



CORRIDORS AND TECH REGIONS: INTERNATIONAL CASE STUDIES



GREATER COPENHAGEN AND SKÅNE: THE ØRESUND REGION (DENMARK AND SWEDEN) > *CREATING A LARGER FUNCTIONAL ECONOMY*

Creation of a larger functional economy with new regional brand/name. With a total population of 3.6 million, the Øresund is one of the most well-known example of European cross-border collaboration, building on the metropolitan area around Copenhagen and, across the sound, southern Sweden following the opening of a fixed-link bridge/tunnel in 2000.

The collaboration aimed to create critical mass and increase the 'effective density' of the Greater Copenhagen area. Benefits include agglomeration economies by creating a larger metropolitan region, with an integrated labour market, serving to overcome the disadvantages of the area's peripheral location in global terms.

Building a large, more integrated knowledge economy. The Øresund Region is a technology hub with innovation potential, world-class scientific infrastructure and a good environment for start-ups. The Øresund accounts for a large share of total Swedish and Danish R&D. Life sciences/medical tech employs 40,000; ICT employs 100,000.

The new regional brand identity may be losing relevance. As of January 1st 2016 the Øresund Committee will officially be renamed to the Greater Copenhagen & Skåne Committee.

Infrastructural improvements are an essential driver for regional integration and competitiveness, but are not sufficient on their own. Wider policy efforts were needed to connect the assets and capabilities in the enlarged region. Many of the initiatives in the Øresund have been to create networks and collaborative platforms.

The growth and benefits from integration have tailed off. 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.

Without wide buy-in from all levels of government and policy communities, progress is not assured. The Øresund has benefited from EU funding and initiatives due to its transnational nature. Apparently, support from national and regional governments has not been as overt or integrated as necessary.



GREATER COPENHAGEN AND SKÅNE: THE ØRESUND REGION (DENMARK AND SWEDEN) > CREATING A LARGER FUNCTIONAL ECONOMY

Introduction

The Øresund is one of 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. As of January 1st 2016 the Øresund Committee will officially be renamed to the Greater Copenhagen & Skåne Committee.

The Øresund region has a population of 3.6 million people (the Skåne Region of Sweden, and the Sjaelland region of Denmark), and was created by the construction and opening (in 2000) of a road and rail bridge linking Copenhagen/Zeeland (Denmark) and Malmö/Skåne (Sweden). Until the opening of the Øresund Bridge, commuting across southern Øresund was limited with only around 2,000 people living in one country and working in the other. The increased accessibility offered by the fixed link enabled far more people to commute across Southern Øresund within an acceptable journey time – with commuting has rising tenfold so that by 2009, almost 20,400 people commuted to work or to college/university on the other side. Commuting is highly one-directional, with around 95 per cent of all commuters living in Sweden and working in Denmark.

An interesting feature is the development of industry-specific corridor initiatives – such as Medicon Valley, a life sciences industrial development zone. During the first years following the opening of the Øresund Bridge, growth in commuting was largely driven by differences in property prices between the two countries, which resulted in many Danes relocating to Scania while continuing to work on the Danish side. A capital with 1.3 million inhabitants, Copenhagen offers a diverse labour market with higher salaries and greater job opportunities compared to Malmö. This is, of course, attractive to Swedish job-seekers. It was, however, not until 2005 that Swedes began to make an impact on the Danish labour market when the booming Danish economy forced many employers to recruit Swedes. A few small companies even chose to move their production to Scania to get access to the workforce they needed.



The economy and rationale for spatial integration

The OECD¹ has argued that many of the pre-conditions for a functional region area present:

- > Physical internal accessibility, thanks to the Øresund Bridge
- > External accessibility, thanks to Kastrup Airport
- > Similar levels of economic development
- > Similar industry specialisms and activities



There have been efforts to build an “Øresund identity” in a culturally and linguistically similar but still diversified population stand high on the political agenda, albeit the sense of an Øresund identity appears to be much higher on the Swedish side.

The main rationale for establishing the Øresund region is to achieve greater **critical mass**. These include 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 peripheral location in global terms. Although Copenhagen is a large city, it is small by global standards.

Common drawbacks of metropolitan regions relate to congestion costs as well as higher land and housing prices. The Øresund actually helps relieve these pressures by **combining the advantages of a successful metropolitan economy with an extended hinterland** (Malmö-Lund).

