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Regional Innovation Monitor Plus

Regional Innovation Report (South Sweden)

To the European Commission
Enterprise and Industry Directorate-General
Directorate B – Sustainable Growth and EU 2020

technopolis |group|

Regional Innovation Monitor Plus

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technopolis |group| in cooperation with

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PREFACE

Launched in 2010. the Regional Innovation Monitor[1] continues to be one of the flagship initiatives of DG Enterprise and Industry of the European Commission. From the outset. it aimed at supporting sharing of intelligence on innovation policies in some 200 regions across EU20 Member States.

RIM Plus aims to help regions to improve their innovation policies based on better and harmonised policy intelligence. The new contract aims to contribute to the development of more effective regional innovation policies and promote policy learning. Building upon the experience gained and results obtained during the implementation of the RIM in the period 2010-2012. the RIM Plus service evolves towards providing practical guidance to regions on how to use the collected information. establishing a network of regional experts with thematic specialisation. and organising specialised workshops taking into account the relevance and potential interest among the regional innovation policy makers.

RIM Plus covers EU-20 Member States: Austria. Belgium. Bulgaria. the Czech Republic. Denmark. Finland. France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden and the United Kingdom.

This means that RIM will not concentrate on Member States where the Nomenclature of territorial units for statistics NUTS 1 and 2 levels are identical with the entire country (Estonia, Latvia, and Lithuania), Malta which only has NUTS 3 regions, Slovenia which has a national innovation policy or Cyprus and Luxembourg which are countries without NUTS regions.

The main aim of 30 regional reports is to provide a description and analysis of contemporary developments of regional innovation policy, taking into account the specific context of the region as well as general trends. All regional innovation reports are produced in a standardised way using a common methodological and conceptual framework, in order to allow for horizontal analysis, with a view to preparing the Annual EU Regional Innovation Monitor Plus report.

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The present report was prepared by Ingrid Helene Garmann Johnsen (ingrid.johnsen@nordregio.se) and Lise Smed Olsen (lise.smed.olsen@nordregio.se). The contents and views expressed in this report do not necessarily reflect the opinions or policies of the Regions, Member States or the European Commission.

The Regional Innovation Access Point and Knowledge Hub presenting further details of the regional innovation measures, policy documents and regional organisations in South Sweden is accessible through the RIM Plus online inventory of policy measures here: http://ec.europa.eu/enterprise/policies/innovation/policy/regional-innovation/monitor/region/select

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[1] http://ec.europa.eu/enterprise/policies/innovation/policy/regional-innovation/monitor/

[2] http://www.mediconvillage.se/en/news/2013/01/medicon-village-has-grown-more-expected-first-year

Executive Summary

1. Main Trends and Challenges in the Regional Innovation System

South Sweden is a growth region both from a national and European perspective, with an internationally competitive industry in different sectors. The NUTS 2 region South Sweden (Sydsverige) consists of the two relatively independent NUTS 3 regions **Skåne** and **Blekinge**. In December 2012, Skåne had a total of 1,263,088 inhabitants, including Sweden's third largest city region Malmö, with 307,758 inhabitants. Blekinge had 152,315 inhabitants. Malmö (the regional administrative capital), Helsingborg and Lund are the main cities in the region of Skåne (33 municipalities), all three are located near or along the Öresund strait.

The region has strong clusters with adjustment and development capability, large investments in industries that strengthen competitiveness, strong research and innovation environments, large R&D investment. As such, the regional innovation system is generally varied and well-functioning with a regional structure that is well integrated. However, there are still challenges that should be addressed.

Challenge 1: Internationalisation needs to be strengthened

There are indications that the degree of internationalisation is low in the region (low export values per employee), despite the region's geographical location. It is essential that knowledge production in the region is implemented with the best in the world through developing stronger and larger international networks. The clusters/open innovation arenas should be stimulated to develop more strategic alliances and strengthen international links. Different forms of collaboration need to be formed with other regions, not least collaboration with the Öresund region.

Challenge 2: Productivity and economic growth in the region is weak

Although the South Sweden region has increased its share of the national population in recent decades, the region's share of GDP remained unchanged and even decreased slightly. In manufacturing, the average productivity is considerably lower than in Stockholm and Västra Götaland. If the productivity of manufacturing had been at the same level as in the other two metropolitan regions, Skåne's regional GDP would have grown at the same rate.

Challenge 3: A lack of venture capital in the region

Most projects and companies are funding the first development stages with equity and own work efforts, which is not always enough. It is mainly the lack of seed capital for "traditional businesses" and service companies that is an issue. For more research-oriented companies an innovation system is in place with supporting actors who have the resources to participate in the seed stages, but not to a sufficient extent. There is need for capital for the entire chain from idea to growth/expansion. There is a need of funding in different phases (e.g. loans, equity, "soft" loans) and flexible capital with different types of investors in order to match the diversity of industries.

2. Innovation Policy Governance

In Sweden, the national level of government has the main responsibility for funding of research and higher education, while responsibility for basic civil services (e.g. basic education, care for the disabled and the elderly and child care) is administrated at the local, municipal level (*kommun*). During the last decade, responsibility for regional development has to an increasing extent been decentralised to the NUTS 3 regions (*lä*n), i.e. counties. Traditionally responsibility was shared between County Administrative Boards (*länsstyrelsen*), representing the national government at a regional level, and Regional County Councils (*landsting*). Over time, other types of directly or indirectly elected organisations for regional development have developed.

Since 2007, Regional Development Councils have been established in 14 NUTS 3 regions, including region Skåne.

During recent years, innovation has become more important as the focus of Swedish regional policy has shifted from regional redistribution, to regional development and now to regional growth. National initiatives have been taken to encourage regional actors at the county level to develop regional innovation strategies and to create competitive platforms for competence development. Further, higher educational institutions have been encouraged to increase their collaboration with the surrounding society and to develop regional innovation offices. As a result, responsibility for innovation is to a large extent allocated to the regional level.

3. Innovation Policy Instruments

As the NUTS 2 level is not an administrate level, there is no common regional innovation strategy for the whole of South Sweden. In the last few years, much work has been done in Skåne to develop the innovation system and enhance innovativeness in the longer term. This work has been carried out by the stakeholders in the region, VINNOVA and the Swedish Agency for Economic and Regional Growth (Tillväxtverket). In Region Skåne public support for innovation and entrepreneurship is addressed in An International Innovation Strategy for Skåne 2012-2020. In parallel, the region initiated an OECD Territorial Review as an input for revising the Regional Development Strategy 2014-2020. The region is also member of the EU platform for Smart Specialisation Strategies in Seville. Part of this is an increased focus on open innovation platforms and a pilot project on innovation procurement.

Several projects and processes have been implemented with the ambition to develop a better understanding of regional innovation capacity. Region Skåne has the responsibility for development at the regional level, and in this work, the EU plays an important role. The regional policy is executed in alignment with national policies and in smart synergy with the European policies and funding instruments for cohesion, research and innovation.

4. Conclusions: future actions and opportunities for innovation policy

The future opportunities for South Sweden's innovation policy highlights that increased international collaboration and investments in research infrastructure are crucial.

Previous studies highlight the following opportunities for the region's future development:

1. Strengthen international collaboration

Policies aimed at trans-border cross-fertilisation must focus on international exchange of ideas, technologies and business practices. In the future larger international flows of researchers, workers and students will be necessary if the region is to attain the diversity in skills and experience required of a top technology region (OECD, 2012: 15). The challenges related to strengthening the internationalisation of the region could be addressed through collaboration initiatives in the region's areas of strengths. Moreover, the challenge of weakened productivity and economic growth is addressed.

2. ESS and MAX IV

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 Skåne, where the facilities are located. Several incubators and other initiatives exist on both sides of the Öresund straight to support start-ups in knowledge-based activities (Nauwelaers, C., K. Maguire and G. Ajmone Marsan, 2013).

Similarly, regional stakeholders highlight the following opportunities for the region's future development:

3. Strengthen exports and internationalisation

In South Sweden there is a real concentration and specialisation in areas such as ICT, transport/ logistics, life sciences, food, etc. There is also a significant concentration in environmental technologies, with a focus on thermal technology, water purification, ventilation, waste recovery and system solutions. Within most of the areas of strength there are cluster initiatives. There is an ongoing effort to strengthen the innovation system and the regional leadership and to strengthen innovation in the intersections between different industries and areas of knowledge. Possible areas for innovation that have been identified in Skåne are personal health, smart and sustainable cities, and smart materials.

4. Opportunities related to large scale research infrastructure investments

Investments are high in both public and private R&D as a share of GDP in Skåne. In coming years, multi-billion investments will be made in research infrastructure in the region through the establishment of the research facilities ESS and MAX IV, which increases the innovation capacity and will attract workers and researchers to the region. The region has an extensive collaboration between local, regional, national and international actors in order to strengthen the development and proliferation effects of the research facilities.

1. Main Trends and Challenges in the Regional Innovation System

1.1 Recent Trends in Economic Performance

The NUTS 2 region South Sweden (Sydsverige) consists of the two relatively independent NUTS 3 regions **Skåne** and **Blekinge**. In December 2012, Skåne had a total of 1,263,088 inhabitants, including Sweden's third largest city region Malmö, with 307,758 inhabitants. Blekinge had 152,315 inhabitants. Malmö (the regional administrative capital), Helsingborg and Lund are the main cities in the region of Skåne (33 municipalities), all three are located near or along the Öresund strait.

South Sweden has a unique geographical position. There is an increased integration within the Baltic Sea region, as well as between Malmö and Copenhagen in the cross-border Öresund region, bringing together the Capital and Zealand Regions of Denmark and the southernmost Swedish county of Skåne. The Öresund strait, a 20-kilometre wide maritime area with a bridge/tunnel connecting the two sides through fast train and road links, separates the Swedish and the Danish part of the Öresund area.

The infrastructure in the region is generally well-developed, and the geographical location means that many parts of the region have access to a larger labour market within reasonable commuting distance by car.

