffic of goods over the Oresund can be observed since 2000, followed by a plateau since 2007. The ferry traffic in the north of the Oresund has experienced only a slight decrease over the last 20 years. The joint venture Copenhagen-Malmö Port offers transport and logistics services based on the two harbour facilities. It is an important vehicle to upgrade cross-border functionality from the point of view of freight transport.

There has been a rise of students from Sweden to Denmark, but with a downward trend today. Among the 18 000 commuters that crossed the sound in 2001, approximately 2 300 were students. There is a traditional imbalance in student mobility, as many more Swedes go to Denmark to study than the reverse, a trend that was reinforced with the bridge. The low number of Danish students that chose to study in Sweden generally chose universities outside of the Oresund, while most mobile Swedish students from Skåne move to the Danish Capital Region (Oresund Committee, 2012a). The flow of students from Sweden to Denmark has been declining recently, due to increased costs for attending some courses and changing evaluation criteria on the Danish side.

Physical internal accessibility, thanks to the Oresund Bridge, and external accessibility, thanks to Kastrup Airport, are both excellent. From the core of the Oresund (Copenhagen and Malmö-Lund axis), it is very easy to connect to the other side of the sound by car or train over the bridge, and to leave the region to more distant places through the Kastrup International Airport. The availability of an international airport at the core of the Oresund is a major asset: Kastrup International Airport is not only the national airport for Denmark, but also a major hub for international connecting flights. The airport also serves Southern Sweden, to which it is well connected by railway. This not only gives the Oresund an important advantage in international competition, but the airport and related businesses also provide a lot of jobs in the region. However, the dominance of SAS Airline in Kastrup's operations is a vulnerability if SAS hits hard times.

Bridge crossing tariffs entail mobility barriers. The costs for using the bridge by car or train are fairly high for non-regular travellers, while cheaper tickets are available for commuters (with

comparatively higher prices than domestic travel). For students in particular, the costs of crossing the bridge on a daily basis are viewed to be expensive.

New scientific and transport infrastructure on both sides of the sound are expected to increase the demand for high-skilled and construction labour. On the Swedish side, construction and subsequent operation of the MAX IV and ESS large scientific installations will create demand for new (mainly highly skilled) jobs (see Box 1.2). The expected impact on employment of several transport infrastructure projects on the Danish side have been calculated to reach 6 400 jobs per year over the period 2010-20 for the whole of East Denmark. They include: the Fehmarn Belt Fixed Link; a new 15-kilometre long Metro Cityring under central Copenhagen and Frederiksberg; the expansion and modernisation of the railway network and motorway network in the Greater Copenhagen Area and Zealand; the construction of new hospitals and the modernisation and expansion of a number of existing hospitals in the Greater Copenhagen Area and on Zealand; and the construction of a new state prison on North Falster (OECD, 2012a).

Building an "Oresund identity" in a culturally similar but still diversified population stands high on the agendas. Danes and Swedes share many cultural traits, and speak similar languages, albeit the rise of the English language detracts from knowledge of the neighbouring country's language. Yet there are cultural differences, for example in the business environment and business practices, which can be experienced as difficulties. The Oresund Region is rich in cultural activities (it hosts a third of all those employed in the cultural sector in Denmark and Sweden), a situation that is appealing to the diversity of residents living in and around the area. According to a 2009 survey, the sense of the Oresund identity is much higher on the Swedish side (with close to 80% of people feeling part of the cross-border area) than on the Danish side (only 44% of Danes identify themselves with the Oresund) (Oxford Research, 2009). Another survey conducted by the Oresund Committee in 2012 revealed that Swedes are more receptive to getting closer to the Danish side of the Oresund than the reverse (Oresund Committee, 2012a). Cultural events across the border, or shared interests such as the bilingual TV series "The Bridge", are signs of the importance of cultural considerations for citizens to feel a sense of belonging to the cross-border area.

Studies of the life science sector point to limited cross-border interactions in business innovation but some integration in scientific collaboration. As in other cross-border areas, data to measure the depth of integration in the Oresund mainly cover commuter flows, transport flows or internal migration patterns, and not knowledge flows and interactions in innovation. A few studies have nevertheless focused on cross-border scientific and innovation interactions and offer somewhat contradictory results:

- Global linkages are of greater importance than local collaborations for innovation projects in biotech firms (Coenen et al., 2004; Moodysson and Jonsson, 2007). In science-based industries, where collaboration and knowledge exchanges tend to be highly formalised, the value of proximity seems limited.

- A specialised labour market is the most important localised advantage for biotech companies, rather than direct collaboration with other firms or universities.

- Such a limited degree of business interactions in the cross-border life science cluster needs to be put in perspective with similarly low levels within domestic clusters. The Copenhagen and Malmö life science clusters, taken separately, show (like other Baltic clusters) very limited degrees of both general and innovation-oriented co-operation with other companies. In a recent enquiry on the intensity of clustering in life science clusters in the Baltic Sea region, less than 20% of the companies reported co-operating inside their cluster (Blohm Graversen and Rosted, 2010).

- The opening of the Oresund Bridge had a limited effect on the growth in overall co-authorships between the two parts of the Oresund, but a significant positive impact on intra-Oresund

co-authorship in the biotech field, at the expense of the within-country national co-authorships between Skåne and Stockholm (Hansen, 2013) (Box 1.3).

Box 1.3. **Scientific collaboration in biotechnology in the Oresund: Internal and external trends**

To assess the importance of the Oresund cross-border area for scientific co-operation in biotech, a study compared the increase in co-authorships and citations between the Danish and Swedish parts of the Oresund, with similar developments between the Oresund Region and the main biotech hubs of Basel, Massachusetts, New Jersey/New York, Île-de-France and Stockholm.

The study found that:

- The number of co-authorships between Danish and Swedish researchers in the Oresund Region increased considerably during the years 1994-2009, both before and after the bridge opening.
- While public-public co-authorships dominated the first part of period, private firms and research institutes are increasingly engaged in cross-border scientific collaboration. It is particularly the case for Danish firms, and one in five co-authorships is now between Danish private and Swedish public organisations. This indicates that the cross-border collaboration is increasingly concerned with research of commercial relevance.
- This increase in intra-Oresund co-authorships is higher in the biotech field than the increase in extra-regional linkages with the largest biotech hubs (Massachusetts, Basel, Île-de-France, or similar for New Jersey/New York). The Oresund–Stockholm scientific collaboration has experienced a significant decrease, indicating a substitution effect of the collaborations at the benefit of the intra-Oresund orientation.

Source: Hansen, T. (2013), "Bridging regional innovation: Cross-border collaboration in the Oresund Region", *Geografisk Tidsskrift-Danish Journal of Geography*, Vol. 113, No. 1, pp. 25-38.

CHAPTER 2

DRIVING FORCE AND KEY ACTORS FOR THE ORESUND CROSS-BORDER AREA

2.1. Rationale for the establishment of the cross-border area

Table 2.1. **Snapshot of the rationale and relevance for cross-border collaboration**

(Oresund in bold)

Driver	Explanation	Relevance for cross-border co-operation
Economies of scale	Combine resources for efficiency of investment, larger labour markets or access to wider business and knowledge networks to increase critical mass; often used to overcome peripherality	**Strong** Moderate Weak Not present
Political recognition	Increase the recognition and strengths of areas that are far from capitals to better negotiate and compete for resources from higher levels of government	Strong **Moderate** Weak Not present
Complementarities	Build on diversity of assets in terms of research, technology and economic base, as well as supply chain linkages	Strong **Moderate** Weak Not present
Branding	Increase internal recognition of the cross-border area as well as its external attractiveness to firms and skilled labour	**Strong** Moderate Weak Not present
Border issues	Address the day-to-day opportunities and challenges associated with flows of people, goods and services (including public services) across the border	**Strong** Moderate Weak Not present

Note: The assessment of relevance relates to the actual relevance in current cross-border collaboration, not necessarily to the potential relevance.

Achieving greater critical mass lies at the core of the rationale for establishing the Oresund. The 2010 ORUS regional development strategy for the Oresund states that "*it is only through close co-operation that the Oresund Region can attain sufficient critical mass to be able to compete internationally*" (Oresund Committee, 2010a). For the Swedish side, which is in a peripheral situation in its national context, reaping the benefits of agglomeration economies by linking to a larger metropolitan region serves to overcome the disadvantages of peripherality. But the "overcoming peripherality" rationale is also present for Copenhagen on a wider scale. Stockholm has declared itself "the capital of Scandinavia" and, as the capital of the largest Scandinavian national market, builds up its strong position for attracting more companies and talent than other Scandinavian capital cities. With 3.8 million inhabitants, the Oresund has a population exceeding that of Stockholm by around 1 million, and this can favour Copenhagen in the international competition for attracting multinational headquarters and talent. The presence of the international airport in Copenhagen also compensates for Skåne's peripherality in Sweden. From an internal perspective, expanding the labour market can reduce unemployment. Common drawbacks of metropolitan regions relate to congestion costs, higher land and housing prices. The Oresund has the potential to combine the advantages of two types of region: metropolitan (Copenhagen) and intermediary (Malmö-Lund).

Exploiting complementarities in knowledge assets is a positive sum game that has not yet been fully exploited in cross-border policy efforts. Much of policy makers' attention has turned to the potential for cross-border collaboration in academia and between academia and business, most notably in the life science and biotech sector. Actors in this domain identified potential for collaboration, which would be further enhanced by the opening of the bridge. The Medicon Valley Alliance (MVA) is one of the flagship innovation initiatives for the entire Oresund Region. Through its activities, the MVA contributes to the international visibility of the region. The changing landscape for the life science sector means that the MVA's initial focus on exploiting cross-border complementarities has shifted towards the promotion of external linkages to global life science knowledge hubs (Box 2.1). Exploiting complementarities in the food sector is a less obvious choice since the main actors in food industry on the Danish side are located in Jutland rather than in the Oresund. Nevertheless, joining forces within a large network (the international Foodbest consortium, see Chapter 4) helps to tap into complementarities: packaging and logistics on the Swedish side and food processing on the Danish side.

Box 2.1. **Medicon Valley Alliance: A flagship cluster in the Oresund strong in networking**

After informal contacts started in 1992, the Medicon Valley Academy (MVA) was founded in 1997 as an Interreg II project. The prospect of a bridge between Denmark and Sweden was a strong motivation to develop a cluster specialised in biotech, relying on scientific organisations and companies on both sides of the sound. The aim of the MVA was to stimulate the interactions between research and business communities in the two countries. The primary initiators behind the Medicon Valley Academy cluster organisation were the Universities of Lund and Copenhagen, strongly supported by the major pharmaceutical companies in the region at the time: Novo Nordisk, Lundbeck and AstraZeneca. After the first three-year period, strong networks of public authorities, hospitals, companies and universities were instituted. The name Medicon Valley was successfully branded internationally.

In 2007, Medicon Valley Academy changed its name to Medicon Valley Alliance to signal a broader partnership, involving not only academia and public research but also firms and other actors of the region. The MVA is a non-profit association mainly funded by membership fees (half private, half public). It has grown from 30 members to approximately 300 in 2013. The Secretariat has a balanced Swedish-Danish staff of 13.

The initial goal of the MVA was to increase cross-border integration of actors. However, due to the transformation and increased globalisation of this industry (see Box 1.1), this goal became less adapted to the needs of both companies and researchers in this area. The strategy changed from being inward- to outward-oriented, giving a higher premium on the creation of stronger global linkages between MVA actors and other top bioregions. The external branding of the MVA (and the Oresund) in view of developing worldwide partnerships and attracting talent, research and venture capital funds has become its primary goal.

These new orientations created the need for a more focused definition of the MVA's strengths. The priority areas are: healthy mental ageing and independent living; systems biology (with a focus on personalised healthcare); and immune regulation. The main instruments used to implement the MVA's strategy are traditional networking and partnership building events, and in addition:

- MVA ambassadors posted in major biotech hubs (currently Japan, Korea and the United States), and acting as door-openers for the MVA's actors to find partners in those regions, while promoting the MVA in these locations.
- the UK-MVA Challenge programme promotes researcher mobility, joint research and post-doctoral programmes, as well as exchange of experience between the MVA and UK biotech cluster managers.

Barriers to develop this cluster are mainly internal to the region. There is a difficulty in engaging firms with universities. Differences in regulation and legislation in the public healthcare sector on both sides of the border also complicate co-ordination. There is unclear commitment in the cross-border co-operation dimension. The cluster lacks a clear, long-term strategy with precise tangible goals, to be measured and evaluated. According to observers and stakeholders, the potential for major collaboration projects over the border remains under-exploited. The most important results so far concern international profiling of the region and internal and external networking. For universities, proximity is not so relevant in research activities, while the reverse is true for educational activities. Concerning the latter, funding barriers for cross-border students have impeded cross-border co-operation.