Exploiting complementarities in knowledge assets is another driving force for the Øresund that can benefit both sides. The bi-national life science cluster is a flagship initiative within the Øresund, 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, there is a view that the potential for collaboration projects across the border remains under-exploited², 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

¹ Nauwelaers, C., K. Maguire and G. Ajmone Marsan (2013), “The case of Øresund (Denmark-Sweden) – Regions and Innovation: Collaborating Across Borders”, OECD Regional Development Working Papers, 2013/21, OECD Publishing. <http://dx.doi.org/10.1787/5k3xv0lk8knn-en>

² Ibid.



several previous cross-border cluster associations have essentially reverted back to only one side of the Øresund.

Branding is another goal in the Øresund project. From the mid-1990s, many “O” organisations and initiatives were born to give life to the “Øresund” 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.

Key industries and the knowledge-based economy

Both Danish and Swedish sides of the sound share similar levels of development and types of industry. They both have 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 Øresund Region is a technology hub with excellent innovation potential, world-class scientific infrastructure and a good environment for start-ups. The Øresund 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 Øresund 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.

The main technology- or knowledge- based industries where there is a significant presence include:

- > **Life sciences and medical technologies:** 3 regions, 12 universities, 32 hospitals, over 300 bio/medtech companies with R&D and/or production and over 40,000 employees. Dedicated industry cluster organisation – Medicon Valley Alliance (MVA).
- > **IT Cluster:** 10,000+ ICT firms, 100,000 employees, 150,000 students, €22 billion revenue. Home of many global brands: Sony Ericsson R&D Centre based in Lund; Nokia’s largest R&D centre outside of Finland in Copenhagen; Birthplace of Bluetooth technology (created by Ericsson in Lund facility); Public research institutes in Lund and Lyngby.



Challenges

Even though there are good arguments for functional economy integration in the Øresund, the dynamics and economic activities are not evenly balanced. According to an OECD working paper³, the Øresund Region cover a more important share of the Danish (49%) than the Swedish (11%) economy. Over two-thirds of the inhabitants of the Øresund 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 Øresund has a core-periphery configuration, as most of the population, economic growth and activity are concentrated in the central area of the Øresund, 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 Øresund is further nested in the wider Øresund-Kattegat-Skagerrak border region, and in the Baltic Sea macro-region.

Economic and innovation assets of the Øresund are important but the region still faces threats. Although specialised in services, the Øresund 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 Øresund. Ageing, labour force shortages and growing international competition for its key industries are common challenges throughout the Øresund. 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 Øresund are better than their national contexts (according to Orestat, in 2009, 26% of all new businesses in Denmark and Sweden were launched in the Øresund Region), but not as high in a wider comparison.

ENABLING ASSETS, INFRASTRUCTURE AND POLICIES

Enabling assets

There are several basic assets that are fundamental to developing the Øresund region across two countries:

Scale: there are a combined total of 3.6 million inhabitants in the Skane Region of Sweden (1.2 million) and the Sjaelland region of Denmark (2.4 million). As a result the public services and institutions are also significant – for example there 12 universities and 32 hospitals.

Infrastructure: the fixed link (bridge and tunnels) across the Øresund Strait was completed in 2000. There is one international airport and three regional airports. There are significant rail links and services, and motorways.

³ op. cit. Nauwelaers, Maguire and Ajmone Marsan (OECD).



Industry and enterprise: the Øresund area, when combined, forms a significant economy – for example, if the Øresund is compared to standard EU regions, it ranks 7th among EU regions in the fields of high-tech manufacturing and knowledge intensive services; and ranks 4th for scientific output.

Enabling infrastructure

THE ØRESUND BRIDGE/TUNNEL WAS THE KEY ENABLING INFRASTRUCTURE WHICH OPENED IN 2000

The key infrastructural investment was, of course, the bridging of the strait that separates the Danish island Zealand from the southern Swedish province of Scania. The 16km Øresund fixed link was opened in July 2000 and connects the Copenhagen area (the capital of Denmark) with Malmö, the second largest city in Sweden. The fixed link consists of a railway line and a two-lane motorway. Before the opening of the fixed link, three ferry routes connected Copenhagen with Sweden in the southern part of Øresund.

Despite initial lower-than-expected traffic volumes immediately after the opening of the fixed link, its expected pay-back time is 50 years based on an average 3.5% rate of interest. Clearly, this indicates the bridge as to be a sound investment also from a socio-economic perspective.

A recent evaluation of the socio-economic effects of the fixed link presents revealed that the bridge has generated significant consumer benefits, which over a ten year period discounted at 3.5% p.a. to 2000 amounts to €2 billion in 2000 prices, which amounts to 53% of the construction cost. By applying the medium growth scenario from the Øresund Consortium assuming a long-term trend of 1.8%, the benefits to cost ratio for a 50 year period is 2.2 with an internal rate of return of 9%.