There are considerable differences within the South Sweden region. The percentage of inhabitants born abroad is well above the national average of 15.4% in Skåne (18.4%), but lower in Blekinge (10.9%). The share of inhabitants with a 3-year tertiary education is slightly above the national average of 24.8% in Skåne but there are variations, with the highest levels in South-West Skåne, including the university city of Lund. In large parts outside the Malmö-Lund region in Skåne, as well as in Blekinge, the level of education is below the national average. All sub-regions have greatly reduced the number of people employed in goods-producing industries and all, except the southeast Skåne, can exhibit strong growth in business services. Southwest Skåne (Malmö-Lund) is clearly the most expansive region with the most “modern” sectorial structure.

The **population** in South Sweden has been relatively stable for a long time. The tendency is that the populous towns, and metropolitan areas in particular, are becoming more attractive at the expense of smaller, more peripheral and industry-dominated parts. Skåne has had a good population growth in recent decades, primarily by occupancy of a relatively young population, and migratory flows from abroad and from the rest of Sweden, mainly directed towards south-western Skåne. In Blekinge, on the other hand, the proportion of elderly in the population is increasing faster than the national average, while the share of younger people is decreasing in favour of the neighbouring regions Västra Götaland and Stockholm. As a result, in the future will be fewer people in working age, and this puts great pressure on the region. In the next decades this development will also affect the labour supply in the whole of South Sweden, and there is reason to believe that the labour market in the long term will be affected by a shortage of labour supply.

The **GDP per capita** in South Sweden in 2011 was €34,800, well above the EU27 average of €25,200, but below the national average of €40,800 (figure 1). The average level of unemployment in South Sweden in 2012 was 9.4%, which is above the national average of 8.0%. The region also has a higher long-term unemployment rate than the nation as a whole (2% compared to 1.4% respectively), even though the rate is low compared to the EU27 average of 5.1% (figure 1). The proportion of the population employed in the region is below the national average, although this difference has diminished significantly in recent years.

The **industry structure** in the region has changed drastically over the last two decades. The number of people employed in agriculture has almost halved since 1990, while the number of people employed in the goods-producing sector has decreased by about a fifth. Today most sectors of the Swedish economy are represented in South

Sweden, except for some parts of the financial sector, which are concentrated to Stockholm, and certain sectors related to natural resources. Employment in high tech industries and knowledge intensive services is slightly below the national average. In Blekinge, the percentage of gross value added (GVA) in manufacturing industry (42%) was well above the national average (26%) in 2008.

The **employment structure** in South Sweden is close to the national average. Public sector accounts for about one third of the employment, while industry and business account for 19% and 29% respectively (figure 1). However, the share of people employed by the public sector is higher compared to the EU27 average, and lower for employment in industry. Still, there are certain groups with significantly low employment rate, which is often linked to people of foreign origin. This demonstrates that there are considerable economic and ethnic segregation in the region.

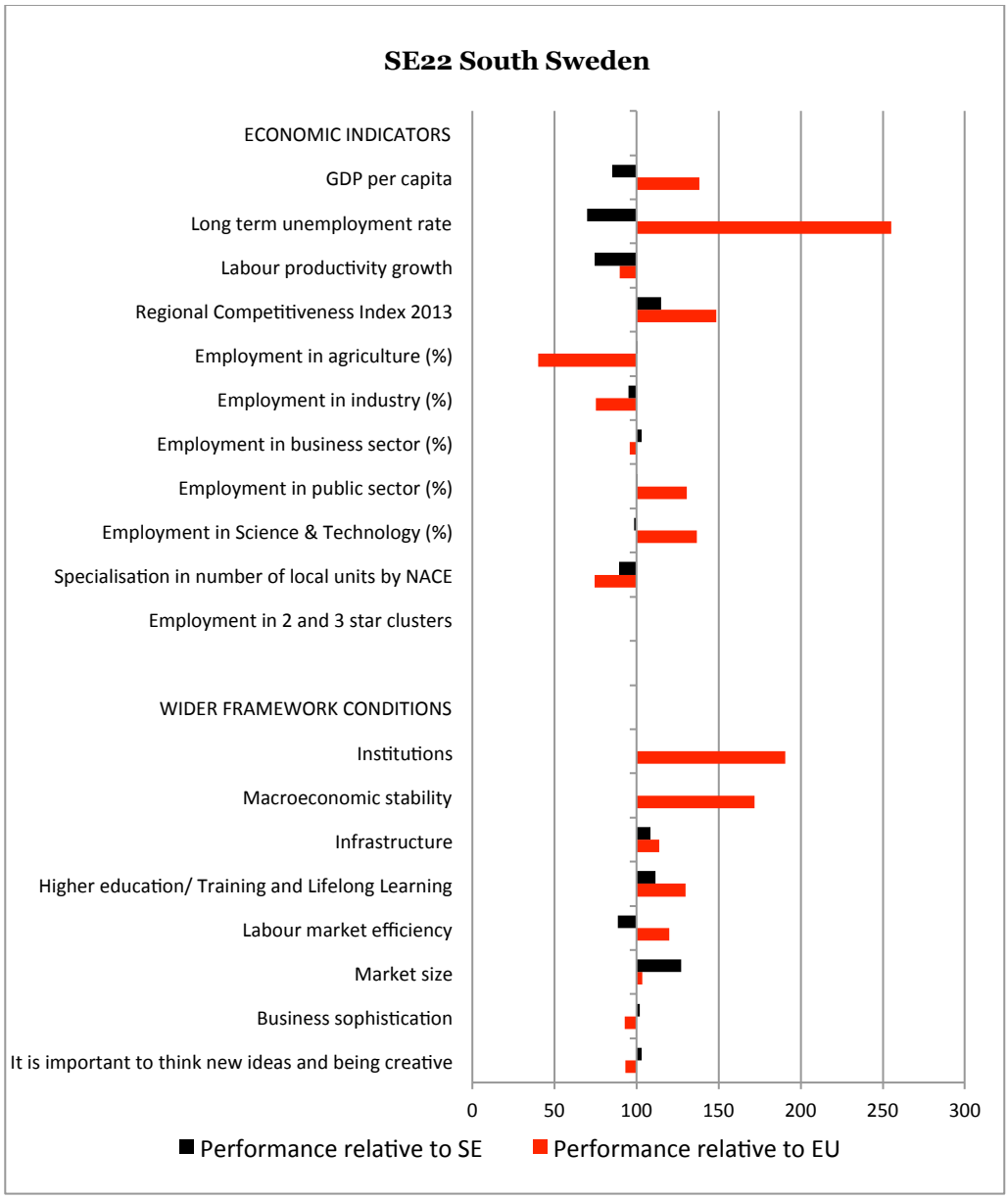
Labour market efficiency is one way to measure the ability of companies to flexibly manage their workforce and quickly hire and fire employees, which can be regarded as an important factor in general business competitiveness. Compared to EU27 South Sweden has higher labour market efficiency, however, lower compared to the national average in Sweden (figure 1).

If we look at the **wider framework conditions** in the region, it is evident that the educational structure in South Sweden is close to the national average, although there are significant differences within the region. For instance, in Skåne the level of education is significantly higher in the south-western parts than in the rest of the region. The educational structure largely mirrors the industrial structure in the region; the industry composition of south-western Skåne is more oriented towards knowledge-intensive industries than in the rest of Skåne. Outside Malmö and Lund, on the other hand, the industrial structure is characterised by a high proportion of labour-intensive industries whose main competitive advantage is low price rather than knowledge. There is also a lower share of people with higher education working in these industries compared to the national average. However, with regards to higher education and lifelong learning, the region as a whole is performing better than the national average and EU 27 (figure 1).

If we study the economic structure more in detail, it is apparent that South Sweden is strong in **food production**, **pharmaceuticals** and **medical technology**, and **telecom**. Together these sectors make up about 10% of the total employment. However, within the sectors it is only a few niches that have a strong international competitiveness. These niches are, among others, diabetes research and dialysis equipment in pharmaceutical and medical technology, functional food and packaging within the food sector, and mobile technology within the ICT sector.

South Sweden has comprehensive initiatives to support the region's development and growth, including efforts to strengthen the regional innovation system. Such effforts among other things include public funding that provides support for the development of innovation and entrepreneurship in the region. The innovation systems governance in the region will be further discussed in chapter 2.

Figure 1 Economic Performance Indicators



Source: Eurostat.

1.2 Recent Trends in Regional Innovation Performance

According to the European Regional Innovation Scoreboard 2014 (European Commission, 2012), Sweden belongs to the **innovation leaders**, with an innovation performance well above that of the EU average. Sweden is one of the countries with the highest proportion of research in terms of GDP, and the majority of the investments in research and development (R&D) are made by industry. If we look more in detail at the NUTS 3 level, South Sweden is characterised as an innovation leader both in a national and European context. The region is characterised by a **high level of R&D expenditures by businesses** compared to the national average and the EU27 (figure 2). For instance, the number of **EPO patent applications** (per mln population) was more than three times as high for South Sweden than the EU27 in average (about 352 applications per mln population compared to 110 respectively) (figure 2).

The companies in the region invest heavily in R&D compared to the nation as a whole and the EU27 and the total R&D personnel as a percentage of the active population in the region is high (2,4%). The share of technological (product or process) innovators as percentage of all SMEs is also slightly higher than the EU27 average, and business R&D expenditures as a percentage share of GDP is considerably higher in South Sweden than the national average (3,3% compared to 2,3% respectively), although the share has seen a steady decreased since 2007 (figure 3).

The **share of R&D expenditures** as percentage of GDP has also decreased since 2009; however, the percentage share of the R&D expenditures from higher education has remained stable in the same period (figure 4). The 1,1% share of GDP spent on R&D in higher education is higher than the national average of 0,9% and considerably higher than the 0,5% average in EU27 (figure 3).

Government investment in R&D as percentage of GDP in South Sweden is well below the EU27 and national average, although there has been a slight increase the past few years; in 2011 government R&D made up a bit more than 0,1% of GDP, compared to 0,25% in the EU27 (figure 3). In comparison, higher education R&D expenditure was considerably higher in South Sweden in 2011 at more than 1% of GDP compared to the EU27 average of 0,4% (figure 3).

If we look further at **SMEs innovation data** the percentage of SMEs that are technological innovators are higher in South Sweden than both the EU27 and national average (figure 6). The figure also shows that the share of innovative SMEs collaborating with others, and the share of SMEs innovating in-house is also considerably higher compared to the national end EU27 average (figure 6).