Sources: www.mva.org; Asheim, B. and J. Moodysson (2008), "The life science cluster of Medicon Valley, Scandinavia", mimeo, CIRCLE, University of Lund; Region Skåne and Capital Region of Denmark (2013), "Background report for the OECD study on cross border regional innovation policies", January, including inputs from Oxford Economics.

International branding and regional identity has been an important focus in the Oresund project, but the brand name is being reconsidered by some. A lot of effort has been put in creating and diffusing the "Oresund" brand. After the bridge, the new MAX IV and European Spallation Source in Lund (Skåne) are assets that are being used to fuel the branding of the Oresund as a science region and renew cross-border interest. Additional benefits from these large scientific infrastructures may be gained if local spillovers are fostered, and this is currently promoted through several dedicated projects. The Oresund brand may be revisited. The Mayors of Copenhagen and Malmö have proposed the alternative branding of "Copenhagen-Malmö". Other alternatives suggested by actors in the area include the "Copenhagen Greater Region", the "Scandinavian Bay Area" or the "Copenhagen Circle City".

Overcoming border obstacles towards an integrated labour market is a major driving force for the Oresund co-operation. The ambition of creating a common and well-functioning labour market is at the core of Nordic co-operation, and the Oresund is no exception. As a consequence, the main objective for the region has been to reduce the obstacles caused by administrative, legal and physical barriers. Local and regional authorities co-operate across borders to promote territorial development by improving infrastructure and public transport, and by managing and monitoring common cultural and natural heritage. The Nordic Council of Ministers supports this co-operation (Hörnström et al., 2013). At national inter-governmental level, reaching agreements to harmonise legal and regulatory frameworks and decrease border barriers is an important area of work of the Nordic Council of Ministers. The case of the Oresund has revealed a number of barriers for cross-border work (see Annex A), which is fuelling Nordic efforts.

Co-operation has been a positive sum game for the region, but the balance of benefits varies by type for each side. In terms of the labour market, Denmark benefits from Swedish labour during periods of labour shortages, and the Swedish side is gaining through avoided unemployment benefits for some of its cross-border commuters. However, Sweden is losing income taxes as commuting Swedes pay in their country of employment (Denmark), not residence. The Swedish side benefits more when large scientific infrastructure is located on its side, but Denmark can also benefit, such as through use of beam time at the MAX lab by actors from Denmark. Kastrup Airport in Denmark is also an asset for the Swedish side of the Oresund. Both sides benefit from greater visibility for international competitiveness.

2.2. Role of key actors in cross-border area establishment and evolution

The origins of today's Oresund Region involved the public, private and university sectors (triple helix). Like for all successful initiatives, there are many parents. Companies and business associations have been active in identifying the potential to be gained from a more integrated market, dating back to the early phases of the construction of the Oresund project. The creation of the cross-border Oresund Business Council is testimony to this interest. Universities and higher education institutions (HEIs) played their part too, and the Oresund University was established to pursue the goal of exploiting knowledge complementarities and extending university-industry relationships on a wider, but still regional, scale. Universities were also the initiator of a flagship project for the Oresund, the MVA (see above). The local public authorities also embraced the goal of giving a more prominent image to a larger region and supported the objective of creating a larger labour market and better connectivity with the bridge: the Oresund Committee is the expression of this joint interest.

The Oresund includes a large diversity of actors involved in knowledge creation, diffusion and absorption, providing a rich environment for innovation. On the private side, both sides of the straight include multinational companies as well as smaller firms in the life science, ICT and clean tech sectors. Many business services organisations support companies in their innovation efforts: start-ups and new technology-based firms can find dedicated advisors, coaches, facilities, and funding sources in the numerous specialised incubators and science parks located mainly in Copenhagen, Malmö and Lund. Companies can take part in cluster initiatives, some of them spanning the entire region. City business

support and inward investment agencies, as well as chambers of commerce, also play a role in supporting the networking and easing the business operations in the region. And, as already mentioned above, the cross-border area hosts a large number of universities, with education and research activities in the various private sector domains of specialisation (Table 2.2).

Table 2.2. **Key innovation actors in the cross-border area**

	Danish Capital Region and Region Zealand	**Region Skåne**
Firms	Life science: Biotechnology and pharmaceuticals: ALK Abello, Chr. Hansen, LEO Pharma, Lundbeck, Novo Nordisk, Novozymes, Coloplast, Ferring Pharmaceuticals Medicine technology: Ambu Int., Coloplast, Gambro, McNeil, Otiocon, Widex ICT: Alaso Actebis, Altea, Axis, IBM Denmark, KMD, Microsoft, Simcorp, TDC, Telenor, Telia Sonera, AF/Epsilon, TDC Mobile: Blackberry, Huawey, Intel, Jayway, Nokia, Qualcom, Softhouse, Sony Mobile, ST Ericsson, Svep Clean tech: DONG, Novozymes, Danisco, Haldor Topsoe, Rockwool, COWI, Grontmij Calr Bro, Vattenfall	
Business services organisations	Copenhagen Bio Science Park Nokia Bridge (Copenhagen) Symbion incubator (Copenhagen) Scion Science Park (Copenhagen) Clusters: Copenhagen ICT Cluster, Copenhagen Clean Tech cluster Growth houses Cities' business support services Copenhagen Capacity (inward investment agency) Chamber of Commerce	Medeon Science Park and incubator (life science) (Malmö) Ideon Science Park (Lund) MINC -IT (Malmö) Medicon Village (Lund) Krinova – food, environment, health (Eastern Skåne) Clusters Mobile Heights, Media Evolution, Skåne Food Innovation, Sustainable Business Hub Cities' business support services Southern Sweden Chamber of Commerce
	Cluster Medicon Valley Alliance Oresund Business Council	
Public research and tertiary education organisations	Copenhagen University Danish Technical University Copenhagen Business School IT University of Copenhagen Roskilde University Danish research and technology organisations (GTS institutes)	University of Lund Malmö University Malmö Media College Kristianstad University Swedish University of Agricultural Sciences

Sources: Oresund Institute (2013); Denmark Capital Region and Region of Skåne (2013), "Cross-border regional innovation policies, background report to the OECD study, Oresund", January.

2.3. Barriers for cross-border co-operation linked to actors

Cross-border governance in the Oresund involves mostly local and regional authorities, and to a certain degree universities, but the involvement of residents and companies is more limited. Public sector representatives are the driving actors in the governance of the Oresund. Private actors, citizens and NGOs are only weakly involved in the overall governance and strategy for the Oresund. The evaluation of the Interreg A programme for the Oresund concluded that the "*Oresund cross-border co-operation initiatives are locally and regionally still perceived of as something of an elite branding project. This is*

mainly due to the fact that the main promoters of these initiatives are local and regional public authorities" (Molle, 2010). While this diagnosis might be exacerbated by the particular features of the Interreg programme (see Chapter 3), the lack of alternative sources of funding for cross-border initiatives imply that this view may apply to a wide range of co-operations in the cross-border region. Firm-driven cross-border collaboration for entrepreneurs in the TTR-ELAt area (intersection of Belgium, Germany and the Netherlands) is supported by a private foundation, BiELAt (Box 2.2).

Box 2.2. **The BiELAt Foundation: Connecting entrepreneurs in the cross-border area of the TTR-ELAt**

The BiELAt Foundation was created in 2005 by a group of entrepreneurs from the Eindhoven region who sought to facilitate and promote business opportunities in the cross-border area where they are located. BiELAt activities were launched with an event gathering academics and business leaders, who decided to put creativity, entrepreneurship and innovation at the top of the foundation's agenda. The primary goal of BiELAt is to facilitate the creation of business connections, knowledge sharing and opportunities among the business community, research institutions and investors across Southern Netherlands, North Rhine-Westphalia and Belgium. The business community is aware of the rich innovation eco-system in the area, but it recognises the difficulties in mapping and meeting relevant private actors operating across the border.

The two-person secretariat of BiELAt works in the Netherlands and in Belgium to organise matching and networking events for entrepreneurs in the area. On average, BiELAt organises four to five events per year, where entrepreneurs meet with external experts, investors and the research community to create business opportunities. BiELAt is mostly funded through the participation fees of companies, since often the administrative burden and compliance rules in the different public administrations are too complex for efficient and effective event organisation. BiELAt events are organised in different locations in order to maximise the participation of entrepreneurs from different areas.

Source: TTR-ELAT (2013), "Background report to OECD study cross-border regional innovation policies", March; www.bielat.nl; interview with OECD.

Universities are core to the region's innovation potential, but they are competing for students and research resources, therefore some forms of collaboration are difficult. The region has around a dozen higher education institutions, 150 000 students and 12 000 researchers. They attract students from outside of the region in respective countries and internationally. There are collaborations between these universities among themselves in different networks, most recently the Oresund University Network that ceased to exist in 2012 after 15 years in operation, although several collaborations continue in other forms. Additional cross-border collaboration barriers for universities concern specific challenges for cross-border students. Given the importance of universities as a resource in the region for innovation-driven growth, finding sustainable ways of engaging universities in the Oresund's initiatives, as well as promoting closer collaboration among them when it makes sense, is another element to boosting the Oresund's integration.

Student flows from Sweden to Denmark have also slowed down. Changes in tuition fee structures and difficulties in converting grades (to be validated as admission conditions in Danish universities) explain a decreasing flow of students from Sweden (and other countries) to Danish universities. In addition, lack of co-ordinated information for cross-border students is also a hindering factor. As observed in other cross-border areas, it can be easier to promote defined joint study programmes, as opposed to generic cross-registration options, such as in the Bothnian Arc or the TTR-ELAt cross-border regions. Eucor in the Upper Rhine area has a broader cross-border network approach (Box 2.3).

Box 2.3. **Promoting cross-border student flows: International examples**

Transnational University Limburg (Netherlands-Belgium)

The Maastricht University (UM) in Dutch Limburg was established in 1976, and is the youngest of the 13 public universities in the Netherlands. With approximately 16 000 students (2012) and, together with UMC+, about 9 000 staff members and a turnover of about EUR 800 million, it is a major driving force for the region. The Hasselt University in Belgian Limburg is also a young university established in 1971 that organises undergraduate and post-graduate programmes in the fields of medicine, dentistry, sciences, law and applied economics. In 2001, the Flemish and Dutch Ministers of Education signed an international treaty which founded the Transnational University Limburg. Academic staff from Hasselt University (Flanders) and from nearby Maastricht University (in the Dutch Province of Limburg) now jointly undertake research and offer degree programmes in the life sciences and computer sciences.

The Nordic Mining School (Finland-Sweden)

The University of Oulu and the Luleå University of Technology have jointly established the Nordic Mining School (NMS). The NMS offers a new degree programme in fields related to the mining industry. The aims of the NMS are: *i)* to bring the students at masters level in both universities together to reach critical mass; *ii)* to build the best graduate school in mining-related education in Europe; and *iii)* to strengthen the research co-operation in mining, exploration and environmental engineering, mineral processing, metallurgy and process engineering. The initiative, which received funding by the European Union Interreg IVA Nord programme in the period 2008-11, offers students master's degrees in both universities. Students enrol in a relevant master's programme at either of the universities and spend at least six months of their studies at the other university and qualify for a double degree from the Nordic Mining School. A joint professorship in "mineral entrepreneurship" was established to give students knowledge of the economics to start and run businesses in the mining and exploration industry.

Eucor, the Upper Rhine University (France, Germany, Switzerland)

Eucor is a network of leading universities founded in 1989 in the Upper Rhine area across Germany, France and Switzerland, including the University of Freiburg and the Karlsruhe Institute of Technology in Germany; the University of Strasbourg and the University of Haute-Alsace in France; and the University of Basel in Switzerland. The Rectors of the five universities and the President of Eucor meet twice per year to define strategic priorities for the network of institutions. The Eucor network has also established a co-ordination office with the responsibility to organise thematic bi- or tri-national meetings around cross-border issues such as: university language policies; doctoral studies; inter-university cultural events; and inter-university transport. In 2009, Eucor established a cross-border university Student Council, with the aim to promote Eucor mobility programmes among students. Eucor promotes and creates thematic networks and projects for researchers and students, focusing on similar topics in the five universities of the cross-border region.

Source: OECD (2013), *Regions and Innovation: Collaborating Across Borders*, OECD Publishing, Paris.