The benefits of the bridge are widely driven by labour market effects. In 2010 as much as 73% of the benefits were related to the labour market, a share that has been steadily rising since the opening. An important cause for this is the high integration in the Øresund Region.

Studies that compare the Øresund Bridge, The Channel Tunnel, and the Great Belt Bridge point to three issues that may have been decisive for the success of the Øresund Bridge: i) Low exposure to competition from aviation, ii) Low degree of border effects and, iii) Large local labour market agglomeration effects .

KASTRUP (COPENHAGEN) AIRPORT OFFERS INTERNATIONAL ACCESSIBILITY FOR THE ØRESUND REGION

Kastrup Airport serves Copenhagen and the surrounding region, including Malmö and the Scania region. It offers international flights and is also located next to the Øresund bridge, with integrated rail services to Malmö and Central Copenhagen.

- > Copenhagen Airport, Kastrup (Danish: Københavns Lufthavn, Kastrup) or Copenhagen Airport (Danish: Københavns Lufthavn; IATA: CPH, ICAO: EKCH) is the main international airport serving Copenhagen, Denmark, the entire Zealand, the Øresund Region, and a large part of southern Sweden (not only Scania). It is the largest airport in the Nordic countries with 25.6 million passengers



in 2014 and one of the oldest international airports in Europe. Furthermore, it is by far the busiest airport for international travel in Scandinavia.

- > The airport is located on the island of Amager, just 8 kilometres (5.0 mi) south of Copenhagen city centre, and 24 kilometres (15 mi) west of Malmö city centre via the Øresund Bridge. The airport lies mainly in the municipality of Tårnby, with a small portion in neighbouring Dragør.
- > The airport is the main hub out of three used by Scandinavian Airlines and is also an operating base for Thomas Cook Airlines Scandinavia and Norwegian Air Shuttle. Copenhagen Airport handles 60 scheduled airlines and serves more than 62,000 passengers per day; 23.3 million passengers passed through the facility in 2012, making it the busiest airport in the Nordic countries, with a maximum capacity of 83 loadings/hour and with room for 108 aeroplanes. Unlike other Scandinavian airports, a considerable share of the airport's passengers are international. The domestic part of the annual passengers is lower than 10%. The airport is owned by Københavns Lufthavne, which also operates Roskilde Airport. The airport employs 1700 staff (excluding shops, restaurants etc.).

Enabling policies

Governance is institutionalised through the Øresund Committee and supported by several public, private and non-profit organisations. The Øresund 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 Øresund Direkt, to support cross-border labour market integration, and the Øresund Institute which carries out studies on the area. Private voluntary initiatives, such as the Øresund Chamber of Commerce and Student Samarbetet Øresund, also reinforce collaboration. The Øresund Business Council, the former Øresund University and the Øresund Committee represent the bi-national triple helix actors that played key roles in the origin and development of the Øresund 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.

In 2013 the Øresund had a vision but had yet to implement a 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". However, the vision is not accompanied by a developed joint strategy targeting economic development and innovation.

Local and regional authorities in the Øresund 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.

There has been significant institutional through higher education institutes. The Øresund University was founded in 1997 –a university network organisation, comprising 12 universities. Its main areas of activity include:



- > Collaboration in education and research (uni.Øresund.org)
- > Information study (gateway.org)
- > International summer university (summeruniversity.org)
- > Collaboration with industry and society (Øresundscienceregion.org)
- > Øresund Entrepreneurship Academy (oeacademy.org)
- > Øresund Innovation (Øresundinnovation.org)

Øresund Entrepreneurship Academy promotes, unites and develops strong competencies and best practices in entrepreneurship education for the universities in the region. It co-operates with regional and international business and other innovative organisations.

Innovation-Centres and networks include Nano, science parks, and tech transfer units.