The rate of enterprise creation is relatively high, especially in Skåne, which partly can be explained by the fact that larger city regions tend to innovate more. However, studies of South Sweden have shown that relatively large resources are invested in early stages to capture ideas that have the potential to become new companies, but that the support structure for companies in the growth stage are weak. For instance, the structure for capturing service innovations has been especially weak and the availability of venture capital too small. This might help explain that despite the high level of R&D expenditures, patent applications, and number of R&D personnel, the share of **turnover of newly introduced innovations new to the market** is very low compared to the EU27 (figure 2). However, measured in euro per inhabitant government R&D expenditure is much lower than EU27 on average, and higher education R&D expenditure is still below the national average (figure 3).

The **innovation support structure** consists of a variety of organisations and measures to support the development of innovations and business ideas from the conceptual stage through to market launch. Many of the organisations work closely with higher education, especially the technology oriented competence areas. However, generally there is a need for better coordination of the different actors' efforts as well as an increased internationalisation of the supporting agencies. These concerns have been addressed in the regional innovation strategies for both Skåne and Blekinge where the overall aim has been to develop a long-term innovation system and strengthen innovation performance in the region. The work has been carried out by the actors in the region, along with national partners such as VINNOVA and the Swedish Agency for Regional Growth (Tillväxtverket).

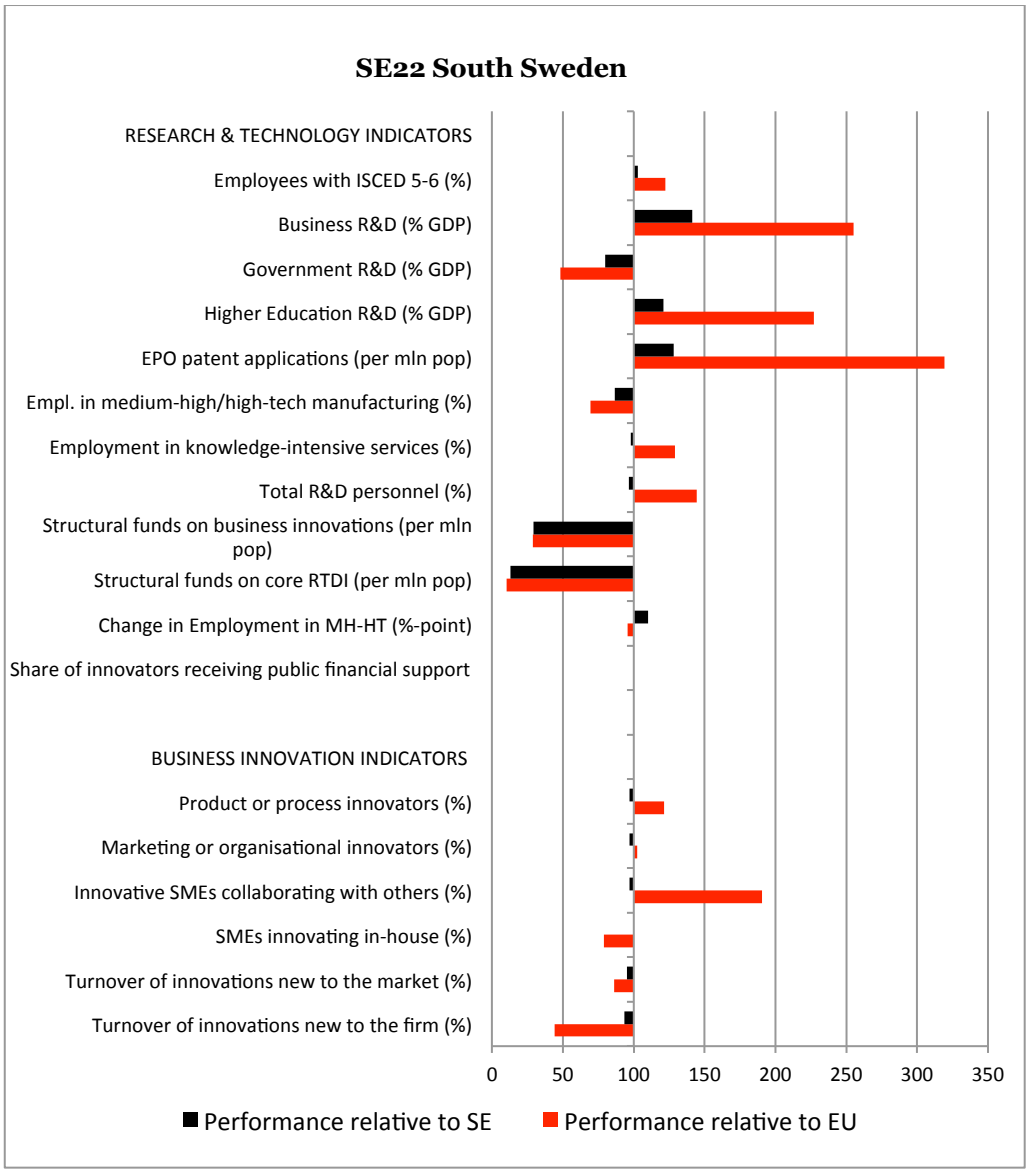
The **European Structural Funds Programme** that was running from 2007 to 2013 was focused on business incubators in order to increase survivability and innovation in start-ups. One successful example is the project "Growth Malmö"(Tillväxt Malmö), an incubator that was developed with a focus on helping business owners to reach the next step and hire more employees. The project is run by the Foundation Uppstart Malmö that started in 2011. However, the amount of structural funds spent on business innovations and core research, technological development (RTDI) and innovation is very low in South Sweden compared to the national level and

the EU27 (figure 2). This suggests that there is room for improvements when it comes to innovation support for technological development in the region.

Important social sectors in Sweden are run by the public sector and this is especially relevant for large parts of the healthcare sector which make up a large part of the region's activities. An important part of the development of the region's innovation capacity is thus centred on how publically financed services increasingly can provide space for innovation and entrepreneurship. At the current stage **R&D investments** in South Sweden are largely driven by business; the government only invests 0,12% of GDP in R&D and only 1,09% in higher education (figure 2). The high proportion of private research involves that the results to a large extent are commercialised (which might help explain the high number of EPO patent applications), but it also means that the region's R&D efforts are largely driven by a few companies, which creates a certain vulnerability for the region.

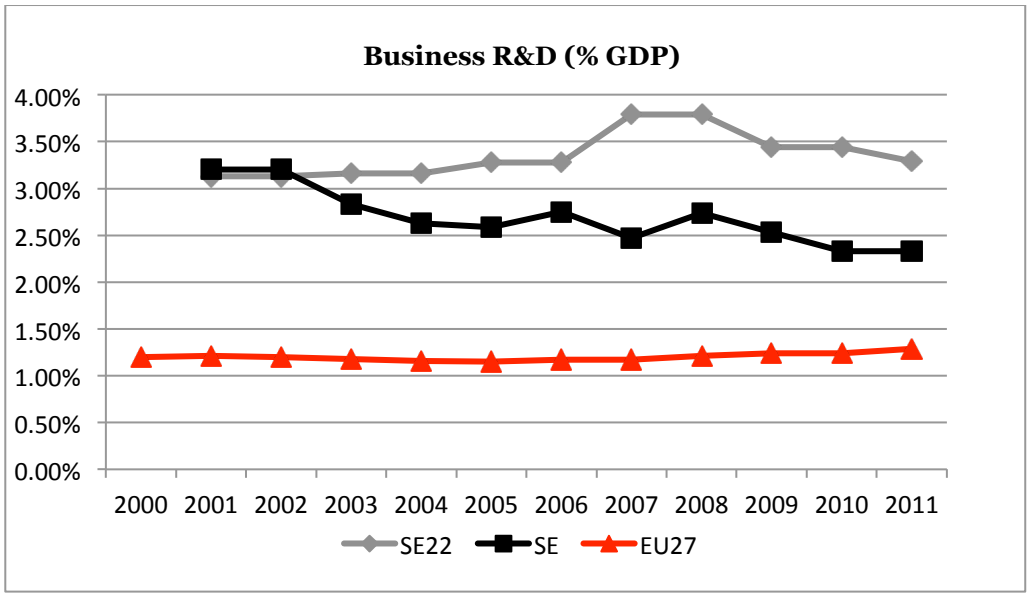
Skåne is currently actively promoting the development of new products, services and practices in the public sector. Among other things they work actively with pilot projects to drive the development of more innovative procurement. Innovative procurement will work as a new approach for procurement managers and as a tool to stimulate innovation. The aim is to contribute to more efficient and better public services, increased growth and jobs, increased export power in the business world and a better society.

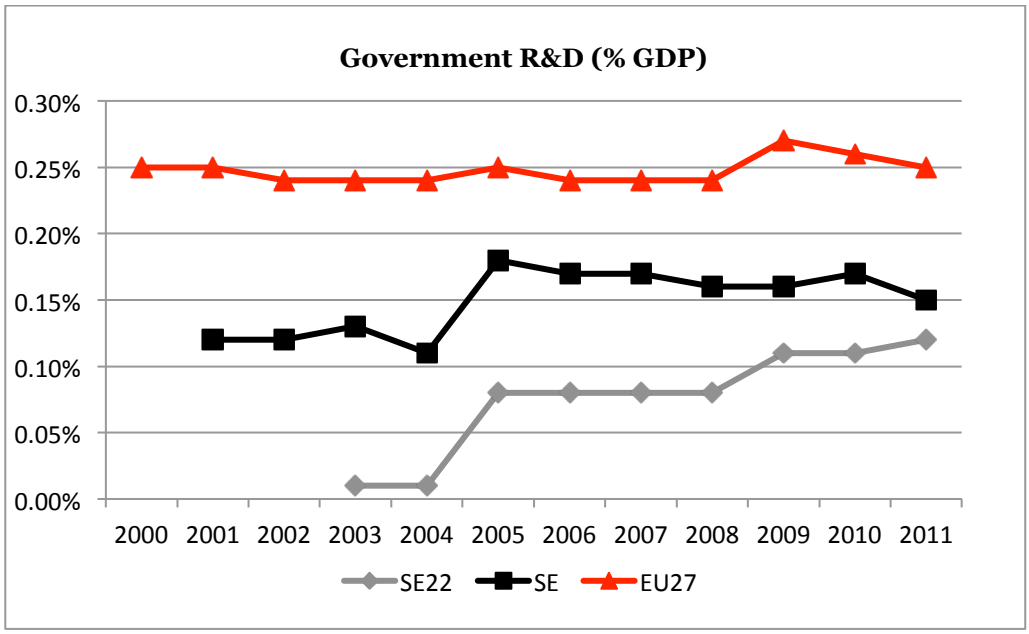
Figure 2 Innovation Performance Indicators