CHAPTER 3

GOVERNANCE OF THE ORESUND CROSS-BORDER AREA

Table 3.1. **Snapshot of the governance characteristics**

(Oresund in bold)

Characteristic	Specification	Comments
National political capitals	Yes, each side **Yes, at least one** None	Copenhagen, the capital city of Denmark, is part of the Oresund, while Skåne is located more than 600 kilometres away from Stockholm (the Swedish capital).
Longevity of public co-operation *(social proximity)*	**>20 years** 10-20 years <10 years	Cross-border integration in the Oresund is long-standing, starting well before the opening of the bridge in 2000, and further promoted at Nordic level.
Innovation policy competencies *(institutional proximity)*	Balanced, strong Balanced, weak **Unbalanced**	Even if both Denmark and Sweden are centralised countries in an OECD perspective, the level of autonomy of the Skåne region for supporting innovation-driven collaboration is higher than that of Danish regions. Both regions have resources for innovation and R&D investment.
Political commitment *(institutional proximity)*	**Balanced, strong** Balanced, weak Unbalanced	The overall commitment to the Oresund integration goal is high among respective regions, particularly relative to other cross-border areas, even if there is stronger interest from Skåne than from the Capital Region of Denmark. At the national level, the political commitment is not as strong on either side.
Institutionalisation and legitimacy *(institutional and social proximity)*	**Present, strong** Present, weak Not present	The Oresund Committee and its supporting institutions provide strong institutionalisation and legitimacy to the area.
Actors in governance	**Public sector** University/research actors Firms Mix of actors (triple helix)	Public commitment drives the governance, which is not matched by strong bottom-up engagement of firms. University and research actors play a key role in cross-border linkages, albeit termination of the Oresund University and the associated network decreases the direct joint university engagement.
Funding sources	**Mainly public** Mixed public/private Mainly private	Nordic and EU sources of public funding, with co-funding from local authorities, are the main funding sources to nurture the Oresund initiatives. Private co-financing of these activities remains low.

3.1. Vision for the cross-border area

The Oresund Committee has formulated a vision for the Oresund Region in 2020. The vision is spelled out as follows: "*By maximising the benefits of integration and cross-border dynamics, the Oresund Region will stand out as the most attractive and climate-smart region in Europe*." ORUS is the Regional Development Strategy adopted by the Committee in 2010 (Oresund Committee, 2010a). ORUS focuses on four main themes: *i)* knowledge and innovation; *ii)* culture and events; *iii)* a diverse, yet cohesive labour market; and *iv)* accessibility and mobility. These themes are further detailed into a wide set of expectations for the Oresund in 2020 (Box 3.1). While having such a long-term vision is better than a collection of *ad hoc* projects, the long list of visions without priorities complicates implementation. In addition, the fact

that the Committee does not include main actors such as universities (see below) means that it needs to work with other stakeholders for concrete activities to fulfil its action plans.

Box 3.1. **Vision for the Oresund in 2020 (ORUS)**

1. Front-runner in environmentally friendly transport and a laboratory for green technology.
2. Centre for cleantech solutions and sustainable urban development to host an Oresund Region EXPO in 2022.
3. Single, attractive, obstacle-free labour market where individuals with a variety of educational backgrounds and skills have unrestricted access to all of the region's workplaces, irrespective of whether their skills have been acquired in Sweden, Denmark or elsewhere.
4. Model for how to make the best possible use of the resources that workers with a non-Scandinavian background can bring to the labour market.
5. Place where opportunities, regulations and frameworks are communicated through OresundDirekt.
6. Model region in terms of digital integration through the use of high-quality broadband.
7. Region with a diverse cultural offering that meets high criteria in terms of quality.
8. Region that invests in cultural activities produced for, with and by children and young people.
9. Host for international events and a popular tourist destination.
10. Cohesive, competitive educational market that trains the best candidates and attracts students and researchers from other countries.
11. Hub of innovation, with entrepreneurs and synergies between educational institutions and trade and industry.
12. Region whose residents are able both to make use of all that the region offers and to explore its potential.

Source: Oresund Committee (2010), *ORUS: Oresund Regional Development Strategy*, Oresund Committee.

3.2. Institutionalisation and multi-level governance of cross-border co-operation

The Oresund governance is institutionalised through the Oresund Committee, gathering local and regional authorities. Established in 1993, it is a forum for voluntary political co-operation at the initiative of Swedish and Danish local politicians on both sides of the Oresund. It is a political interest organisation that promotes co-operation across the sound at all levels and safeguards the interest of the Oresund Region before the national parliaments of Sweden and Denmark. The members of the Oresund Committee from Denmark are: the Capital Region of Denmark, Region Zealand, the City of Copenhagen, the City of Frederiksberg, Bornholm Regional Municipality, the Local Government Regional Council for the Capital Region of Denmark and the Local Government Regional Council for Zealand. The Oresund Committee members from Sweden are: Region Skåne, the City of Malmö, the City of Helsingborg, Lund Municipality and Landskrona Municipality. The full Committee meets twice a year, and a smaller Executive Committee meets four times per year.

The Oresund Secretariat, supported by a number of specialised organisations, implements the cross-border actions and initiatives. The Secretariat is a ten-person organisation which provides continuity in actions, in collaboration with public actors on both sides, to implement the Committee's strategy. It also hosts the Secretariat for the programme Interreg IVA Oresund. Data provided by Orestat has been valuable for informing cross-border efforts, albeit it is an Interreg project with uncertain funding going forward. The Secretariat is further supported by several external organisations:

- The *Oresund Institute* is a non-profit Danish-Swedish association founded in 2002 with the purpose of encouraging integration within the cross-border region. It provides studies and analyses useful for monitoring and decision making with respect to the future of the area. It also publishes the *Oresund Magazine* and *JOBØMAGT*, providing information on the region, its firms, political events and other information of interest to residents.
- *Oresund Direkt* is an organisation with the goal of supporting labour market integration through the provision of legal and regulatory information to commuters and employers on both sides of the border. Through this work, Oresund Direkt is in a position to provide information on cross-border labour market trends and needs.
- *Oresund Culture* is a common platform for cultural actors across the sound. The *Oresund Film Commission* promotes the region as a film location and provides services to international film companies operating in the region.

Firm and student groups also support the Oresund, particularly in the early stages. The *Oresund Chamber of Commerce*, a joint venture between the Danish and Southern Sweden Chambers of Commerce, was a pioneer in developing analyses and concrete actions to support business operations across the border. For example, it developed the first *Oresund Integration Index* in 2000. *StudentSamarbetet Oresund* is a cross-border body for student organisations.

Local and regional authorities in the Oresund are involved in joint strategies in the areas of land planning, transport and the environment. Several strategies have been elaborated under the aegis of the Oresund Committee. They include: a joint cross-border development plan (with planning recommendations to local authorities); a joint environmental programme for the Oresund; and a cross-border transport development plan (Moller, 2010). Such planning has played a key role in the emergence of Interreg projects in the fields of transport and communication, environment and tourism. A focus on cross-border transport and communication infrastructure is also present in the Helsinki-Tallinn cross-border area, where major efforts have been paid to develop an integrated vision for transport and infrastructure development (Box 3.2).

Box 3.2. **Helsinki-Tallinn Transport and Planning Scenarios**

The H-TTransplan project organised the collaboration of planning authorities and stakeholders in the transport sector in the Tallinn and Helsinki regions from 2011-12. The project focused on the integration of the Helsinki-Tallinn capital regions with respect to planning of transport and infrastructure in the region. A large number of stakeholders from the public, private and academic sectors have been involved in discussing future scenarios of the region and plans related to: local and regional transport systems, transnational transport corridors, and hubs and logistics centres affecting the development of the Baltic Sea eastern shore as a whole. This project forms part of the institutional platform "Rail Baltica Growth Corridor" for the joint development and co-operative activities of public and private stakeholders acting for the promotion of Rail Baltica, an EU-promoted investment project that will provide a new north-south rail connection in the Baltic Sea region. The project involved a survey on business mobility and commuting, a territorial impact assessment, and the development of four scenarios for Helsinki-Tallinn transport and infrastructure development. The work includes co-ordination of information flows between the two city-region planners.

Source: Tapaninen, U. (2012), *Helsinki and Tallinn on the Move: Final Report of the H-TTransPlan Project*, Tallinn-Helsinki; www.euregio-heltal.org/httransplan.

The Oresund has not yet aligned regional development and innovation strategies to take advantage of synergies throughout the cross-border area, and the "smart specialisation" strategies are one way to do so. The three regions of the Oresund have recently adopted regional development strategies in which research, technology, innovation and high-skilled workers are at the core of their development model. They have all mentioned cross-border and international connections as an avenue for development (including the Oresund, northern Germany in particular for Zealand, and the Baltic Sea). The scope of international collaboration is greater in the plan for the Capital Region, while the importance of the Oresund stands out more prominently in Skåne's plan. Skåne has adopted a strategic innovation policy approach that is more advanced than many OECD peer regions (OECD, 2012a). While the alignment of strategies among regions that are a part of a cross-border area does not yet exist, the Brainport strategy within the TTR-ELAt cross-border area is an advanced example of a regional strategy fully incorporating the cross-border dimension in its strategic goals and action plan (Box 3.3). The Capital Region of Denmark and Region Skåne are, however, exploring the idea of involving observers coming from the other region in the discussions around their respective regional development plans. Projects in the new Interreg programming period may provide the opportunity to reach this strategic stage by helping to support the implementation of the innovation-related activities in the ORUS strategy.

Box 3.3. **Cross-border dimension at the heart of the Brainport 2020 Strategy in Southern Netherlands**

Brainport 2020 emphasises the importance of cross-border developments within the Top Technology Region/Eindhoven-Leuven-Aachen triangle at the intersection of Belgium, Germany and the Netherlands. The regional strategy includes the following points:

Within the domain of technology: The leading knowledge and technology position of the TTR-ELAt needs to be ensured and extended. In this respect, the establishment of TTR-ELAt research institutes within the main clusters (high-tech, lifetech, solar/energy, mobility) is an important element in the Brainport 2020 action plan. The strategy promotes actions related to joint participation in European Innovation Partnerships (EIT) and joint application and collaboration in co-locations of the EIT. The action programme also includes the establishment of a solar-valorisation programme, which has led to Solliance, and the opening up of national funding instruments for innovation.

Within the domain of people (labour market): Marketing and the promotion of the TTR-ELAt as an attractive region in which to live and the establishment of an international career in technology is essential. Excellent international access to and within the TTR-ELAt is an important basis for economic growth and innovation. Stronger and better rail and road connections between important nodes in Germany and Belgium are promoted in the action programme as well as a feasibility study of a cross-border high-speed train network.

Within the domain of business, the Brainport 2020 Strategy puts emphasis on increasing the number of fast-growing innovative companies and entrepreneurship. Activities include the continuation and extension of a Master class in High-Tech entrepreneurship at the TTR-ELAt level and the start-up of a roadmap of innovation processes (such as the TTC project).

Within the domain of governance, the Brainport 2020 strategy emphasises the promotion of the TTR-ELAt as a European and internationally renowned Top Technology Region. Implementation of a cross-border cluster stimulus subsidy is one of the measures that has been taken in this regard, as well as the establishment of multilateral agreements with North Rhine-Westphalia, Flanders and Wallonia.

Source: TTR-ELAT (2013), "Background report to OECD study on cross-border regional innovation policies", March.

There are some common priority areas across the respective regional plans. The 2011 innovation strategy in Skåne focuses on three areas of strength: materials science, personal health and smart sustainable cities. On the Danish side, innovation strategies are formulated by Regional Growth Fora and implemented by regional Growth Houses and other actors. Regional business development strategies are

co-ordinated with the national level through Partnership Agreements. The 2011-13 strategy for the Capital Region of Denmark focuses on six priorities: new welfare and health technology; attractive city with good connections; innovation and research; talent and skills; business clusters in biotech – pharma, cleantech and welfare technology in particular; and entrepreneurship. The Growth Forum of Zealand has put a high priority on the green sector (cleantech, energy and the environment), health innovation and the pharma/medical sectors, as well as food and agriculture, and tourism.

Regional authorities need to consider the impacts of regional growth in the core as well as cohesion goals for the entire area. Development of stronger relationships for the Capital Region towards the east, with neighbouring Sweden, is often perceived by the rest of Denmark as competition with the development of Jutland. This pressure acts as a deterring factor for national authorities to devote more attention and efforts to the building of the Oresund. On the Swedish side, the impacts of the co-operation across the Oresund have the greatest direct impacts in the Malmö-Lund area, due both to proximity and to the concentration of economic activity. The rest of Skåne benefits from the collaboration, but less directly.

National commitment is still needed for success of the cross-border area. In 2007, the Swedish Minister for Employment and the Danish counterpart signed the "Two Nations – One Labour Market" declaration of intent to work more resolutely towards an integrated labour market in the Oresund Region. The Oresund Committee is intensively lobbying national authorities in view of solving the numerous cross-border barriers to cross-border integration, in particular, differences in taxation and social security systems, which call for responses from the national level (Oresund Committee, 2010b; see Annex A). The fact that national representatives no longer participate in the Committee (and previously participated only with an observer status) may limit their engagement. The Nordic Council of Ministers has a working group (*Gränshinderforum*) in charge of identifying the legal and regulatory border barriers, and developing joint solutions to these problems.