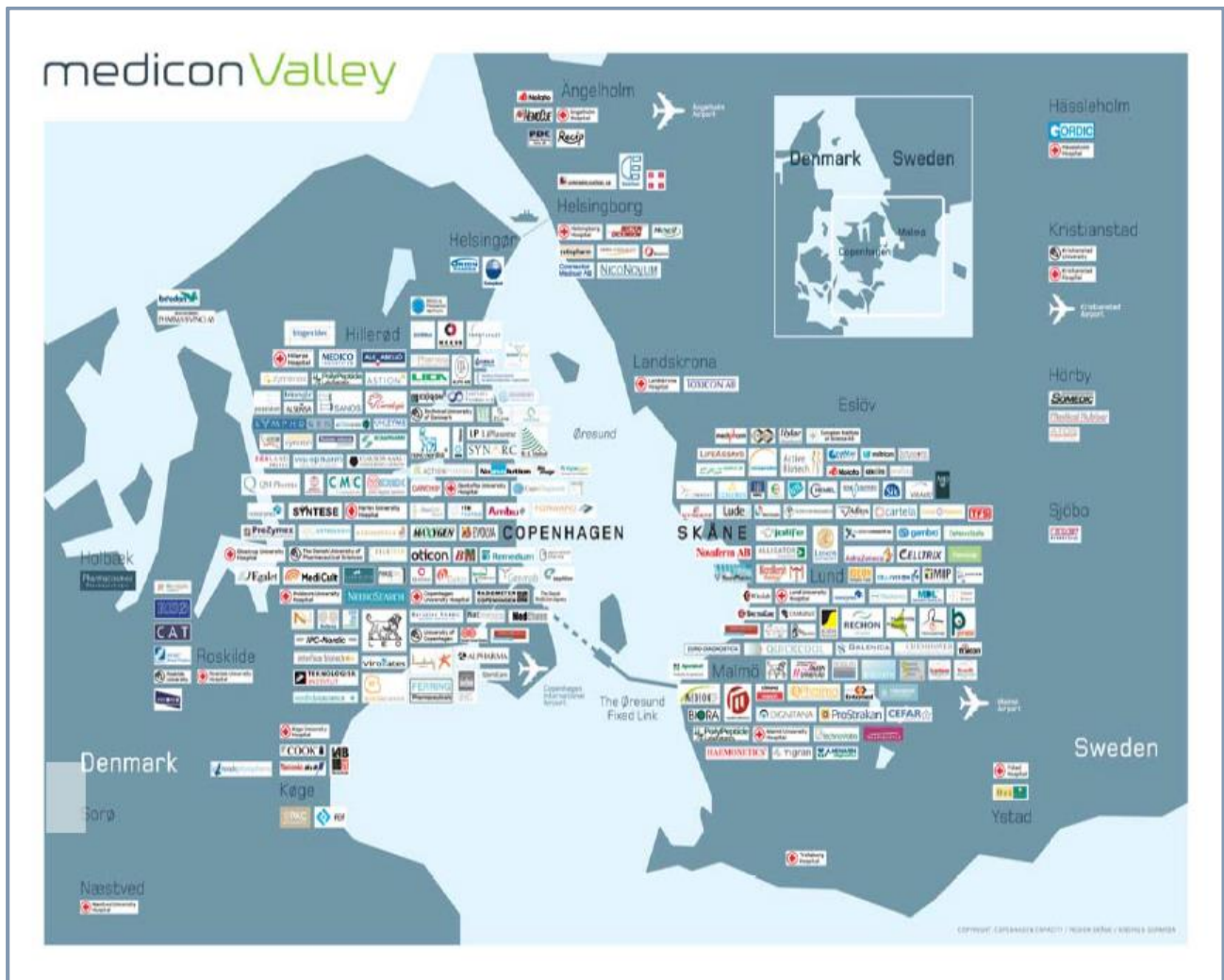
Øresund Science Region is a transnational, triple helix driven tool, aiming to strengthen the regional knowledge based economic development.

The ØSR network: involves 12 universities, 2500 companies, and local and regional authorities. It aims to promote economic growth, regional integration, to establish state-of-the-art networks and clusters, and stimulate new knowledge in areas where Øresund is competitive. Its platforms include: Øresund Logistics, Øresund IT Academy, Øresund Environment Academy, Øresund Food Network, and Medicon Valley Alliance.

Medicon Valley Alliance (MVA)

The Medicon Valley Alliance (MVA) is a life sciences and medical technology cluster organisation. Its member base comprises biotech, medtech and pharma companies of all sizes, CROs and CMOs, as well as public organizations, universities, science parks, investors, and various business service providers. The cluster supports over 40,000 employees across the Øresund region. As a non-profit member organization, MVA carries out initiatives on behalf of the life science community to create new research and business opportunities within the region – initiatives which members would not be able to implement individually, and which strengthen the development of Medicon Valley as a cluster. The primary focus areas of the organization are:

- > Building local and global networking platforms for academia and/or business
- > Organizing events and seminars with the objective of improving knowledge and competencies in the region
- > Providing overview of the ongoing development in Medicon Valley and an understanding of regional stakeholders' need in order to perform focused lobby activities with relevant decision makers
- > Conducting analyses and leading strategic initiatives aimed at improving the region's life science environment



As a region Medicon Valley has been able to maintain a fairly strong position due to high historical **innovation ability** in terms of patent filings and new product development. Medicon Valley has very strong global life science players such as Novo Nordisk and Lundbeck, but to stay competitive in the future and ensure strong continuous growth in the region, there is a growing understanding that there is a need to create a stronger foundation for start-ups to prosper.