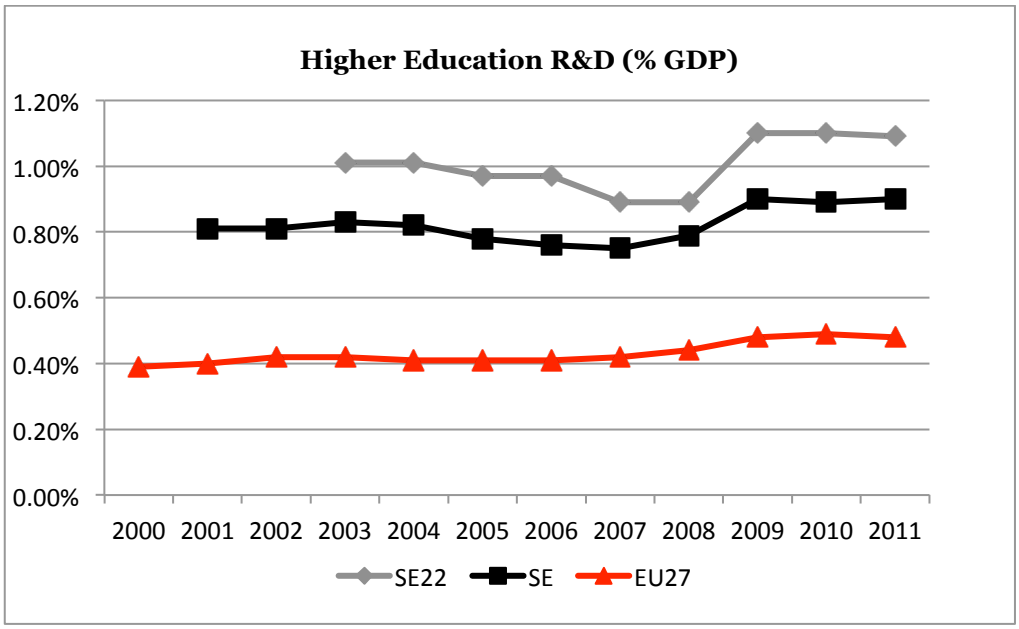


Source: Eurostat.

Figure 3 R&D Expenditure per Sector of Performance

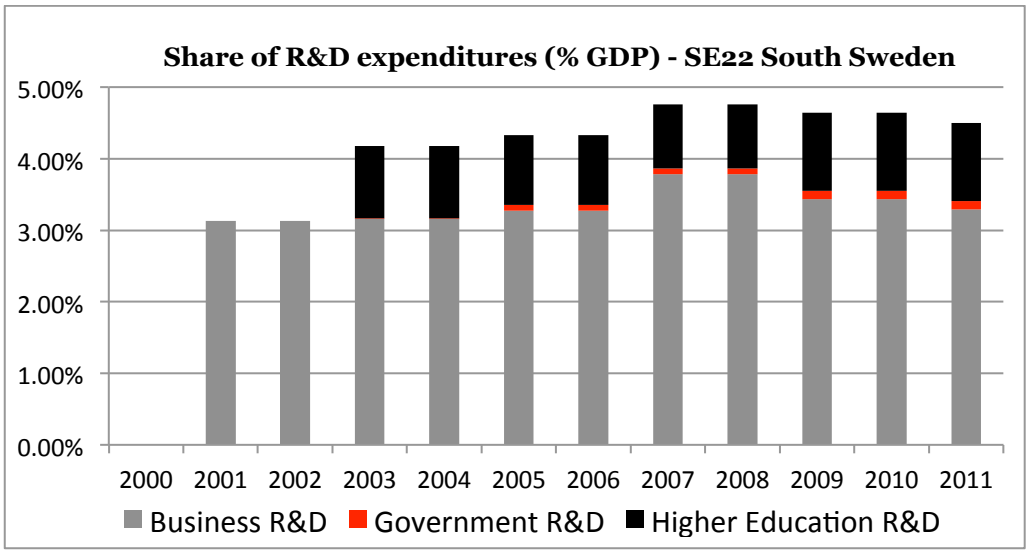






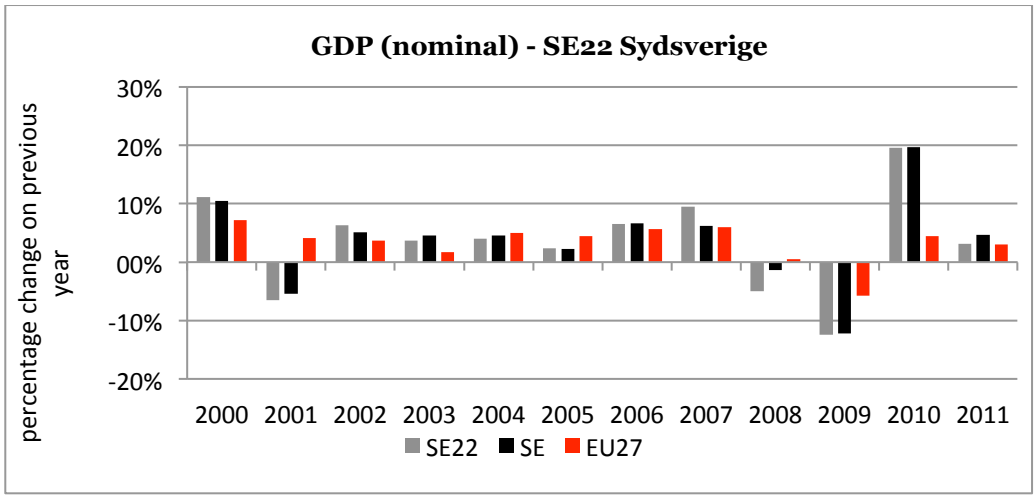
Source: Eurostat.

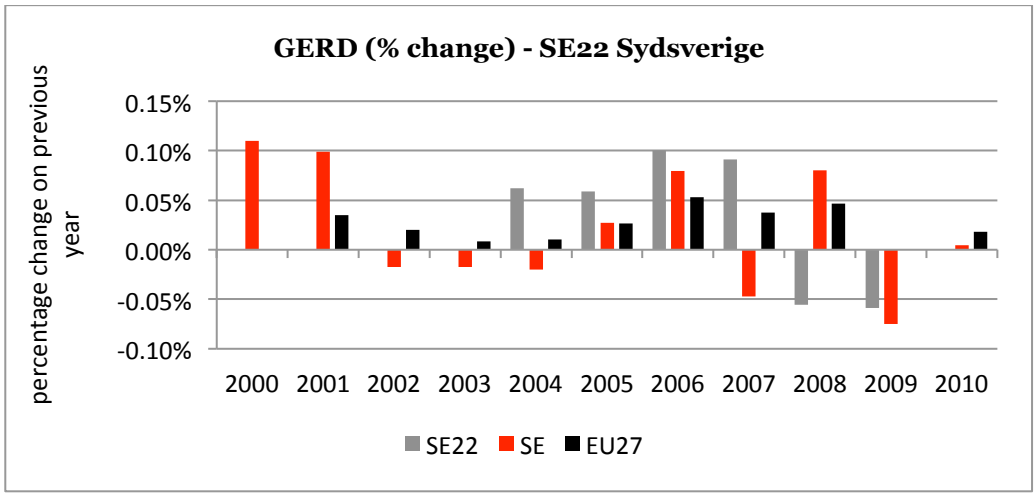
Figure 4 Share of R&D Expenditures per Sector of Performance



Source: Eurostat.

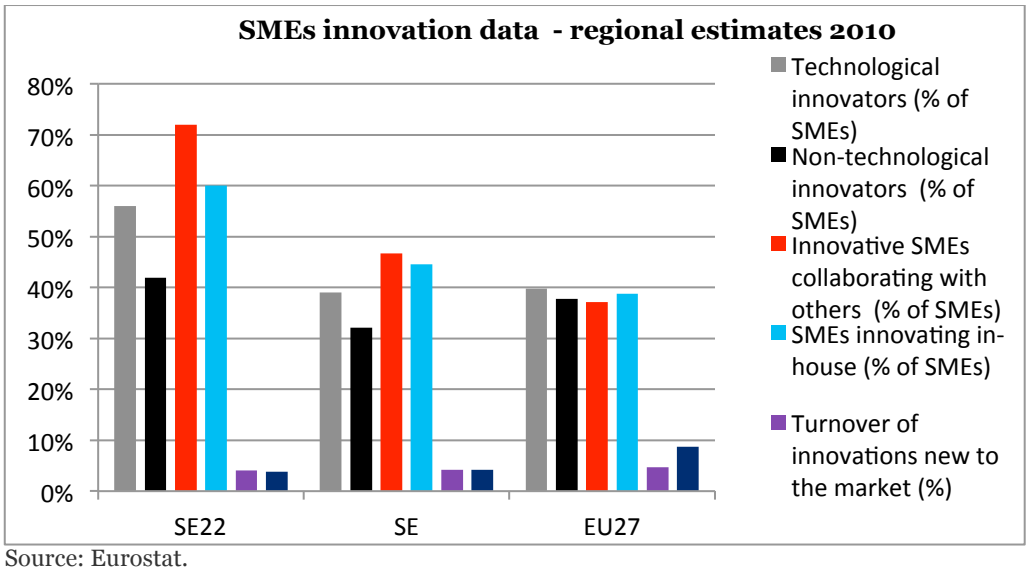
Figure 5 GERD and GDP Trends





Source: Eurostat.

Figure 6 Technological & Non-technological Innovators



Source: Eurostat.

1.3 Identified Challenges

South Sweden is a growth region both from a national and European perspective, with an internationally competitive industry in different sectors. The region has strong clusters with adjustment and development capability, large investments in industries that strengthen competitiveness, strong research and innovation environments, large R&D investment. As such, the regional innovation system is generally varied and well-functioning with a regional structure that is well integrated. However, there are still challenges that should be addressed.