3.3. Funding for cross-border co-operation

The permanent co-operation structure is funded by the Nordic Council of Ministers and local and regional authorities. The Oresund Committee is financed through contributions from its members, the size of the contribution calculated according to the number of inhabitants in the respective municipality or region. Additional structural funding is provided by the Nordic Council of Ministers. Approximately half of the Nordic Council's budget for co-operation on regional policy (DKK 30 million annually) is allocated to the 12 Nordic cross-border committees. While Nordic funding is much smaller than EU funding, it is essential for ensuring the stability of the cross-border structure (Hörnström et al., 2013).

Supra-national public funding for cross-border co-operation projects in the Oresund comes mainly from the European Territorial Co-operation (Interreg) programme. With a total budget of EUR 223 million over the period 2007-13, the Oresund-Kattegat-Skagerrak programme is the largest of the 8 Territorial Co-operation programmes for cross-border collaboration (Interreg A) in the Nordic countries. This funding is complementary in nature to the Nordic Council funding, since it is targeted at projects and not at structures. Nordic funding can also partly be used to co-fund Interreg programmes. Both supra-national sources serve to legitimise cross-border co-operation and to elevate its status on local, regional and national policy agendas. For the period 2007-13, EUR 52.5 million was made available from EU sources to the Oresund part of the programme, and a further EUR 13 million for the whole Interreg area (see Chapter 4). The implementation of the Interreg A programme in the Oresund stands out in comparison with other Interreg A programmes across the EU due to a number of positive characteristics particular to this cross-border region that mitigate the common disadvantages of this funding source (Box 3.4). The new Interreg programme for the coming period 2014-20 will have a strong focus on innovation, as one of the topics with the highest priority. The regions have been the main actors in designing the new programme (with Skåne as the co-ordinator) and organised public consultation to determine the priorities.

Box 3.4. **Good practices in designing and implementing the Interreg A programme in the Oresund**

The evaluation of the Interreg IIIA programme in the Oresund highlights a number of positive factors which contribute to a more efficient implementation of this programme than in other cross-border areas in the EU. The points below refer to typical shortcomings experienced in Interreg A implementation, which are addressed in the Oresund:

- The existence of the Oresund Committee, and its central role in designing the Interreg programme, together with the role of the Oresund Secretariat in managing the programme, ensure a good co-ordination and the strategic orientation of cross-border regional policies.
- The initial Oresund programme strategy was based on a very intense diagnosis of the shared needs and problems realised at the outset, which were then used to feed the programme strategy, ensuring a good link between the SWOT analysis and the programme strategy.
- Project selection procedures are in line with the strategic goals, transparent and predictable.
- Cross-border organisations (such as the Oresund University)[1] act frequently as project initiators and leaders, building on good knowledge of actors on either side of the border and ensuring their effective commitment within an orchestrated strategy.
- The above points ensured that adopted projects are genuinely joint cross-border projects (and not parallel projects).
- A number of projects have proved sustainable beyond the project funding period.

Note: 1. The Oresund University, which also played a strong Interreg programme administration role, is no longer in operation.

Source: Möller, K. (2010), *Ex-Post Evaluation of the INTERREG III Community Initiative Funded by the ERDF: Evaluation of the Interreg IIIA Oresund (Denmark/Sweden)*, report to the European Commission.

Danish national public R&D funding can, in principle, be used for cross-border co-operation. A unique situation exists in the Oresund, with one national authority (Denmark) allowing public funds to cross the border to firms or research entities if it is of benefit to Denmark. While this possibility formally exists, it is not reported to be applied in practice and it is not clear why. This question merits greater investigation, as well as how joint financial tools and research funds could be designed for the future (see Box 4.2 on the challenges with the prior Oresund Contracts).

3.4. Barriers for cross-border co-operation linked to governance and funding issues

Regional and local commitment to the Oresund is mixed. Skåne welcomes the bridge and its positive benefits for an integrated cross-border region as a necessity for its economic survival. The same level of enthusiasm is not found on the Danish side. Cross-border integration is viewed as positive, but not as a necessity, since the position of the Capital Region within the Oresund and in its national context is stronger.

National authorities on both sides of the border could do more to join forces in supporting the Oresund initiatives. Despite political declarations, there are few instances (outside of the Nordic Council of Ministers) where national authorities exchange and decide on joint action to support the Oresund goals. The Oresund Committee does not include national authorities, and this absence may also contribute to the lower level of commitment than the Oresund Region seeks in terms of regulations and direct programming.

ORUS is not yet matched with an implemented Action Plan. The Oresund Committee has already taken a first step thanks to a shared vision codified in a strategy and recently an Action Plan. The next steps to turn the vision and strategy into a reality include: prioritisation of goals; clear and measurable targets, milestones and budgets by actor to involve stakeholders beyond the Committee; and an adapted policy mix. The upcoming Interreg programme may help to implement the strategy through programmes and financing.

Private funding in publicly funded initiatives is currently insufficient to ensure the long-term sustainability of many projects. The Nordic Council and the European Union provide complementary types of funding to support the Oresund. While the former is more oriented to structural funding and the latter to project funding, both face the problem of sustainability because of a lack of private co-funding. It is likely that the Nordic Council of Ministers' budget will be reduced in 2014, and consequently funding for cross-border co-operation structures throughout the Nordic area, including the Oresund Committee (Hörnström et al., 2013).

Implementation of the Interreg programme suffers from a number of administrative challenges. Despite the comparatively positive picture achieved in the Oresund with respect to typical design and implementation of Interreg A elsewhere (see Box 3.4), the programme nevertheless suffers from limitations associated with administrative rules:

- Private funding was not eligible for co-funding in Interreg projects to present; therefore private actors have played *de facto* a marginal role in the programme. However, the latest version of the rules of the new Interreg program makes it possible for private actors (companies) to be partners in Interreg projects.

- Monitoring and evaluation procedures have a more administrative than strategic orientation, and impacts of the projects are not yet known.

- Differences between Danish and Swedish interpretations of EU rules regarding additionality, lead partner principles and payments, have led to difficulties and delays in programme implementation.

CHAPTER 4

THE ORESUND CROSS-BORDER INNOVATION POLICY MIX

4.1. Cross-border initiatives and policy instruments

The instruments commonly used in the Oresund cover many areas, but there are several opportunities to expand the policy mix. The Oresund has a number of strategy and policy development tools, including branding activities (Table 4.1). R&D support has been tried in the past, but could be reconsidered in a revised form. Joint use of scientific infrastructure is a focus today with the construction of the ESS and Max IV. Cluster networks have been heavily used, with varying degrees of sustainability. Different forms of human capital development (educational programmes, labour market assistance) have also been actively used. Technology transfer, innovation support, technology parks, and other instruments such as financing and public procurement have not been part of the cross-border policy portfolio. Many actors are co-operating across the globe (co-operation with Massachusetts in the health area is a case in point) but may overlook the potential in the proximity.

Table 4.1. **Cross-border policy instruments in the Oresund**

Instruments	Programmes
Strategy and policy development	
Benchmarking and policy learning	
Analytical exercise (like mapping of clusters or value chains, technology foresight exercises)	Orestat, Oresund Integration Index, Oresund Institute studies
Joint branding of the cross-border area	Life science ambassadors from the Medicon Valley Alliance Brand IT (branding for ICT in the Oresund) 2009-12 *Oresund Magazine* and promotional activities
R&D support	
Joint public research programmes	Formerly: Oresund Contracts
Joint research infrastructure, shared access to research facilities	Formerly: Oresund University ESS and MAX IV (larger territorial scope)
Cross-border private R&D funding programmes (generic and thematic)	
Technology transfer and innovation support	
Cross-border innovation advisory services (vouchers, intermediaries)	
Advisory to spin-off and knowledge-intensive start-ups	
Other technology transfer centres and extension programmes	
S&T parks and innovation networks	
Cross-border science and technology parks and incubators	
Cluster or network networks initiatives	Medicon Valley Alliance (also supports international cluster networking), Oresund Foodbest, Oresund Material Innovation Community, Oresund Energy, Brand IT

Table 4.1. **Cross-border policy instruments in the Oresund** (*cont.*)

Instruments	Programmes
Human capital	
Scholarships/student exchanges	Formerly: Oresund University
Joint university or other higher education programmes	Formerly: Oresund University Cross-border industrial PhD Joint PhD programmes and proof-of-concept programmes between Lund and Copenhagen universities Various temporary Interreg university co-operation projects
Talent attraction, retention or mobility scheme; cross-border labour market assistance	Oresund Direkt EURES
Other instruments	
Financing (venture capital funds or angel networks)	
Public procurement	
Other	

The main cross-border initiatives are public-private innovation platforms funded by successive generations of Interreg projects. The Oresund first benefitted from Interreg funding during the period 1994-99 (Interreg II): 119 projects were approved for a total EU funding of EUR 13.5 million. The evaluation of Interreg II stated that "*this first generation of EU-funded co-operation projects was very successful and had a visible or even significant impact on improving the economic fabric and on furthering socio-cultural understanding*" (Möller, 2010). The most important projects during that period were instrumental in building up the cross-border innovation base for the Oresund: *i)* a cross-border business cluster in science-based industries (Medicon Valley, see Box 2.1); *ii)* SME networks (Oresund Food Network); *iii)* Oresund Business Council; and *iv)* Oresund University. During the Interreg III period (2000-06), the Oresund Science Region was a large programme (total cost EUR 3.8 million, EU funding EUR 1.9 million) with a Secretariat at the Oresund University. It funded seven collaboration platforms: Medicon Valley; Oresund IT Academy; Oresund Environment Academy; Oresund Food Network; Oresund Logistics; Diginet Oresund; and Nano Oresund. These organisations have evolved differently in terms of ownership and funding after the end of Interreg III funding (Box 4.1). Many have continued in some form into Interreg IV (Table 4.2).

The Oresund University formally ceased in 2010 but different forms of co-operation continue in specific projects. The Interreg II programme financed the Oresund University, which was a co-operation among 14 universities and university colleges across the Oresund. The co-operation sought to open courses and facilities to students from across the border and to support joint research. The Oresund University was co-financed by Danish and Swedish national and regional sources. The Oresund University also played a key role in establishing and managing innovation platforms in seven different areas (see Box 4.1), and has been a key actor in developing and implementing Interreg projects (Table 4.2). Oresund Entrepreneurship focused on stimulating and developing entrepreneurship and enterprising behaviour at area universities. Oresund University managed several programmes that served to build internal identity through a common brand. The association closed down in 2010 as some of the co-funders started to withdraw support. Student financing issues, differences in semester calendars, grading differences and insufficient private sector involvement were among the difficulties. Co-operation continues through several projects with different groupings of actors, most notably through the above clusters.

Table 4.2. **Interreg IV A projects in the Oresund focusing on innovation and skills development**

Project – period - key areas	Lead partner	Total budget (EUR millions)	EU contribution (EUR millions)
Brand IT I and II 2009-10 and 2010-12 ICT industry, benchmarking, branding	University of Lund	3.5	1.8
Oresund Materials Innovation Community I and II 2009-10 and 2010-12 Materials science, mapping, innovation system, joint European investment	University of Lund	3.2	1.6
Wind in Oresund 2008-11 Wind-based energy, joint courses, engineering programmes	University of Lund	1.9	0.9
Oresund Region Creative Metapol 2008-11 Innovative platforms, creative industries, culture, planning, research, education, civil society	Herlev municipality	1.9	0.9
Integration between Sustainable Construction Processes 2009-12 Construction sector, common market, co-operation, network	Technical University of Denmark	1.7	0.9
Food KIC in the Oresund 2010-12 Food industry, innovation, healthcare food, business models	Roskilde University Centre	1.4	0.7
Oresund Business Match 2010-12 Knowledge-sharing platform, SMEs, matching business partners	Copenhagen regional development agency	0.9	0.5
Governance of Sound of Science 2010-13 Materials science, joint vision, strategies	University of Lund	0.8	0.4
Culture-driven Innovation Oresund 2009-11 Student mobility, models, universities, public sector, private sector	Copenhagen University	0.4	0.2
Institutional co-operation between Malmö University and Roskilde University 2008-10 Education concepts, research, institutional collaboration, exchange	Roskilde University Centre	0.2	0.1

Source: European Commission (2010), *Connecting Oresund Kattegat Skagerrak: Co-operation Projects in Interreg IVA*, European Union, Brussels.