Some significant challenges face the life sciences cluster, including downsizing multinationals, decreasing returns on R&D spend and weaker **ability to create new businesses**. In 2012 Boston Consulting Group reported on the future challenges and opportunities facing Medicon Valley. The report mentioned the setbacks affecting the life sciences cluster including several companies downsizing operations in the region, substantially decreasing returns on R&D (globally) during recent years, significantly lower productivity growth (particularly in Denmark), and weaker ability to create growth from new businesses. Growth from the life science sector has mainly been driven by few large companies in the region, namely Novo Nordisk.

Boston Consulting Group particularly highlighted the **lack of role models** i.e. scientists and companies that encourage entrepreneurship by leading the way and providing beneficial exit options, as well as the difficulty of obtaining funding for start-ups in the region.



Looking forward - Medicon Valley Alliance (MVA) initiated 'The Beacon Initiative' – part of the EU Interreg project "Medicon Valley - A world-class life science region" to address some of the regional challenges identified. The Beacon Initiative aims to identify a few focus areas ('beacons') where Medicon valley can become an international leader, class and thereby indirectly boost the innovation eco-system and the underlying growth factors. Over time, these beacons are expected to become global sign-posts that will attract talent, business, and capital to the region, and be the catalysts to establish unique centres of excellence. In this way, the Beacon Initiative will identify areas of specialism where firms and institutions within the Øresund are well placed to develop and succeed.

CHALLENGES

Integration is under threat: the recent re-instatement of border controls between Denmark and Sweden due to concerns about managing migration may affect the future integration of Greater Copenhagen and Skåne areas.

Is the new regional brand "Øresund" being abandoned? As of January 1st 2016 the Øresund Committee will officially be renamed to the Greater Copenhagen & Skåne Committee. This brings into question the perceived or actual success of creating new place names and associated branding around multi-jurisdictional collaborations.

The growth and benefits from integration have tailed off. 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. Some in the area are looking to the new scientific infrastructure in Skåne as one of the catalysts 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 Øresund.

Regional and national authorities' commitment to the cross-border area is mixed. 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 Øresund, 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 Øresund. The dynamics of Denmark result in tensions between Copenhagen-Zealand versus the Jutland, thus politicising national efforts that support the Øresund.

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 Øresund 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 Øresund. 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 Øresund policy mix for innovation. Regions on both sides are important actors with competences and budgetary resources to promote R&D and innovation. 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.

LESSONS FOR THE LSCC AREA

Effective infrastructure connections are essential to creating larger functional market areas, and creating larger socio-economic and institutional regions. The Øresund bridge and tunnels, and associated road and rail links were essential drivers.

There were complementary features, as well as economic rationales for integration. The regions of Copenhagen in Denmark and Skane in Sweden had quite similar economies in terms of industrial and technology specialisms. The creation of a larger functional market also helped to provide additional capacity in terms of labour, skills and land for the Copenhagen economy.

However - infrastructural improvements on their own will not maximise the potential and benefits from creating larger functional economies. The Øresund example shows that the benefits of improved connectivity have their limits in terms of labour market catchments, commuting, and capturing the benefits of offering a more diverse range of business and residential locations.

Wider policy efforts are needed to connect the assets and capabilities in the enlarged region. Many of the initiatives in the Øresund have been to create networks and collaborative platforms.

Without wide buy-in from all levels of government and policy communities, progress is not assured. The Øresund has benefited from EU funding and initiatives due to its transnational nature. Apparently, support from national and regional governments has not been as overt or integrated as necessary.

A new brand creates opportunities, but perhaps better using established brands works best. The creation of the "Øresund" brand for a regional identity has led to many new initiatives and collaborative ventures. As of January 1st 2016 the Øresund Committee will officially be renamed to the Greater Copenhagen & Skåne Committee. So the Øresund brand may start to disappear from use.

The creation of a regional collaboration platform has led to a host of new ventures, local relationships, private sector buy in and international connections.

Creating a regional brand and identify and configuring bigger partnerships and institutions has created international profile. Associated with the brand, the creation of ventures such as the Medicon Valley Alliance has meant that the region can put forward a more impressive set of credentials as a leading R&D location and tech region. This has allowed the region to climb the league table in terms of scale and reputation.



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