Challenge 1: Internationalisation need to be strengthened

There are indications that the degree of internationalisation is low in the region (low export values per employee), despite the region's geographical location. For this reason, strengthening the international competitiveness is one of the objectives of the international innovation strategy of Skåne.

In the strategy the need for institutes of technology and universities, companies and also public bodies to develop ways of strengthening their international competitiveness is stressed. It is essential that knowledge production in the region is implemented with the best in the world through developing stronger and larger international networks. The clusters/open innovation arenas should be stimulated to develop more strategic alliances and strengthen international links. Different forms of collaboration need to be formed with other regions, not least the Öresund region (Skåne Research and Innovation Council (FIRS) and Sounding Board for Innovation in Skåne (SIS), 2011a); Skåne-Blekinge, 2014).

Challenge 2: Productivity and economic growth in the region is weak

Although the South Sweden region increased its share of the national population in recent decades, the region's share of GDP remained unchanged and even decreased slightly. In manufacturing, the average productivity is considerably lower than in Stockholm and Västra Götaland. If the productivity of manufacturing had been at the same level as in the other two metropolitan regions, Skåne's regional GDP would have grown at the same rate (Skåne-Blekinge, 2014).

An important challenge is thus to stimulate more viable and growing companies in the region. The innovation capacity needs to be encouraged, both within the specialised knowledge-intensive companies, as well as within the existing regional industries more generally. This can be done through the strengthening of access to business contacts, venture capital, knowledge and networks. Regional authorities can also

promote and support access by companies, especially SMEs, to advanced business services and intermediate innovation centres in areas, such as marketing, design, organisational improvements, etc.

Challenge 3: A lack of venture capital in the region

Most projects and companies are funding the first development stages with equity and own work efforts, which is not always enough. It is mainly the lack of seed capital for "traditional businesses" and service companies that is an issue. For more research-oriented companies an innovation system is in place with supporting actors who have the resources to participate in the seed stages, but not to a sufficient extent.

There is need for capital for the entire chain from idea to growth/expansion. There is a need of funding in different phases (e.g. loans, equity, "soft" loans) and flexible capital with different types of investors in order to match the diversity of industries. In the international innovation strategy for Skåne the need to adapt financial instruments to the needs of different companies and industries is stressed. The requirements for venture capital and exit strategies differ between life sciences, manufacturing industry, culture, the service sector and social innovations, for example. It is therefore necessary to make the financial instruments more flexible in order to match and address the diversity that exists in Skåne (Skåne Research and Innovation Council (FIRS) and Sounding Board for Innovation in Skåne (SIS), 2011a); Skåne-Blekinge, 2014).

2. Innovation Policy Governance

In Sweden, the national level of government has the main responsibility for funding research and higher education, while responsibility for basic civil services (e.g. basic education, care for the disabled and the elderly and child care) is administrated at the local, municipal level (*kommun*). During the last decade, responsibility for regional development has to an increasing extent been decentralised to the NUTS 3 regions (*län*), i.e. counties. Traditionally responsibility was shared between County Administrative Boards (*länsstyrelse*n), representing the national government at a regional level, and Regional County Councils (*landsting*). Over time, other types of directly or indirectly elected organisations for regional development have developed. Since 2007, Regional Development Councils have been established in 14 NUTS 3 regions, including region Skåne. For designing and implementing the European Structural Funds 2007-2013, **eight Swedish NUTS 2 regions** were formalised and will continue in the same form during 2014-2020. Today, all NUTS 3 regions are required to develop a regional development strategy on a regular basis and all NUTS 2 regions develop Operational Programmes for the ERDF. These programmes are developed in regional partnerships with actors from different sectors, e.g. business, public sector, universities and non-profit organisations.

During recent years, innovation has become more important as the focus of Swedish regional policy has shifted from regional redistribution, to regional development and now to regional growth. During 2009, national agencies and business organisations initiated the process **Innovation for Growth**, to mobilise national and regional actors and provide input to the national innovation strategy. In 2010, Sweden adopted a national services innovation strategy and in 2011 the government initiated a broad process to develop a national innovation strategy. During 2012, the Ministry of Enterprise, Energy and Communication presented the new national innovation strategy "**The road to a world class innovation climate 2020**" (Regeringskansliet, 2012). The process of formulating the strategy was organised in broad dialogue with stakeholders in different parts of society, including regional bodies. There has also been a high degree of participation and involvement from all the Ministries of the Government Offices.

National initiatives have been taken to encourage regional actors at the county level to develop regional innovation strategies and to create competitive platforms for competence development. Further, higher educational institutions have been encouraged to increase their collaboration with the surrounding society and to develop regional innovation offices. As a result, responsibility for innovation is to a large extent allocated to the regional level.

The national and regional public entities involved in the innovation system can be grouped in four categories, i.e. developing policies on national and regional level (parliament, national and regional governments, ministries, local authorities and county councils), supporting implementation of policies and financing innovation and R&D (e.g. research funding institutes, the agency for innovation systems - **VINNOVA**, sectoral agencies), implementing research and development (e.g. universities and research institutes) or supporting commercialisation and entrepreneurship (e.g. the agency for economic and regional growth - **Tillväxtverket**, **ALMI**, incubators). Many of these have regional representation.

South Sweden is part of the larger national innovation system and the regional governance structure is a mixture of public and private initiatives, involving actors at different levels. To involve various actors, several clusters and cooperative platforms have been established. A proposal for a Structural Funds programme for South Sweden 2014-2020 was submitted 27 March 2014 (Skåne-Blekinge, 2014). Besides this, the governance structures of the NUTS 3 regions Skåne and Blekinge are different and have not been integrated.

In Skåne, the **autonomy** concerning regional innovation policies is high. Region Skåne is controlled by a politically elected regional council and has the overall

responsibility for regional development. This includes health care, development and implementation of a Regional Development Strategy, including measures linked to lifelong learning, stimulation of research and innovation, infrastructure development, as well as implementation of the EU Structural Funds Programme. Other key actors in the region of Skåne include seven cluster initiatives working to strengthen the competitiveness of companies in the region in particular: **Skåne Food Innovation Network**, **Mobile Heights**, **Media Evolution**, **Sustainable Business Hub**, **Packbridge**, **Resilient Regions** (previously Training Regions) and **Medicon Valley Alliance** (a cross-border initiative). The Skåne cluster initiatives have successfully supported companies in Skåne for a long time in their efforts to become more competitive. This is evident, for example, in an increase in the number of members of the initiatives.

The **Regional Development Strategy** is the main strategic document outlining the strategy for regional development at the NUTS2 level (Region Skåne, 2014; Region Blekinge, 2013). The regional development strategy should also be seen in relation to the national and European context, for instance the national strategy for regional growth and attractiveness of the Baltic Sea Strategy, the WHO health strategy, Europe 2020, the EU's energy and climate targets for 2030 and EU Cohesion Policy.

The local authorities are responsible for coordinating the implementation of the strategy, in collaboration with stakeholders, to initiate, implement and participate in funding of programmes and activities in development priority areas. The regional development strategy sets regional priorities to support a strong long-term business development and is a tool to prioritise and coordinate system-enhancing resources in these areas. It does not contain detailed objectives and examples of activities; these are found both in EU programmes in the region and in other implementing tools. Based on the principles for implementation of the programme every actor decides on the goals, strategies and actions for the activities in which they are responsible. Different stakeholders participate according to their goals through their own activities and in collaboration with others. To facilitate implementation of the programme, municipalities, businesses, organisations, social partners, universities, research institutes, government agencies, local and regional companies and other stakeholders are supported by a programme committee that consists of key stakeholders related to the programme's growth targets. Their task is to facilitate the work of coordinating regional development in accordance with the programme's focus.

The strategy is a tool to prioritise and coordinate resources at the regional level. These resources are available from a variety of stakeholders such as the municipalities in Skåne and Blekinge, public authorities, industry, universities and university colleges as well as organisations and individuals. The Regional Development Strategy for Skåne 2014-2030 **"Open Skåne 2030"** focuses on regional conditions to strengthen the cooperation between the different actors in the region. The overall objectives of the strategy are to 1) offer a belief in the future and quality of life; 2) be a strong sustainable growth engine; 3) take advantage of its diverse urban structure; 4) develop the welfare services of the future; and 5) be attractive on a global scale. "**Attractive Blekinge**" which is Blekinge's Regional Development Strategy that runs from 2014-2020 focuses on the following priority areas: 1) develop the image of an attractive Blekinge, 2) life quality (including secure environments for working, living and recreation); 3) provide good opportunities to find a stimulating job; 4) efficient and sustainable public transport systems.

In the development of its strategy the Region's role is to coordinate the work, to serve as an inspiration and unifying force for regional development but also to be an actor in its implementation. Municipalities can on their respective conditions contribute to the achievement by its municipal activities in various projects and activities, some in collaboration with other stakeholders. The County Board has the responsibility to monitor how other governmental authorities work with development issues and to promote and coordinate the efforts of other agencies for regional growth.

The region of Skåne is also part of the Oresund region which on the Danish side involves the metropolitan area around Copenhagen, and the neighbouring region of Zealand. Governance of cross-border cooperation is managed by the Oresund Committee that gathers several regional and local authorities in the area. National authorities, firms and universities are not members. The Oresund Committee has formulated a **vision for the Oresund Region** in 2020. The vision is: "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: knowledge and innovation; culture and events; a diverse, yet cohesive labour market; and accessibility and mobility (Nauwelaers, C., K. Maguire and G. Ajmone Marsan, 2013).

In recent years, initiatives have been implemented in Skåne to develop the innovation system and enhance innovativeness in the longer term. This work has been carried out by the stakeholders in the region, VINNOVA and the Swedish Agency for Economic and Regional Growth (Tillväxtverket). It includes "Skåne's Innovation Capacity – a situation analysis", produced in 2009 as a self-assessment to obtain a clearer picture of the innovation system. A network analysis, a functional analysis and an international peer review were also conducted, and these also form the basis for action plans and ongoing work.

Among other things, these studies show that relatively substantial resources are invested in the early stages to pick up ideas that have the potential to become new enterprises, but that the support structure for businesses is weak. The situation analysis has also found that the structure for picking up service innovations is poor, that access to risk capital is too limited and that the need for a systematic environmental and market analysis is great but not satisfied. Further, the analysis shows that better coordination of the efforts of the various players is needed, along with increased internationalisation of the supporting bodies.