Programmes of the Nordic Council of Ministers and the European Union also support cross-border co-operation at a wider scale that includes the Oresund. Beyond these Interreg initiatives specifically targeted at the Oresund, programmes with a larger territorial scope are also used to support cross-border co-operation. The Nordic Council of Ministers (Nordplus programme for collaboration between HEIs) and the European Commission (Erasmus, Framework Research programmes, etc.) both have programmes supporting international collaboration on a broader scale.

Beyond Interreg, the Oresund does not currently offer joint programmes for innovation projects. Jointly designed and implemented programmes, using national and/or regional sources of funding to support innovation actors, do not exist in the Oresund. Actors use Interreg sources to support their initiatives, with the disadvantages and the time-bound nature of this funding source. A joint co-operative R&D funding programme, the Oresund Contracts, was tested in 2000-04 but a number of flaws resulted in the programme's termination (Box 4.2). Understanding the lessons learnt from this experiment could help in designing more adapted programmes in the future. Actors in the Oresund could also draw lessons from joint programmes being developed elsewhere, such as the bi-national Wood and Materials Science programme, jointly developed by Finland and Sweden (Box 4.3).

Box 4.1. **Clusters in the Oresund**

The **Medicon Valley Alliance** cluster in life science is the most well-known cluster association in the Oresund (see Box 2.1).

The **Oresund Environment Academy:** This cluster aims to create synergies and growth in the Oresund Region by combining the competencies of the universities, public authorities and firms in the environment, climate and energy sectors. The ***Energi Oresund*** project focuses on strategic energy planning. Municipalities and energy companies across the Oresund implement concrete demonstration projects to address the challenges connected with integrating renewable energy in the existing energy system. Energi Oresund is working on three key activities: *i)* storage of renewable energy; *ii)* energy supply to low-energy construction; and *iii)* setting up co-operation and an idea development forum concerning strategic energy planning in the Oresund Region. A second project is ***Bio-refinery Oresund*** to establish a pilot-scale bio-refinery and facilitate transnational co-operation for the development and implementation of bio-refinery processes in the Oresund Region. A third project is ***Sustainable Building Processes*** to integrate sustainable building processes with the application of information and communication technologies.

The **Oresund Food Network** ceased in December 2010 when the Oresund University network terminated, but several projects are continuing under the auspices of Roskilde University and Lund University. The initiative was a knowledge and innovation network within the food value chain. It supported collaboration by initiating, co-ordinating and participating in multidisciplinary projects within areas such as: food and health; production and sustainability; and gastronomy and experience. The project ***Food + Pharma = Unlimited Health*** was an Interreg IIIA funded project from 2006-07 as a collaboration between Oresund Food and Medicon Valley Alliance. It promoted networking across the food and medicine sectors throughout the Oresund Region among universities, hospitals, industries, authorities and the healthcare system. ***Foodbest Oresund*** is an Interreg IVA project to reinforce the technology content and competitiveness of the food industry. It is acting as the node of a pan-European Foodbest consortium with France (INRA), Italy, the Netherlands and the United Kingdom, and is applying to be a Knowledge and Innovation Community of the European Institute of Technology with a co-location centre in the Oresund.

Nano Oresund is another cluster programme that, after expansion to a wider area, ended as a project but is nevertheless an area of potential for the region. This cluster brings together and promotes the nano resources in the Oresund Region. It is a network organisation concentrating on intensifying the commercial development of nanotechnology in the region. Nano Oresund's objective is to increase the application of nanotechnology in industry and to promote start-up firms for nano-technology solutions. The cluster has increased its geographic coverage. **Nano Connect Scandinavia** covers the whole Oresund-Kattegat-Skagerrak region. The aim of the project was to increase co-operation between universities, develop links with industry and showcase the different areas of strength in the region. External branding of the region was also an important goal. The project resulted in a mapping exercise, conferences, seminars and field trips. Attracting firms to participate in the project proved very difficult, in part due to EU funding rules (notably rules to avoid distortion of competition). Confidentiality requirements also impeded business involvement. After the end of the Interreg IVA funding of this project in 2012, the project was terminated and is not sustainable without further public funding.

Oresund IT was another cross-border cluster, but at the end of the Interreg project only continued on the Swedish side under the name **Cluster 55°**. The initiative sought to provide knowledge and contacts among the ICT actors in the Oresund Region through collaboration between well-established companies and innovative start-ups. It promoted the cluster through: information (publications, newsletters and on the Internet); venues for networking (conferences, workshops and other networking events); matchmaking; topical research (gathering and disseminating information on subjects of importance for regional stakeholders); and R&D projects (identifying and initiating research and development projects). At the end of the public financing cycle through Interreg, the cluster was continued on the South Sweden side with support from the Skåne region. **Brand IT** with similar goals and cross-border coverage was subsequently funded under the Interreg IV initiative.

Oresund Logistics supports the logistics cluster through several support functions. The project disseminates knowledge on advanced logistics and supply chain management, initiates and co-ordinates research, development and innovation projects, and advocates for the logistics sector. Oresund Logistics acts as a generator of innovative projects within areas such as humanitarian logistics, sustainable transport, intelligent supply chain management, city logistics and green corridors. From 2006-09, projects with a total value of more than EUR 45 million were implemented.

Sources: www.oresund-environment.net; www.oresundfood.org; www.nano-oresund.org; www.oresund.org/it; http://www.oresund.org/logistics; www.energioresund.org.

Box 4.2. **Evaluation of the Oresund Contracts, a joint Swedish-Danish programme**

The Oresund Contracts were launched as a joint Danish-Swedish initiative in 2000, with the aim to support the development of the Oresund Region by funding six pre-competitive pilot R&D co-operation projects between companies, universities and research institutes from both sides of the cross-border region. The programme was jointly launched by Swedish and Danish national authorities for the 2001-04 period. It relied on the Danish instrument *Centerkontrakt*, now called Innovation Consortia, and extended it over the national border. The Danish *Centerkontrakt* was launched (in 1995) to better link institutes both with user needs and with universities. The administration of the programme was shared between the two national agencies, which were each managing three of the six projects.

The evaluation concluded that initiatives of this kind have the potential to contribute to the joint development of this region, though both programme logic and implementation need to be better adapted to the context. The Oresund Contracts, or at least those which have functioned well, reduced uncertainty and for some, entry barriers for co-operation, but for a more visible effect, several elements need to be corrected:

- A lack of strategic management of the programme: a common relevant problem definition, a common vision at the level of operationally responsible agencies, a common programming document and some long-term financial commitment to reach the long-term objectives involved, were all largely missing.

- The absence of a strong research institute sector in Sweden, comparable to the GTS in Denmark, was a barrier to develop the projects which placed the institutes at the core of the intended partnerships.

- The requirement for balanced geographic composition of the consortia often came at the expense of their quality and the search for real complementarities and synergies. The requirement for a *juste retour* principle on individual projects was difficult to satisfy, since the regions involved were, respectively, a central region in Denmark and a peripheral region with fewer knowledge institutes in Sweden.

- The procedures of the Oresund Contracts did not allow significantly new networks to be built. More account should have been taken of the need for a first feasibility (getting-to-know each other) phase for these relatively complex cross-border projects.

- The partnerships behind the projects worked largely at a personal level rather than through structured agreements between organisations, which raises the question of their sustainability. Extending and widening existing networks seems to be one way of sustaining the effects of the projects.

- Effects in terms of penetration of the Swedish market by the Danish GTS institutes seem limited, due notably to non-matching specialisations. There is some evidence that institutes from both sides have begun to operate more closely together but without a financial incentive to continue doing so it is unlikely this will be sustainable.

- At the time of the evaluation, the exploitation of research results by the partner companies was still inconclusive and dissemination to other companies potentially interested by the technological applications was restricted to conferences, workshops and publications. Attempts to develop supplier groups or involve users did not seem to have borne fruit.

- This outcome raises the issue of whether the research focus of the programme was optimal with respect to regional needs. A number of stakeholders and participants were of the opinion that the projects were driven more by national participants (e.g. projects clearly pulled together by institutes on both sides), instead of focusing on technologies or sectors which could have a broader impact on the region. The risk is that the effects are limited to a small group of niche technology firms involved in each project. In short, the projects seem too narrow and engage a too few people to make a real difference in terms of contributing to the integration of the Oresund RIS.

Following this experiment, national authorities have not succeeded in establishing the Oresund Contracts as a part of the regional support portfolio of instruments.

Source: Faugert, S., E. Arnold, A. Reid, A. Erikson, T. Jansson and R. Zaman (2004), "Evaluation of the Oresund Contracts for cross-border R&D co-operation between Denmark and Sweden", *VINNOVA Rapport 12*.

Box 4.3. **Joint Finnish-Swedish research programme in wood material science and engineering**

The Wood Material Science and Engineering (WMS) Research Programme (2003-07) was a joint Swedish-Finnish programme with the aim to improve the competitiveness and sustainability of European forestry and forest-based industry. The programme was a first attempt to align several national public funding sources from the two countries:

- in Finland, the projects were funded by the Ministry of Agriculture and Forestry, the Academy of Finland and Tekes.
- in Sweden, the financers were VINNOVA and the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning.

The budget of the WMS Programme was EUR 19.7 million and it involved 317 researchers from 29 research units and more than 70 partner organisations from the 2 countries. The WMS Programme funding was organised as a "virtual common pot" in which one programme virtually combines different existing funding mechanisms. The benefit of this approach is its flexibility at the programme level, but at the same time, the decisions and management of individual projects remain in the hands of each funding organisation. To a large extent, the WMS projects were curiosity-driven rather than mission-oriented.

The programme was successfully concluded and had a valuable impact, particularly with regard to:

- The programme scope definition was systematic and project selection ambitious. The programme managed to advance top-level research in fields that were considered relevant within academia, the five funding organisations and industry. In these areas, scientific output was extensive (articles, degrees); particularly in relation to the programme's rather limited duration and funding volume.
- There has been a positive contribution in bringing Swedish and Finnish researchers closer together. Several excellent research projects would not have begun without the WMS Programme. The transnational research collaboration continues in many projects following the programme, but rather at the individual level than at institutional or research group level. Existing networks have continued and have been strengthened and some new cross-border collaborations have emerged. Researchers and industry value getting to know new partners for potential future collaboration.
- The competence and readiness of the five research-funding agencies to organise transnational research programmes has significantly improved through the joint learning process of the WMS Programme. This has had immediate positive implications.

Source: Halme, K., S. Kanninen, K. Viljamaa, E. Arnold, T. Åström and T. Jansson (2008), "Creating cross-border competence: impact evaluation of the Wood Material Science and Engineering Research Programme", *Tekes Programme Report*, N°2.

The *Orestat Database* is a unique asset that includes harmonised statistics for both sides of the Oresund as well as flows across the sound. Region Skåne, in co-operation with other public institutions in the cross-border region, produce comparable figures and Orestat treats and analyses the data for regular publications, such as *Oresund Trends* and the *Oresund Integration Index* (Oresund Committee, 2012a; 2013). Statistics Denmark and Statistics Sweden produce the data in the database. Those data and analyses provide policy relevant support for the monitoring of integration of the Oresund, the identification of cross-border bottlenecks and the definition of policies. Such detailed and up-to-date information is generally not available in other cross-border regions. After the initial development period in 1998-2001, studies have been carried out in several fields to examine the possibility of deepening and extending the database to cover more fields. Some difficulties were experienced with respect to securing national co-funding on the Swedish side (the Danish Ministry of Research provided basic funding until 2006). In 2009, the task of producing cross-border statistics was assigned to Statistics Sweden and a permanent budget allocated to this purpose, which created a partly subsidised financing of the *Orestat Database*. This budget was

unfortunately removed in 2013. There is currently no national budget in Sweden for cross-border statistics. The Danish funding remains, although it has shrunk due to budget cuts in the Danish public sector. Since 2005, a User's Council was established to support the work of Orestat. Orestat includes data on: commuting and migration patterns, business activities, population trends, housing and the labour market. Current developments aim to cover the following new themes, in line with the ORUS strategy: knowledge and innovation, culture and experiences, cohesive strength, accessibility and mobility, climate and sustainability, health and lifestyle (Box 4.4).

The *Oresund Integration Index* does not capture knowledge and innovation flows. The *Oresund Integration Index* (see Chapter 1) uses the data included in the *Orestat Database* to compute a general index of integration in the cross-border area. The index is a weighted average of sub-indices covering five dimensions: *i)* labour market; *ii)* transport and communications; *iii)* housing market; *iv)* business; and *v)* culture. The index is a very powerful policy support tool to substantiate the efforts of the Oresund Committee and raise policy attention to the situation of the cross-border area. The extension of the database to new themes should make it possible to include the innovation dimension in the *Integration Index.*

Box 4.4. **Orestat, a database to measure the integration of the Oresund region**

The *Orestat Database* contains comparable statistics for the Oresund Region in several areas such as demography, labour market, housing and employment. The database was built through two Interreg projects, Orestat I and II. Over the years its design has become somewhat technically obsolete and not very user-friendly. Orestat III aims at improving the current version of the database. The statistics will be a better base for quality-assured analysis, planning information and input for forecasts. During the project period of Orestat III, the technical platform has been renewed and the website has been modernised. Under Orestat III, 20 exploratory studies are being conducted to develop comparable statistics on the different priorities of the regional development strategy for the Oresund (ORUS). The exploratory studies have been preceded by workshops with a wide range of users and experts. The database will contain comparable statistics in various areas such as employment, education, environment, health, culture, infrastructure, industry structure, regional economy, and research and innovation. The result of the project will be presented in different seminars and conferences. A lot of work is being carried out to obtain new funding from the Swedish government and increased funding from the Danish government.

Sources: www.interreg-oks.eu; www.orestat.se; www.orestat.dk.

Regional magazines are used to reinforce the internal identify of the Oresund as well as external branding efforts. The *Oresund Magazine*, produced by the Oresund Institute, contains information on general socio-economic trends, articles on cross-border infrastructure connections, cross-border businesses, and media and cultural events related to the cross-border life (TV series, concerts, exhibitions, and so on). A second regular publication, *JOBØMAGT*, provides data and articles on social, political and economic affairs, alternating between Danish and Swedish language depending on the article.

4.2. Untapped potential for promoting cross-border innovation synergies

Opportunities for cross-border synergies in the cleantech industry merit further investigation. The Oresund Committee has established a working group for environmental growth, with the ambition to gather strengths in the cleantech industry. The working group is exploring opportunities to bring together firms exporting environmental technology solutions across the border and to co-operate on international branding activities (Olsen et al., 2012). It may be possible to merge the cluster organisations on each side of the border, the Sustainable Business Hub in Skåne and the Copenhagen Cleantech Cluster. A distinction between the two cluster organisations is that the Sustainable Business Hub, although it has some members based outside of Skåne, is mainly a regional initiative that depends on funding from the Regional Council of Skåne. In contrast, the Copenhagen Cleantech Cluster is a nationally supported initiative. The management of the two cluster organisations have met to discuss opportunities for collaboration, but actual

co-operation has not yet been established. Simple instruments, such as the cross-border voucher scheme used in Ireland-Northern Ireland (United Kingdom), could help create incentives to co-operate across the border in such a promising domain (Box 4.5). Cross-border programmes for cluster stimulation in the TTR-ELAt area have also been helpful in supporting clusters, including with significant contributions from the Dutch Ministry of Economic Affairs, which recognises the importance of the cross-border dimension for achieving its national goals (Box 4.6).

Box 4.5. **Innovation vouchers in Ireland and Northern-Ireland (United Kingdom)**

The Innovation Vouchers scheme is a shared programme between Invest Northern Ireland and Enterprise Ireland. It deserves attention because of its uniqueness as a joint cross-border publicly funded programme of the "virtual common pot" type. The two administrations provide joint funding for a unique scheme, accessible in both areas (EUR 4.1 million annual budget). Each voucher is worth EUR 5 000 and can be used by the enterprises to employ a knowledge provider (such as a higher education institution) to overcome a technical problem. The firms and knowledge providers can be located either in Ireland or Northern Ireland.

Source: OECD (2013), *Regions and Innovation: Collaborating Across Borders*, OECD Publishing, Paris.

Box 4.6. **Top Technology Clusters and the Cross-border Cluster Stimulation Fund in the TTR-ELAt**

The **Top Technology Clusters (TTC)** programme aims to stimulate innovation-oriented co-operation of companies by creating cross-border, SME-based co-operation consortia in four fields corresponding to the TTR-ELAt's strengths: ICT, energy, advanced materials, and life science. The TTC programme is led by AGIT (the Aachen regional development agency) with a budget of EUR 5 million. The TTC is run by 19 partners (regional development agencies, innovation agencies, cluster organisations, universities) across the regions comprising the TTR-ELAt. It uses three instruments with cross-border characteristics:

- networking events (socialising, B2B, brokerage) across the TTR-ELAt.
- business development support managers and activities.
- innovation vouchers for studying the feasibility of joint cross-border innovation projects: free research/advice from a knowledge provider within the Greater Euregio Meuse-Rhine (EMR) area up to an amount of EUR 5 000 to stimulate cross-border SME-based co-operation consortia.

Decisions on voucher applications are taken by an *ad hoc* group of TTC partners. In total, 35 vouchers have been made available, 13 were issued during the second half of 2012. The first results are promising, with a total of 49 partners involved in the voucher projects, and 3 out of 4 partners being SMEs. The main domains for which the vouchers have been used are: energy, life sciences and high-tech systems. There is also a balance among the cross-border regions, with five consortia led by a German SME, four by a Dutch SME and four by a Belgian SME.

The **Cross-Border Cluster Stimulation Fund (GCS)** is a joint fund to stimulate cross-border co-operation in the EMR area which also supports the TTR-ELAt's objectives. It is managed by LIOF, the regional development agency of Limburg Province, Netherlands. The GCS provides innovation funds to complement the TTC programme which operates at an earlier stage of collaboration. The GCS funds cross-border, SME-based R&D projects, with individual funding between EUR 100 000 and EUR 250 000 per business case, for up to 18 months. At least two SMEs from two different countries (including at least one SME in the EMR) must be involved. Large companies and universities may participate.

An external expert committee ranks the proposals, based on the following selection criteria: technological and scientific strengths (10%); innovation level (20%); potential market success (40%); European co-operation (maximum 15%); and personal contribution of funding (maximum 15%). The Interreg Steering Committee gives formal commitment to the best-ranked proposals. In the first wave (end 2012), eight projects were supported, for a total budget of EUR 5.6 million, with grants of EUR 2 million being 36% of the budget for those projects. A second selection round in mid-2013 resulted in 14 additional R&D projects. In total, the GCS will foster 22 SME-based cross-border innovation projects with a funding amount (directly for the individual co-operation consortia) of EUR 4.7 million.

Box 4.6. **Top Technology Clusters and the Cross-border Cluster Stimulation Fund in the TTR-ELAt** (*cont.*)

Funding sources are unequally spread between the TTR-ELAt's partners, with a dominance of Dutch funding:

Contributor	Contribution in EUR
Interreg	2 290 000
Ministry of Economic Affairs (Netherlands)	2 000 000
Limburg Province (Netherlands)	200 000
North Brabant Province (Netherlands)	200 000
Land NRW (Germany)	200 000
AGIT (Germany)	9 000
Limburg Province (Belgium)	180 000
IC Limburg (Belgium)	20 000
Wallonia Region (Belgium)	240 000
Flemish Brabant Province	200.000
Total	5 539 000

Source: OECD (2013), *Regions and Innovation: Collaborating Across Borders*, OECD Publishing, Paris.

Joint innovative public procurement, notably in health and energy, and open data strategies could be considered. Opportunities exist in the health and energy sectors to support innovation through public procurement, as those are areas where public authorities are large purchasers of services. Alleviating barriers for patient mobility will help develop joint services and specialisation in healthcare across the sound. Joint bids across the border could support the development of innovative businesses on a larger scale, relying on similar societal challenges, such as ageing, on both sides of the border. Opening data held by public services (related to food, health, mobility, etc.) over the border, can also serve as a source for innovative IT applications. Another interesting example is that of the C-TRIC, the Clinical Translational Research and Innovation Centre located in Derry~Londonderry, Northern Ireland (UK). One of the cross-border benefits for collaboration is due to the border, as clinical testing trials can involve new populations as well as provide opportunities for actors in Ireland to access the broader UK health system.

Extending the work of business incubators, science parks and venture capital funds over the border is another opportunity. There are similarities and complementarities of sectoral and technology specialisations across the border. Science parks, incubators and business support organisations may be able to better serve their needs and those of their clients by working cross-border. For example, this could expand opportunities for participants in innovation projects and provide further matchmaking with nearby partners. Collaboration of science and technology parks has been a tool used in the Helsinki-Tallinn cross-border area, as well as joint entrepreneurship promotion programmes using the combined assets of the two regions (Box 4.7). Venture capitalists and angel investors can be encouraged to work across the border. The case of the HALO network across Ireland and Northern Ireland is an example to draw on for cross-border angel investors (Box 4.8).

Box 4.7. **Cross-border co-operation between incubators and in start-up support in Helsinki-Tallinn**

Start-smart is a co-operative cross-border project financed by Interreg IV A Programme 2007-13, Southern Finland-Estonia. The partners are: the Estonian Development Fund (lead partner), the Small Business Center of Aalto University in Finland, BDA Consulting OÜ, Enterprise Estonia and AS Technopolis Ülemiste in Estonia. The aim is to support entrepreneurial attitudes in both countries and accelerate the emergence of innovative enterprises.

Activities include: workshops and seminars in Estonia and Finland with international speakers; start-up demo pitching nights; mapping the Estonian and Finnish start-up ecosystem; a start-up database; one-to-one mentoring; one-to-one consultancy (business plan development, business modelling, marketing, etc.); and overall awareness raising via social media channels.

The 2005-07 **Cross-Border Small Business Environment** project established a network between southern Finnish and Estonian business incubators, with the goal to develop business activities and competitiveness of participating Finnish and Estonian companies. The main activities of the project included the following: *i)* network development of Finnish (southern Finland) and Estonian business incubators; *ii)* the development of a training programme for the managers of business incubators and technology parks, which included a best practice exchange and implementation; and *iii)* the provision of support and information services for Finnish and Estonian companies in developing their business activities and competitiveness. The project has provided market surveys, consulting, training services and thematic seminars for southern Finnish and Estonian SMEs. Participants in the project gained new business partners and customers, knowledge about the Finnish-Estonian business environment, and a greater awareness of cross-border business possibilities.

Source: OECD (2013), *Regions and Innovation: Collaborating Across Borders*, OECD Publishing, Paris.

Box 4.8. **Cross-border Business Angel Network (HBAN) in Ireland-Northern Ireland (United Kingdom)**

Although in its early stages, the HALO business angel cross-border network is unique for its emphasis on an under-represented area in innovation policy, financing support through business angel capital. The HBAN is an all-island umbrella platform for business angel investors focusing on Ireland and Northern Ireland, launched in 2011. This network has the aim to:

- stimulate angel investments.
- empower angel investors to build and maintain an investment portfolio.
- streamline the funding process for firms.

The HBAN works on a regional basis, by establishing partnerships with business innovation centres in Dublin, Cork, Waterford and Galway as well as with Halo Northern Ireland. Each of these centres runs local angel networks at a smaller scale. Trust and local social networks are crucial conditions for the well-functioning of syndicates, but at the same time gaining a sufficient critical mass is important to diversify investments. It has a network of seven investor syndicates as well as a large pool of private investors that operate on a cross-border basis. It also collects data on investors and it has compiled a database of about 150 private investors ready to meet early phase entrepreneurs. It aims to establish an all-island syndicate of investors in the near future. The HBAN organises matchmaking events between investors and entrepreneurs and has recently launched a guide for entrepreneurs called *Raising Business Angel Investment. Insights for Entrepreneurs*.

Source: OECD (2013), *Regions and Innovation: Collaborating Across Borders*, OECD Publishing, Paris.

4.3. Relevance and effectiveness of the policy mix for cross-border co-operation

Table 4.3. **Snapshot of the innovation policy approach**

(Oresund in bold)

Element of policy mix	Definition	Degree
Information	Mutual exchange of data, actor mappings and policy information	Strong **Moderate** Weak Not present
Experimentation	*Ad hoc* and temporary common initiatives without joint funding	**Strong** Moderate Weak Not present
Alignment	Mutual opening of programmes or structures across borders – no joint funding	Strong Moderate **Weak** Not present
Joint actions narrow	Limited cross-border measures, structures and actions with joint funding by actors from several regions	Strong **Moderate** Weak Not present
Joint actions broad	Multiple joint instruments co-funded by the constituting regions	Strong Moderate **Weak** Not present
Strategic policy mix	Joint common strategy adopted at the level of the cross-border area, translated into a common policy mix co-funded by all constituting regions	Strong Moderate **Weak** Not present

The Oresund policy mix includes both top-down and bottom-up initiatives. A strategy exists – ORUS – but it needs to be turned into an effective policy mix, building on the experiments funded by Interreg but mobilising actors and funding sources beyond Interreg. The fact that the Oresund Committee plays a role in Interreg is a positive element to avoid the fragmentation between cross-border strategies and Interreg-funded projects, a situation experienced by many cross-border areas. The majority of initiatives are temporary and rely on EU funding, but several of them survive over time in various forms and sometimes with a sub-set of participants.