Region Skåne and Blekinge are some of the few regional authorities in Sweden that has developed **Regional Innovation Strategies**. The innovation strategy for Skåne "International Innovation Strategy for Skåne 2012-2020" (Skåne Research and Innovation Council (FIRS) and Sounding Board for Innovation in Skåne (SIS), 2011a) introduces the vision that Skåne will be Europe's most innovative region in 2020. "An Innovation Strategy for Blekinge" (Region Blekinge, 2013) mainly focuses on building on the region's strengths through increased cooperation, development of the region's existing clusters, and increased internationalisation (the strategies will be described in more detail in chapter 3).

Table 1 Innovation Policy Governance in Skåne

	Description	Comment
Degree of general regional autonomy	High	Region Skåne is controlled by a politically elected regional council and has the overall responsibility for regional development.
Degree of autonomy with regard to innovation policy	High/medium	Regional innovation policy is executed in alignment with the national strategy, but Region Skåne develops the regional innovation strategy.
Set-up of regional governance system (centralised/de-centralised/fragmented)	Centralised with sub-regional coordination	Region Skåne is the main coordination unit for innovation, but measures are also implemented and developed by municipalities, cluster initiatives, incubators, etc.
Nature of the process of strategy development (top-down/bottom-up/participatory	Participatory	The innovation strategy is developed in broad collaboration through partnerships with regional actors.
Intra- and inter-regional co-operation	Medium/high	There are several strong universities, e.g. Lund University, Blekinge Institute of Technology, Malmö University, Kristianstad University and the Swedish University of Agricultural Science. There is also a diversified business environment, with several established clusters. Key strengths are found in life science, ICT and food, with roughly 24% of the Swedish agriculture and food processing. The number of large research companies is limited, making the region vulnerable to external decisions. Lately, Sony Ericsson has started to downsize its research activities, and Astra Zeneca has closed down its division in Skåne. In parallel, however, the establishment of two large research centres (MAX IV and European Spallation Source) are expected to strengthen regional research activities in the future.

Table 2 Innovation Policy Institutional Set-Up and Available Human Resources in Skåne

Policy stage	Primary organisation	Number of personnel directly in charge	Total number of employees	Summary assessment
Strategy development	Region Skåne	10 (Innovation system unit)	43 (Business Region Skåne)	The Research and development unit's mission is to develop strong research and innovation environments and the Business Development Unit's mission is to stimulate entrepreneurship, economic growth, innovation and improve the environment for business
Programming	Region Skåne and Region Blekinge	2 (part-time)	43 (Business Region Skåne)	The secretariat function for the EU Structural Funds programme is run by two part-time positions (one at Region Skåne and one at Region Blekinge). During periods of programme development more resources are provided.
Implementation	Region Skåne	43	43 (Business Region Skåne)	In addition to Business Region Skåne key actors responsible for implementation are the cluster initiatives.
Monitoring and evaluation	Region Skåne	3 (Analysis unit)	43 (Business Region Skåne)	The unit's mission is to analyse trends, providing relevant facts and monitor and evaluate regional development.

2.1 Clusters / Open Innovation Arenas

An important cornerstone of the innovation system is a regional network of cluster initiatives that are now called open innovation arenas, which are essential for the implementation of the innovation strategy. The seven cluster organisations are briefly introduced below.

The **Skåne Food Innovation Network** is a cluster initiative founded in 1994, which aims to turn Skåne and Sweden into a European food centre. The goal of the Food Innovation Network is that the food industry will develop in a positive direction and lead to new start-ups and renewal in established companies. The goals also include creating a strong power of attraction for the food industry, as well as offering a meeting place for the food industry where the products, services and business ideas of the future are created. The organisation with four employees is 90 percent financed by public funds. Skåne Food Innovation Network runs a number of projects linked to skills provision and has established collaborations with other cluster initiatives internationally and regionally, as well as with Packbridge. The cluster initiative consists of 34 members and 42 partners, where partners are offered greater influence and range of services for a higher membership fee.

Packbridge is a cluster initiative founded in 2010 which focuses on all elements of the packaging industry's value chain, that is, everything from customers to manufacturers, suppliers and researchers. The idea behind Packbridge is to create a meeting place to connect people in the industry. The strong cluster environments within pharmaceuticals and food in Skåne, which make up 80 percent of the need for packaging in society, are a strong contributing factor in the founding of the cluster initiative, together with larger companies in the region such as Tetra Pak and A&R Carton. A fundamental goal is to develop the regional packaging industry and contribute to strengthening its competitiveness. Packbridge currently consists of 119 members, many of which are private companies.

Sustainable Business Hub (SBH) is a network that helps companies in Skåne with activities within the areas of the environment and energy to increase their competitiveness and develop their businesses in Sweden and in the export market. SBH was started on the initiative of companies, the City of Malmö and Region Skåne in 2001, with a wide focus on environmental matters and CSR, and now has around 120 members. In 2008, its activities were radically restricted to just promoting growth and export of environmental technology, focusing on exporting and marketing Swedish system solutions to the Baltic region, the UK and Ukraine. SBH's vision for 2020 is to develop southern Sweden into a leading region within clean technology in northern Europe. In autumn 2011, SBH, like the other cluster initiatives, redefined its goals. The purpose defined for SBH is to strengthen competitiveness and exports of the region's cleantech companies, thereby enhancing the growth of the sector in Southern Sweden. SBH will also be an effective player to support, stimulate and create interactions between actors that can contribute to this.

The **Media Evolution** cluster initiative was founded in 2008 and aims its activities at companies within the media industry in Skåne and Blekinge. Media Evolution's express aim is, in addition to combining existing media networks within southern Sweden, to promote growth within the media and, more specifically, within new media, and to increase the number of companies and people in employment in southern Sweden. The aim of the cluster is that Skåne and Blekinge will be a leading innovation and production environment for user and content-driven media within film, television, computer games, Internet and mobile platforms (Oxford Research, 2011).

Mobile Heights is a membership financed non-profit organization. The initiators and the first members of Mobile Heights were Sony Ericsson, ST-Ericsson, TeliaSonera, Lund University, Malmö University, and Region Skåne. Relevant companies, industry associations, academic institutions and public organisations work

towards the mission of strengthening the region as a hotspot for mobile innovation. Three so-called Industry VINN Excellence Centres (co-financed by VINNOVA) with research in silicon and software design is the foundation for research in Mobile Heights. The three are Systems Design on Silicon (SoS) at the Faculty of Engineering, Embedded Applications Software Engineering (EASE) at Blekinge Institute of Technology and Network for Mobile Services and Applications (NMSA)which is a collaboration between LU, BTH and Malmö University. Research groups at the involved universities focus on areas such as software systems, software, and image analysis. The research base has recently been complemented by an institute for distributed cloud technology - a new area of technology that merges communication and software. MAPCI - The mobile and Pervasive Computing Institute at Lund University – is financed by Region Skåne, Lund University and Sony Mobile.

Resilient Regions Association (initially called Training Regions) was created on the initiative of E.ON, the Swedish Armed Forces, the insurance company If, Lund University, Region Skåne and Saab in 2010. Resilient Regions Association deals with issues involving risk and safety in cities and regions from the perspective of different kinds of flows. The flows which are vital for society are taken care of by different actors, both public and private. There is no actor in the system who can singlehandedly ensure that the city's flows of goods, services, money, people, energy and information function. The city's flows are interdependent, both directly and indirectly. These interdependencies are often critical for society's ability to maintain its functions at the necessary and expected level. Development work must therefore be done through collaboration between the system's actors. Most recently, the concept of Resilient Communities has been launched, a concept with a focus on the processes which steer the development of effective and smart societal flows in daily life. The aim is to create smart and sustainable city development in cooperation between regions internationally.

The final cluster initiative in Region Skåne is the life science cluster which is a cross-border cooperation initiative. Medicon Valley Academy was founded in 1997 as an Interreg II project. 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. The name Medicon Valley was successfully branded internationally. In 2007, Medicon Valley Academy changed its name to **Medicon Valley Alliance**. 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 by 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, 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 (Nauwelaers, C., K. Maguire and G. Ajmone Marsan, 2013).

The CEOs of the cluster organisations (with the exception of MVA which was established as a cross-border initiative by the Universities of Lund and Copenhagen, not involving Region Skåne) are brought together for regular meetings by the department for innovation system development. This is a meeting place for exchange of knowledge between the CEOs and to discuss opportunities for cooperation between them. In between meetings, some CEOs are in regular contact in order to organise cooperation between cluster members, and to organise common events, etc. when it is relevant.

In Blekinge two business networks are in place, also sometimes referred to as cluster organisations, Tech Network and Telecom City.

Tech Network is operated as an economic association, owned by a number of regional manufacturing companies. The aim of the association is to, based on an understanding of technology, help the participating contractors/companies to see and create opportunities for individual and joint business, product and production development by mediating contact between actors and facilitating idea generation.

Telecom City in Karlskrona is a creative meeting place with a focus on growth, also operated as an economic association. The aim of Telcom City's business network is to generate new business and sales opportunities nationally and internationally. Growth is a common goal but also to develop new services and products in collaboration with Blekinge Institute of Technology.

2.2 Other Innovation Support Actors

In order to support entrepreneurship and innovation, a number of business incubators and science parks have been established in the region of Skåne. **Medeon Science Park and incubator** is based in Malmö and is targeted at life sciences. **Ideon Science Park** is based in Lund and the companies based there are active in ICT, Life science and cleantech. **MINC** is a business incubator based in Malmö. **Krinova Incubator & Science Park** is based in Kristianstad and is focused on firms in food, environment, and health. **Medicon Village** was established in Lund on the premises of Astra Zeneca when the company moved its R&D activities out of Skåne at the end of 2012. It is a science park for life sciences and also hosts **Lund Life Science Incubator**.

In Blekinge important innovation support actors are: **NetPort Science Park** with a focus on digital media, Intelligent Logistics/Intelligent Transport Systems (ITS) and energy; and **Blekinge Business Incubator** which comprises **Gameport**, an incubator with a focus on game companies.