Mutual exchange on policies and investigation of possibilities for alignment are not developed. The mixed experience of the Oresund Contracts demonstrates the need for in-depth preparation for joint policies, based on clear need identification on both sides of the border. Aligned or joint policies do not exist, but they could, in principle, be helpful to support those cross-border initiatives that have proven their effectiveness.

CHAPTER 5

RECOMMENDATIONS FOR CROSS-BORDER INNOVATION POLICY IN THE ORESUND

After reaching a plateau in building the cross-border functional region, the time has come for a new chapter in the Oresund's co-operation. The opening of the Oresund Bridge created strong momentum for integration. It raised political commitment and lowered barriers for the mobility of people and for science- and technology-based interactions. A little more than a decade after the symbolic bridge opened in 2000, the integration process has hit a plateau. Several experimental projects have continued and supported the Oresund brand, albeit with some changes (such as the Oresund cluster initiatives), but several others have not (the Oresund University for student exchanges, Oresund Contracts). Much attention in the region is now turned to the construction of the ESS and MAX IV, as new scientific infrastructure with high symbolic value. The facilities also give Denmark a new reason to engage with Skåne. However, given the limited number of firms in a position to benefit from these large scientific installations, expectations for their impact on cross-border regional development need to be realistic. The region is therefore looking in new directions for the process of cross-border integration so that the Oresund engine picks up steam again.

In addition to other on-going efforts, an increased emphasis on cross-border innovation can help the area better co-operate locally to compete globally. Labour shortages, ageing and intensified international competition, such as in the life science sector, are common threats faced on both sides of the sound. Increasing the attractiveness of the region is a positive sum game, bringing benefits from new investments and talent. It serves to keep multinational companies anchored in the region and helps smaller companies become more competitive through innovation. The 2020 vision for the Oresund (ORUS) suggests that the region be "a hub of innovation, with entrepreneurs and synergies between educational institutions and trade and industry". The branding of the region as a large knowledge-based hub in Northern Europe can be further developed through concrete achievements in innovation.

5.1. Cross-border area

Continue to remove barriers that limit further integration and build on the Oresund identity and brand

- **Continue to remove barriers for cross-border student and labour mobility, the core of the Oresund co-operation, which requires national action.** Progress has been made in addressing the very concrete issues that impact the Oresund's residents on a day-to-day basis. Many barriers remain, such as for taxation and pension rights. Additional issues have become more prominent, such as the mobility of non-EU citizens within the region, particularly for the high-skilled researchers that will come to the region for the new scientific infrastructure. Several differences across the two higher education systems resulted in the termination of the Oresund University and have limited student exchange and cross-enrolment. Danish and Swedish authorities could review these particular barriers and seek to address them. The Upper Rhine area, among others, has an active network of universities addressing cross-border student issues. Most of these barriers are in the domain of national policy, and therefore require national commitment to resolve them.

- **Further develop the Oresund internal identity and external brand.** Knowledge of the neighbour's language is reported to be on the decline, an impediment to a regional identity. Making the Oresund feel more integrated to its residents provides stronger conditions for a cross-border regional innovation system. For external audiences, this brand has been most

notable for the life science sector. Efforts to brand the region in a way that contributes to its visibility on a global scale are important, and any international brands should prioritise international audience recognition to go beyond internal political issues.

- **Expand cross-border statistics and analyses to capture the innovation dimension.** The availability of cross-border statistics and research in the Oresund is the envy of many other cross-border areas. However, knowledge and innovation-related information is under-represented. Extending the work of Orestat, and modifying the *Oresund Innovation Index* to include the innovation dimension, is one step in this direction. Stable funding should also be secured for Orestat's work. The continued availability of statistics and an increased breadth of statistics can help to better target efforts on those areas of resident concern generally and for policy intelligence with respect to innovation specifically. The example of InterTradeIreland, which carries out studies and regular business surveys on a cross-border basis, may also inform the Oresund in efforts to further document business relations and innovation patterns to tailor policy instruments.

5.2. Governance

Ensure the ORUS vision's Action Plan is implemented, with innovation as a priority, cultivating greater engagement from national governments and the private sector

- **Transform the ORUS vision and recent Action Plan into a reality with key partners, including universities and industry.** Concrete policies to support the vision of the Oresund as "a hub of innovation, with entrepreneurs and synergies between educational institutions and trade and industry" need to be part of the Action Plan. To achieve this, more actors need to be involved. Such a plan should serve to enumerate measurable goals with an explicit timeframe and identification of the role of various actors to reach these goals. Different levels of government will have their respective roles to implement such actions. The identification of existing and new public and private funding sources will be required. Regular monitoring of the development of the cross-border area, as well as the impact of policies, will serve to clarify the lessons learnt so as to adapt over time.

- **Place a greater focus on innovation (in a broad sense) among the multiple development visions for the Oresund, including jointly defined priority areas.** ORUS includes 12 different axes for the development of the Oresund, with only one of them focusing on innovation. While all of the paths are commendable, it might not be possible to follow them all with the same intensity and at the same time: some prioritisation is needed. Innovation – taken broadly and going beyond science-based developments to include design and entrepreneurship, for example – could become a priority goal within the Oresund strategy. Unlike other domains, innovation is a field with many opportunities that need to be discovered over time, but areas of innovation focus can be developed with the stakeholders in on-going innovation platforms and clusters. This requires alignment with the existing strategic choices made by the three regional authorities of the Oresund.

- **Clarify the incentives for national authorities to increase their role in achieving the goals of the Oresund Committee.** Given the necessity of continuing the work on the legal, tax and regulatory barriers impeding labour market integration, engagement from national authorities is still required. In addition, the development of the innovation potential of the Oresund also calls for responses from the national level in innovation and regional development policies. A closer association of national authorities with the work of the Oresund Committee could help promote the alignment of interests at various levels of governments. Clearly identifying how the

development of the Oresund contributes to national goals serves to clarify the incentives for their increased involvement.

- **Engage the private sector more actively in strategy and programme development to accompany a greater emphasis on innovation.** Securing the participation of the business sector in the work of the Oresund Committee is needed to develop and implement some elements of ORUS, particularly for innovation. Private sector engagement can be mobilised through expert groups or consulting bodies (if not through formal membership). North American cross-border efforts are often led by the private sector or public-private entities. In Europe, the drive tends to be more heavily public sector led. The Upper Rhine Trinational Metropolitan Region is a European example that actively involves the chambers of commerce and business support agencies in different consultation groups for the governance bodies of the area. Since public funding rules under European Territorial Co-operation programmes are typically not conducive to strong firm leadership in projects, most initiatives of the Oresund have traditionally been led by universities. Ensuring the in-depth involvement of companies in these projects through clear eligibility and evaluation criteria is another way to ensure greater firm involvement and sustainability of actions by better leveraging private funding.

5.3. Innovation policies and instruments

Align or mainstream cross-border elements in respective national and regional programmes, building on cross-border specialisations and placing greater importance on firm impacts

- **Align relevant national and regional innovation policies, and if possible mainstream cross-border participation (making participants from the other region eligible for funding), to ensure funding sources better adapted to cross-border innovation.** Implementing the ORUS Action Plan can clarify areas for alignment across the respective strategies. Involving representatives from the region over the border in the preparation of regional development strategies (notably within the framework of EU Cohesion Policy) is another way to proceed. Greater understanding of the other's strategies can also facilitate more combined efforts by the respective regional offices in Brussels. Going one step further, opening policies to foreign participants is another alternative to mainstream the cross-border dimension. The Danish regulatory framework allows for cross-border flows of money in theory, and the possibility for an effective use of this openness should be explored and tested. Experience with the former Oresund Contracts has demonstrated that simply extending national instruments to international participation does not work well without careful consideration of the cross-border differences. A good candidate for this alignment/joint policies work is the case of connecting programmes on cluster policies. In addition, the regular meetings of national innovation policy makers from both sides with respect to the new science infrastructure could be a further opportunity to review national innovation instruments that could be aligned or opened to cross-border participants. All of these strategies serve to identify more adapted funding sources for cross-border innovation, given the challenges associated with Interreg funding.

- **Develop more detailed knowledge of cross-border resources to support networks and clusters with the greatest cross-border potential, including cleantech and healthcare.** Experience to date shows that clusters and networks are either effective mostly in external positioning of the region (MVA), or have their main activity on one side of the sound (ICT). There seems to be untapped potential to further exploit both intra- and extra-Oresund collaboration, relying on the capacities and skills present in the cross-border region. The trans-border cluster programmes and prioritisation of common sectors is at the core of the Top Technology Region-ELAt collaboration that could be a reference for the Oresund. The cleantech

cluster organisations on each side of the border, the Sustainable Business Hub in Skåne and the Copenhagen Cleantech Cluster, are candidates for joining forces cross-border. In healthcare, despite the differences in national regulations, similarities in societal challenges may pave the way towards the development of innovative public services that also result in marketable products. Cross-border innovation-oriented public procurement may encourage this as well.

- **Prioritise projects and initiatives which are most likely to lead to impacts for firms, including cross-border business incubators, science parks and innovation support services.** Many platforms for matchmaking firms have been supported under the Oresund umbrella, but the challenge is to go from meeting to action. Greater firm involvement in strategy and instrument development is more likely to lead to programmes with business impacts and jobs. This is also necessary to ensure the sustainability of the projects after public funding, which is currently dominated by Interreg funds that are not firm friendly. Given the similarities and complementarities in specialisations on both sides of the sound, extending the work of business incubators, science parks and certain innovation support services over the border is another option to be considered. These tools have been under-represented in the current portfolio of cross-border instruments. The Helsinki-Tallinn area has developed several projects connecting science parks and incubators on a cross-border basis. The TTR-ELAt has cross-border science and technology campuses. Open data strategies are another area which could be leveraged for firm development. Again, the experience of Helsinki-Tallinn in opening city databases for private firms to develop applications may be another boost for the Oresund and ITC start-ups.

NOTES

1. Out of the 211 OECD metropolitan areas with data for patents per 10 000 inhabitants.

2. Research carried out at the Copenhagen University Centre for Healthy Ageing provides knowledge resources in this domain. For example, the Nordea Fund provided two times DKK 155 million for such research.

3. Unless otherwise stated, the figures and trends reported in this section come from Oresund Committee (2012a).

4. This figure includes the Swedish county of Blekinge.

5. Specialisation ratio higher than 1.5.

6. Since the financial crisis, exchange rate differentials create an incentive for commuting westwards. Whilst the Danish kroner is pegged to the euro, the Swedish krona is freely floating with the result that the falling Swedish krona translated into a substantial real pay increase for those who earn on the Danish side of the Oresund but incur their living expenses on the Swedish side (OECD, 2012a).

REFERENCES

Ajmone Marsan, G. and K. Maguire (2011), "Categorisation of OECD regions using innovation-related variables", *OECD Regional Development Working Papers*, No. 2011/03, OECD Publishing, Paris, http://dx.doi.org/10.1787/5kg8bf42qv7k-en.

Asheim, B. and J. Moodysson (2008), "The life science cluster of Medicon Valley, Scandinavia", mimeo, CIRCLE, University of Lund.

Blohm Graversen, A. and J. Rosted (2010), *Towards Fact-Based Cluster Policies: Leanings from a Pilot Study of Life Sciences in the Baltic Sea Region*, FORA.

Boston Consulting Group (2012), *Evaluation of Future Opportunities in Medicon Valley*, report for Medicon Valley Alliance.

Coenen, L., J. Moodysson and B. Asheim (2004), "Nodes, networks and proximities: on the knowledge dynamics of the Medicon Valley biotech cluster", *European Planning Studies*, Vol. 12 No. 7, pp. 1003-1018.

European Commission (2012), *Regional Innovation Scoreboard*, Belgium.

European Commission (2010), *Connecting Oresund Kattegat Skagerrak: Co-operation Projects in Interreg IVA*.

Faugert, S., E. Arnold, A. Reid, A. Erikson, T. Jansson and R. Zaman (2004), "Evaluation of the Oresund Contracts for cross-border R&D co-operation between Denmark and Sweden", *VINNOVA Rapport* No. 12.

Greve Harbo, L. (2010), "Nordic cross-border cooperation committees and cross-border authority integration", *Nordregio Working Paper*, No. 2010:3, Nordregio, Stockholm.

Hansen, T. (2013), "Bridging regional innovation: Cross-border collaboration in the Oresund Region", *Geografisk Tidsskrift-Danish Journal of Geography*, Vol. 113, No. 1, pp. 25-38.

Hörnström, L. and A. Tepecik Diş (2013), "Crossing borders: Linkages between EU policy for territorial cooperation and Nordic cross-border cooperation", *Nordregio Working Paper*, Vol. 2013:2, Nordregio, Stockholm.

Hörnström, L., L. Smed Olsen and L. Van Well (2012), "Added value of cross-border and transnational cooperation in Nordic regions", *Nordregio Working Paper*, Vol. 2012:14, Nordregio, Stockholm.

Hospers, G.-J. (2006), "Borders, bridges and branding: The transformation of the Oresund region into an imagined space", *European Planning Studies*, Vol. 14, No. 8, pp. 1 015-1 033.

Lundquist, K.-J. and M. Trippl (2009), "Towards cross-border innovation spaces: A theoretical analysis and empirical comparison of the Oresund Region and the Centrope Area", Vienna University of

Economics and Business, *Discussion Paper 5*, Institute for the Environment and Regional Development.

Lundvall, B.-A. (2008), "A note on characteristics of recent trends in National Innovation Policy Strategies in Denmark, Finland and Sweden", unpublished note, Aalborg University and Science Po.

Madsen, B., J. Madsen and I. Stefaniak (2012), "South Scandinavian cross-border migration. Does the fixed Oresund link create a real difference?", Centre for Regional Tourism and Research, NexO.

Moodysson, J. and O. Jonsson (2007), "Knowledge collaboration and proximity: The spatial organization of biotech innovation projects", *European Urban and Regional Studies*, Vol. 14, No. 2, pp. 115–131.

Moodysson, J., L. Coenen and B. Asheim (2009), "Clusters in time and space: Understanding the growth and transformation of life science in Scania", *CIRCLE Electronic Working Papers*, Vol. 2008/4, University of Lund.

Moodysson, J., M. Nilsson and M. Svensson Henning (2008), "Principles and practices of knowledge creation: On the organisation of 'buzz' and 'pipelines' in life science communities", *Economic Geography*, Vol. 84, No. 4, pp. 449-469.

Möller, K. (2010), *Ex-Post Evaluation of the Interreg III Community Initiative Funded by the ERDF: Evaluation of the Interreg IIIA Oresund (Denmark/Sweden)*, report to the European Commission.

Nordic Council of Ministers (2010), "33 obstacles, challenges and opportunities".

OECD (2013), *OECD Reviews of Innovation Policy: Sweden 2012*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264184893-en.

OECD (2012a), *OECD Territorial Reviews: Skåne, Sweden 2012*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264177741-en.

OECD (2012b), *OECD Economic Surveys: Denmark 2012*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-dnk-2012-en.

OECD (2012c), *OECD Economic Surveys: Sweden 2012*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-swe-2012-en.

OECD (2011), *Regions and Innovation Policy*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264097803-en.

OECD (2010), *OECD Territorial Reviews: Sweden 2010*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264081888-en.

OECD (2009), *OECD Territorial Reviews: Copenhagen, Denmark 2009*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264060036-en.

OECD (2006), *The Oresund Science Region: A Cross-Border Partnership Between Denmark and Sweden*, Supporting the Contribution of Higher Education Institutions to Regional Development Peer Review Report, OECD, Paris.

OECD (2003), *OECD Territorial Reviews: Oresund Denmark/Sweden 2003*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264100800-en.

Olsen, L., C. Fredricsson and L. Perjo (2012), "Green growth and innovation in Nordic regions: Case studies", *Nordregio Working Paper*, Vol. 2012:16, Nordregio, Stockholm.

Orestat database, www.orestat.se, www.orestat.dk.

Oresund Committee (2013), *Oresund Integration Index 2012*, Oresund Committee.

Oresund Committee (2012a), *Oresund Trends 2012*, Oresund Committee.

Oresund Committee (2012b), *Oresundskomiteens Integrationsindeks*, Oresund Committee.

Oresund Committee (2010a), *ORUS: Oresund Regional Development Strategy*, Oresund Committee.

Oresund Committee (2010b), *33 Obstacles, Challenges and Opportunities*, Oresund Committee.

Oresund Committee (2010c), *Annual Review*, Oresund Committee.

Oresund Institute (2013), *Oresund Magazine*, May-July.

Oxford Research (2009), Nätverksbaserad urban innovation, Öresundsregionen version 3.0, Underlag till IBU:s projekt om Öresundsregionens kvalitet, identitet och framtid.

Region Skåne and Capital Region of Denmark (2013), "Background report for the OECD study on cross-border regional innovation policies", January.

Region Skåne (2011), *An International Innovation Strategy for Skåne*, Skåne Research and Innovation Council (FIRS) and Sounding Board for Innovation in Skåne (SIS).

Region Skåne (2009a), *Skåne's Innovation Capacity – A Situation Analysis*, Region Skåne.

Region Skåne (2009b), *Skåne's Innovation Capacity – An Action Plan for a More Innovative Skåne*, Region Skåne.

Sanström, A., T. Dolk and B. Dolk (2011), "Life science companies in Sweden including a comparison with Denmark", *Vinnova Analysis*, No. 3.

Tapaninen, U. (2012), *Helsinki and Tallinn on the Move: Final Report of the H-TTransPlan Project*, Tallinn-Helsinki.

Technopolis (2012), *Regional Innovation Monitor: Regional Innovation Report Denmark: Capital Region*, report to the European Commission.

TTR-ELAT (2013), "Background report to OECD study on cross-border regional innovation policies", March.

ANNEX A

Table A.1. **Obstacles to the Oresund cross-border integration (2011)**

	Sweden	Denmark
Extra jobs[1]	Living in Sweden and working in Denmark can lead to social insurance problems when taking on an extra job in Sweden. A resident of Sweden who works in Denmark is affiliated to the Danish social insurance system. However, if this person also has a job in Sweden, the social insurance cover reverts to Sweden. In such instances, the Danish employer must pay Swedish payroll tax because the worker's social insurance affiliation has been transferred to Sweden. This involves an extra expense for the Danish employer of approximately 25% on the total salary paid to the worker in Denmark.	Living in Denmark and working in Sweden can lead to tax problems when taking on an extra job in Denmark. A resident of Denmark who works in Sweden but also has a job in Denmark is penalised with a so-called "special income tax". In practice, this means that someone who has already paid 25% tax on their income in Sweden, while the tax levied in Denmark is 40%, must pay 15% in tax on their income earned in Sweden to the Danish Tax & Customs Administration. On top of this, he/she loses his/her payment to the Swedish pension fund, 18% on top of the wages.
Taxes		The so called "Fitters' Rule" does not apply in Denmark. Swedish staff recruitment agencies whose registered offices are in Sweden are not able to make use of Sweden's so called *Montörsregel*, or "Fitters' Rule" (which allows people to work for a short period abroad, while continuing to be taxed at home) when supplying workers to Danish companies on the Danish side of the border. This is because Denmark has a special tax (a gross tax rate of 30%) that applies to labour supplied via staffing agencies and, in Denmark, the company that uses such labour is responsible for the administration of tax payments for workers employed under these conditions.
Pension rights	Expensive to earn pension rights on both sides of the border. A resident of Sweden who has contributed to an occupational pension in Denmark of the type classified as a capital pension and who chooses to have this paid out in the form of a one-off payment risks having to pay not only the fee that applies for this in Denmark, but also Swedish income tax on the sum received. This problem was solved in June 2011 through co-operation between Oresund direkt and the central tax authorities.	
Pension funds	Expensive – or even impossible – to transfer pension capital. Transferring occupational pension funds between Sweden and Denmark incurs fees for the individual. It is not possible to transfer Swedish occupational pension funds that have been financed by employer contributions in Sweden. Pension rights across the border can be lost if not actively claimed. There are cases where workers do not receive the pension rights to which they are entitled, either because workers are unaware of their pension rights or because they do not know where to turn to claim their rights.	
Qualifications	Educational qualifications/accreditations/authorisations, etc. are valued differently on opposite sides of the border. Practitioners within a number of trades and professions experience problems relating to the validation of their educational qualifications, which is necessary for them to be able to carry out a certain profession or do a certain job. This problem occurs primarily in the construction industry. And though a resolution to the problem has been found between Sweden and Norway through a bilateral agreement, and piecemeal solutions have been found with Denmark (for example, the recent change of rules allowing Swedish healthcare assistants to work in Denmark) there remains no holistic solution.	
Unemployment benefits	Swedes who are members of a Swedish unemployment benefit fund and take a job on the Danish side of the border, but who do not join a Danish unemployment benefit fund from the first day of the employment, can experience problems in claiming unemployment benefit if, at some later stage, they lose their job. This is because they are considered to have a gap in the time during which they were covered by unemployment benefit insurance. This problem has recently been ameliorated via a ruling of the Swedish Court making it possible to remain insured in Sweden when working in Denmark.	

Table A.1. **Obstacles to the Oresund cross-border integration (2011)** (*cont.*)

	Sweden	Denmark
Work placement	People who are unemployed in the Oresund Region cannot apply for work placement opportunities on the other side of the border. National labour market legislation is based on the assumption that work placement takes place in the home country or, for a Swedish juridical person abroad.	
Apprenticeships	The differing vocational systems across Sweden and Denmark greatly reduce the opportunities to benefit from the skills and competence that young people on the other side of the Oresund border can offer. However, it is possible to have cross-border apprenticeships: in some vocations – such as hairdressers, opticians and plumbers – Swedish companies have employed trainees in a vocational training scheme. Oresund direkt is working to promote this on a wider scale through collective agreements between employers' organisations and unions.	
Student co-workers	Region Skåne has recently introduced student co-workers in Skåne.	Denmark's system of "student co-workers" did not previously exist in Sweden. Under this system students are able to work – at rates stipulated by collective bargaining agreements – on tasks that are relevant to their education.
Job-seeker trips	It had previously been the case in Sweden that job-seekers were entitled to travel grants for jobs anywhere in Sweden, but not on the other side of the border in the Oresund Region. The PES at Oresund direkt launched a programme "The Jobtrain of Oresund direkt" for three months, giving train tickets for free to youngsters who wanted to look for a job in Copenhagen, but who could not afford the fare. This was done in an attempt to show that with a little incitement it was possible to reach a good result in placing young people in jobs. Partly because of the good result the rules in Sweden were changed in February 2011, so now it is possible to get a trip to a job- interview paid for by the Swedish PES also outside of Sweden.	
Health rehabilitation	No rehabilitation at home for cross-border commuters. Cross-border commuters who become ill and require rehabilitation are not entitled to rehabilitation in their country of residence, but only in the country in which they work.	
Political assignments	No leave of absence for political assignments. Cross-border commuters who live in Sweden and work in Denmark do not have the right to take leave of absence for political assignments in their country of residence. This makes it more difficult for Danish companies to recruit workers who are politically active in Sweden. It also inhibits the democratic process as cross-border commuters are denied the same privileges to participate in political activity.	
Company cars	The "Twelve-Month Rule" for Danish company cars in Sweden leads to severe complications. A Danish-registered company car may only be used in Sweden for a maximum of one year if it is used by an individual who is resident in Sweden. After that, the vehicle must either be replaced or reregistered with Swedish number plates.	The Danish solution for dealing with Swedish company cars has not been publicised. If a worker uses a Swedish-registered company car predominantly in the country in which he/she works (based on the number of days of use or the number of kilometres driven), it is possible to apply to the Danish Tax & Customs Administration for an exemption certificate. If the application is approved, the user of the vehicle receives a certificate that entitles him/her to drive the Swedish company car for private purposes in Denmark.
Transport costs	High transport costs across the Oresund border. Companies in the Oresund Region that have chosen to establish a presence on both sides of the border and those who wish to use the entire Oresund Region as a single market are faced with transport costs that are higher than those for companies that are established on one side of the border only.	
Transport delays	Train delays lead to huge costs. Employers on both sides of the Oresund border incur huge expenses as a result of delays to trains carrying employees who live on one side of the border and work on the other.	
Non-EU citizens	Non-EU citizens can work on only one side of the border. A person from a country outside the EU who has a residence permit and work permit for Sweden cannot work on the Danish side of the border. Moreover, a non-EU citizen who has the same permits in Denmark is not allowed to move to the Swedish side of the border. In doing so, a non-EU citizen forfeits his/her Danish residence and work permits and, in consequence, also loses his/her job in Denmark. There are, however, possibilities for most academics, and also for persons earning more than DKK 375 000/year.	

Note: Part of the solution to this problem will be found if, and when, the EU Parliament allows the possibility to work up to 25% in the resident country, and still be socially insured in the country of work.

Source: OECD (2012), *OECD Territorial Reviews: Skåne, Sweden 2012*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264177741-en, based on various sources including Oresund Committee (2010b), *33 Obstacles, Challenges and Opportunities*, Oresund Committee; and Nordic Council of Ministers (2010), "33 obstacles, challenges and opportunities".