NyföretagarCentrum (centre for startups) which is part of the national organisation Jobs and Society, is focused on providing general support for the establishment of new businesses. It does not have a specific sectorial focus or requirements for connection to the academia. Such centres are present in Malmö, Helsingborg, Landskrona, and Ängelholm in Skåne. In Blekinge they are located in Karlskrona, Olofström, Ronneby and Carlshamn. The centres work with a number of activities such as counselling, guidance, idea assessment, seminars and lectures for entrepreneurs in the start-up phase.

Almi Företagspartner AB is owned by the Swedish government and is the parent company of a group consisting of 16 regional subsidiaries, Almi Invest AB and IFS Rådgivning AB. Almi is present in Skåne and Blekinge offering advisory services, loans and venture capital through all phases of the establishment of a business. This includes ideas with potential for growth in the early stages as well as existing companies that are investing in growth and expansion. Almi is also responsible for the Swedish government's incubator programme. Almi's activities are organised in four business areas – advisory services, loans, venture capital and incubation.

Southern Sweden Chamber of Commerce is a private sector organization in place to promote the interests of the business community of southern Sweden. The Chamber of Commerce brings together companies in various networks and organises meetings. It has more than 2,800 member companies, large and small, and it has offices in the regions of Skåne (Malmö and Helsingborg), Blekinge, Kalmar, Kronoberg and southern Halland. The purpose of the Chamber of Commerce is to make southern Sweden a better place to do business. Key activities include: to promote the interests of members in the strategic development of southern Sweden; to support new business through providing advisory services on international markets and utilizing the international network of the organization; and developing networks among the members and organise meetings, and seminars.

2.3 Key Challenges and Opportunities

The regional governance system is well developed in Region Skåne and Region Blekinge which are the main responsible bodies for facilitating innovation and development. However, the drafting of regional strategies is conducted in a participatory manner, including a range of actors throughout the regions. The seven cluster initiatives are essential for implementation of innovation policy in Skåne.

A challenge in terms of implementing the international innovation strategy in Skåne is for the cluster initiatives to develop into 'open innovation arenas' which involves **clearer international positioning and profiling**, and increased participation in international platforms. Moreover, innovation within 'white spaces' is identified as an opportunity for the region. The term 'white space' was coined to describe the development opportunities which arise when two or more industries or knowledge areas come together. Products, services and processes are increasingly based on knowledge from different areas of expertise. Translated into policy terms, the ability to work with white space is about making collaboration between traditional areas of industry and knowledge easier. This will not necessarily result in innovations which are completely new to the market. They may equally consist of new combinations of existing solutions. The areas that have been identified so far in Skåne are personal health, smart and sustainable cities, and smart materials. The latter is related to the research infrastructure investments MAX IV and ESS. ESS provides opportunities for international as well as strengthened cross-border collaboration with the capital region of Denmark, where plans for a larger collaboration project to prepare for the establishments of the research infrastructure and utilise the opportunities this brings in attracting talent to the region, is planned.

The establishment of ESS and MAX IV are seen as a significant future opportunity by Region Skåne. It is now certain that world leading research in material sciences will be conducted in the region. A key challenge with regard to innovation governance is to facilitate the establishment of links between ESS and the business community in order for knowledge generated at ESS to be made accessible to the business community. A respondent at Region Skåne refers to CERN, the European Organisation for Nuclear Research, which is a similar research facility. At CERN initiatives to support knowledge transfer between the research facility and businesses are not in place. It is a priority to be able to take advantage of the opportunities which the international research facility brings. Currently, plans to develop and exploit existing physical meeting places for researchers and companies/entrepreneurs are in progress. Through a mapping of the innovation actors in Skåne it was found that there is **a lack of systematic leadership in the region**. Related to this, a challenge in South Sweden involves the weak support structure for businesses. The structure for picking up service innovations is poor, and access to risk capital is too limited. In addition, substantial resources are invested in the early stages to pick up ideas that have the potential to become new enterprises; however, there is little support in the continuation of developing the businesses further. As a result, a broader and more integrated support system, including better coordination of the efforts of the various players, is needed at the regional level.

3. Innovation Policy Instruments and Orientations

This section provides information on the nature and content of both strategies and actual policy measures implemented in the region.

Other than the governance section, it will focus less on persisting characteristics which can at best be adapted in the long term (e.g. regional autonomy), but mostly on decisions that can be taken, strategies that have been developed and support schemes that have been launched under the current framework conditions (e.g. regional innovation strategies, ERDF operation programming, individual programmes).

3.1 The Regional Innovation Policy Mix

In 2014, the **national strategy for regional growth policy** 2014 – 2020 was launched (Regeringskansliet, 2014). The strategy presents the Government's priorities for regional growth by 2020. These have been identified based on the experience of policy implementation, different analytical reports, and through a broad dialogue with regional and national stakeholders. The strategy has four main priorities: innovation and entrepreneurship; attractive environments; skills; international and cross-border cooperation. These priorities will guide development and implementation of regional development strategies and other policies and programmes to support regional growth, including the EU Structural Funds programmes.

A proposal for an **EU Structural Funds programme for South Sweden 2014-2020** was submitted 27 March 2014 (Skåne-Blekinge, 2014). Approval of the programme is expected in autumn 2014. Based on the EUROPE 2020 Strategy, the Baltic Sea Strategy, the Swedish Partnership Agreement, regional development strategies, OECD Territorial Reviews for Skåne and Småland-Blekinge, experiences and evaluations of the previous programme period and the regional analysis, the draft programme includes five prioritised areas: 1) Smart growth – innovation (strengthening research, technological development and innovation), 2) Smart growth - small and medium-sized enterprises (enhancing the competitiveness of SMEs), 3) Sustainable growth - low carbon economy (supporting the shift towards a low-carbon economy in all sectors), 4) Inclusive growth – broadband (enhancing access to, and use and quality of, ICT), and 5) Sustainable urban and community development (RTDI and competitiveness of SMEs).

As the NUTS 2 level is not an administrative level, there is no common regional innovation strategy for the whole of South Sweden. In the last few years, much work has been done in Skåne to develop the innovation system and enhance innovativeness in the longer term. This work has been carried out by the stakeholders in the region, VINNOVA and the Swedish Agency for Economic and Regional Growth (Tillväxtverket). In Region Skåne public support for innovation and entrepreneurship is addressed in **An International Innovation Strategy for Skåne 2012-2020**. In parallel, the region initiated an OECD Territorial Review as an input for revising the **Regional Development Strategy 2014-2020**. The region is also member of the EU platform for Smart Specialisation Strategies in Seville. Part of this is an increased focus on open innovation platforms and a pilot project on innovation procurement.

Several projects and processes have been implemented with the ambition to develop a better understanding of regional innovation capacity. Region Skåne has the responsibility for development at the regional level, and in this work, the EU plays an important role. The regional policy is executed in alignment with national policies and in smart synergy with the European policies and funding instruments for cohesion, research and innovation.

One of the key strategies of Skåne is to develop a vision-driven leadership. Since 2008, an extensive analysis and dialogue process has taken place to develop the **International Innovation Strategy of Skåne**. In 2010, a Research and Innovation Committee (FIRS) and in 2011 a Sounding Board Innovation in Skåne

(SIS) were established to support the process. The strategy, which was launched in 2011, has a broad approach to innovation, including services innovations as well as public sector innovation, and includes relations also outside of the region.

The foundation of the strategy is substantial investment in reinforcing Skåne's innovation culture and capacity by supporting business innovation, innovation systems, R&D programmes and excellence centres, start-up companies (seed funding, VC), communications infrastructure and cultural institutions. The strategy aims to be bold, inclusive and strategically unified to reflect what the Commission describes in "Innovation Union". It is a tool for development and growth in Skåne, with the ultimate goal to support inclusive, smart and sustainable growth. Six overall action points are highlighted in order to **strengthen Skåne's innovation capacity:**

- develop systemic leadership;
- broaden the sense of what innovation is - include more people;
- streamlining the support structure for innovation;
- developing new innovative areas and creative environments; developing international cooperation;
- strengthening innovation capacity in existing industry and public-sector activities.

These points will be elaborated in an action plan that describes the coordination and joint action between regional, national and international players, where the challenge, the problem and the innovation process are collectively owned. Other important dimensions for the development of a strong innovation culture in Skåne are for the region to be perceived as an attractive international location and innovation environment. The strategy emphasises how to strengthen the international attractiveness of Skåne through not only attractive housing and living conditions for people in the region, but also by stimulating cultural life, with openness, tolerance and diversity among people.

A sub-strategy for Skåne's innovation strategy has been developed entitled "From cluster initiatives to open innovation arenas in Skåne" (Skåne Research and Innovation Council (FIRS) and Sounding Board for Innovation in Skåne (SIS), 2011b). According to the strategy, the clusters developed in Region Skåne shall develop into open innovation arenas, which to a greater extent will attract national and international resources from outside the region. This requires clearer international positioning and profiling, and increased participation in international platforms. This sub-strategy was elaborated with the document "Developing new innovative areas and creative environments" commissioned by Skåne Research and Innovation Council (FIRS) and Sounding Board for Innovation in Skåne (SIS) (2012). This document introduces the notion of 'white spaces', which stresses the need to promote collaboration between innovation arenas in Skåne and between arenas and other initiatives both inside and outside the region. The term 'white space' was coined to describe the development opportunities which arise when two or more industries or knowledge areas come together. Translated into policy terms, the ability to work with white spaces is about making collaboration between traditional areas of industry and knowledge easier. This will not necessarily result in innovations which are completely new to the market. They may equally consist of new combinations of existing solutions. 'White spaces' that have been identified in Skåne are personal health, smart and sustainable cities, and smart materials.

Blekinge also has its own innovation strategy "**An Innovation Strategy for Blekinge**". The strategy focuses on how the region can create strong economic structure of enterprises that have the ability and knowledge to adapt to a more knowledge-intensive production base. One point that is emphasised in the strategy is that in order for smaller regions to grow there is a need for more collaboration with other regions both nationally and internationally. Other important ways to stimulate the innovation climate in the region are to create meeting places for knowledge

exchange as well as to stimulate an entrepreneurial spirit, and provide access to risk capital. Blekinge has a great potential for development of the region's existing industries. The areas of strength that are mentioned in the strategy are **materials processing**, **telecommunications**, **tourism**, **health**, **maritime industries**, **food**, and **cultural and creative industries**. Like in the innovation strategy for Skåne, Blekinge's strategy focuses on sustainability, equality, diversity, internationalisation and cooperation as important horizontal perspectives that are crucial for achieving the goals set out in the strategy.

South Sweden has during the last years focused on strengthening clusters in existing key areas in order to promote innovation. However, to find solutions to new challenges, such as the global climate threat, the financial crisis and the increased share of elderly people, it has become evident that different industries and areas of expertise have to join forces and develop the products of the future together. Examples of support measures to strengthen the priority areas (table 3) are:

- **Öresund Smart City Hub;**
- **ICT Skåne (Mobile Heights);**
- **Cleanovation – Innovation network for adaptation to cleantech;**
- **ESS MAX (TITA);**
- **ICT Blekinge (BICT 1 and 2);**
- **Media Evolution.**

Öresund Smart City Hub is a Swedish-Danish collaboration including municipalities, regions, universities and cluster organisations on both sides of Öresund. In a "Smart City" computing / IT solutions are optimised with cleantech in order to create a sustainable city with a high quality of life. New technologies are placing new demands on the municipality as a client. The project works in three different Smart City areas. During the autumn of 2013 the project developed an innovation platform for street lights and in the spring 2014 cooperation in the areas of mobility (cycling) and water management were initiated. The work with the innovation platforms is based on the municipalities' existing challenges and explores the potential to use existing technologies and/or develop new products/solutions. In Skåne, Sustainable Business Hub was responsible for the project, which was launched in 2012 and will be finished in 2014.

One of the target areas in Region Skåne is **the information and communications technology (ICT) sector**, where Skåne has a strong concentration of internationally competitive companies, such as Sony Ericsson and Ericsson, which together have around 5000 employees. Specialised academic research and educational institutions such as Lund Institute of Technology and Malmö University constitute a strong infrastructure of knowledge. Nearby Copenhagen, Denmark, hosts a Nokia development centre, and in the neighbouring county of Blekinge another mobile communications cluster, Telecom City, is located. In 2008 **Mobile Heights** (described in section 2.1) was established in order to reinforce the region's mobile communications sector. The project was initiated Sony Ericsson, ST-Ericsson, TeliaSonera, Faculty of Engineering (LTH), Malmö University and Region Skåne. Today, Mobile Heights is a non-profit foundation, founded by industry, academia and institutions from the public sector, with support from the ERDF.

Cleanovation aimed at adapting the manufacturing industry in Skåne and Blekinge into a cleantech industry. The purpose of the project was to initiate concrete cases illustrating and testing working methods, which in turn would generate more business opportunities within the field of cleantech. The goal was also to analyse how regional actors can collaborate within the innovation system. The project used knowledge and methods developed within the Swedish Model for Clean Growth project and intended to further develop these methods and co-operation in cleantech innovation system.

The aim was to create a long term platform and innovation system, which can through a systematic approach stimulate development initiatives within the cleantech sector. Sustainable Business Hub was responsible for the project, which was launched during 2010 and finished in 2012.

ESS MAX IV in Southern Sweden – Growth, Innovation, Accessibility and Attractiveness (TITA) was a regional mobilisation project, managed by Region Skåne in cooperation with all municipalities of Skåne, five universities, Region Blekinge, Invest in Skåne, ESS AB and the County Administrative Board of Skåne. The purpose of the project was to use the on-going process to establish two research facilities (ESS and MAX IV) to stimulate growth, strengthen the innovation structure and promote accessibility and attractiveness in the Öresund region. MAX IV is presently in the construction phase and is expected to be started in 2015, while ESS will be ready around 2019. The process requires a close collaboration and involvement from all stakeholders in the region. The project contained nine different sub-projects with varying time limits and involving different stakeholders; relocation support, marketing, development of Lund North East (the immediate surroundings of ESS and MAX IV), a foresight process, ESS and MAX IV as an innovation catalyst, ESS and MAX IV as a growth factor for local and regional business, urban planning and transport infrastructure, land availability register and a pilot study on competence supply needs. The project was launched in 2010 and completed in 2012. The objective of the project **ICT Blekinge** was to develop the preconditions for innovation and growth within the area of mobile services. The project consisted of two sub-projects. ICT Blekinge 1 ran between 2008-2010, focusing on increased cooperation between regional, national and international actors, strengthening the innovation system and supporting long term competence development for future employment and growth. The aim was to strengthen the business potential of firms, develop a regional brand name, attract investments and create broader market access. ICT Blekinge 2 was run during the period 2009-2011, with a focus on increased entrepreneurship in early phases. The idea was to stimulate existing ICT-firms in the region to spin-off business ideas outside of their core business, use available competences to develop new knowledge-based growth firms and to support international growth of new companies. The project aimed to create 400 jobs and 35 firms over three years. The project was administered by TelecomCity, in collaboration with Blekinge Technical Institute and Blekinge Business Incubator.

The cluster initiative **Media Evolution** (also described in section 2.1) was initiated in 2008 to support networking and collaborative projects in the media industry. The project was funded for three years (2009-11) by Region Skåne, Helsingborg city, Malmö city, EU Structural Funds, Region Blekinge, Malmö University, and NetPort.Karlshamn. The initial idea was based on the increasing role of southern Sweden as an innovative arena for the media industry in Sweden. The objective was to create jobs and growth. A long term objective is that Media Evolution and southern Sweden will develop into becoming the most innovative platform within media in Europe. Today Media Evolution is a network organisation with around 100 members from the private and public sectors, including higher education institutions, which engage in various projects and events supported by Media Evolution. The organisation organises and provides funding for conferences, social media, meetings and other activities which support the media industry's competence and business development. It is jointly owned by members, project implementers and public organisations in Skåne and Blekinge.

Table 3 Existing Regional Innovation Support Measures

Title	Duration	Policy priorities	Budget	Organisation responsible	More information
Öresund Smart City Hub	2012-2014	• 2.1. R&D cooperation projects between academy and industry • 2.4. Demonstration projects, proto-types and proofs of concepts • 4.2.Organisational, process and other non-R&D innovation	€ 1m	Oresund Committee	Öresund Smart City Hub
ICT Skåne (Mobile Heights)	2008-2012	• 2.1. R&D cooperation projects between academia and industry • 2.2. Mobility between academia and business • 4.5. Knowledge transfer and cooperation between firms (incl. technology acquisition) • 5.1. Cluster development	€1.2m	Skåne Regional Council	Mobile Heights
Cleanovation – Innovation network for adaptation to cleantech	2010-2012	• 2.2. Mobility between academia and business • 4.5. Knowledge transfer and cooperation between firms (incl. technology acquisition) • 5.1. Cluster development	€400,000	Sustainable Business Hub	

Title	Duration	Policy priorities	Budget	Organisation responsible	More information
ESS MAX (TITA)	2010-2012	• 1.3. Research infrastructures • 2.1. R&D cooperation projects between academy and industry • 4.1. Direct funding to business R&D and innovation	€5.3m	Region Skåne	ESS MAX IV
ICT Blekinge (BICT 1 and 2)	2008-2011	• 4.3. Fostering start-ups and gazelles • 4.5. Knowledge transfer and cooperation between firms (incl. technology acquisition) • 5.1. Cluster development	€2.8m	TelecomCity	
Media Evolution	2009-2011	• 2.1. R&D cooperation projects between academia and industry • 2.2. Mobility between academia and business • 4.5. Knowledge transfer and cooperation between firms (incl. technology acquisition)	€2.5m	Region Skåne	Media Evolution

Source: RIM Plus repository South Sweden

3.2 Regional Policies and Initiatives in Support of Advanced Manufacturing

Region Skåne's smart specialisation strategy; the International Innovation Strategy for Skåne identifies three areas of relative strength: **Personal Health, Smart and Sustainable Cities and Smart Materials**. The existence of strong clusters within life-science, cleantech, ICT, packaging, food and mobile communication is a starting point for development in advanced manufacturing. These are areas managed by the seven cluster organisations located in the region: Medicon Valley, Sustainable Business Hub, Media Evolution, Packbridge, Skåne Food Innovation Network, Mobile Heights, and Resilient Regions. Cross-border and cross-sectoral collaboration is an important part of the strategy of creating open innovation arenas. Strong regional research communities, the planning and building of a world-class European research infrastructure in the region in the form of ESS and MAX IV, as well as the expected future major societal challenges have been decisive for the choice of specialization of Skåne. Cross-border cooperation is a top political priority. The Oresund collaboration is strong and manifested in the life science hub of Medicon Valley, but collaboration is also being strengthened in other areas, such as cleantech, across the border. **Political partnership with Denmark and northern Germany** promotes discussions on joint science and development agendas. Moreover, Region Skåne is working closely with Swedish national authorities to implement the innovation agenda of the Baltic Sea Region Strategy. This has resulted in new co-operations with Finnish regions Tampere (Smart Cities) and Oulu (eHealth).

Strengths exist in the area of advanced **nanomaterials** in Skåne, e.g. due to the location of Maxlab III: synchrotron facility in the region. Furthermore, currently **ESS and MAX IV** are under construction which will further advance the R&D infrastructure in this field. At Lund Technical University, the **ProMaTen centre** for advanced production, at the department of Production and Materials Engineering, is important working with scientific research in materials and production; product optimization with respect to increased productivity; technology transfer in the form of publications, training courses and seminars; technology transfer across and between industries; and assisting enterprises in the use of advanced research infrastructures such as ESS and MAX IV. In January 2013, when Astra Zeneca moved its R&D activities out of Skåne, **Medicon Village** was established at the company's previous facilities. Today, medical technology companies such as Airsonett ORI, biotech companies such as Alligator Bioscience and NeuroVive Pharmaceutical have moved to Medicon Village – there are now more than 20 companies. Many of these companies are located in **Lund Life Science Incubator**, which is located at Medicon Village. In addition to these, some 50 service companies are in place to support developments from idea to commercial product, CRO companies, patent companies, and technology support and business lawyers. Institutions such as the newly established Life Science Foresight Institute and the Swedish Technical Research Institute are also in place. In addition to businesses, ESS was one of the first who moved in. Region Skåne is represented by Regional Cancer Centre South, Epicentre, Primary Scania, Scania Labmedicin - Biobank, Skåne Care Innovator Skåne and ClinTrials Skåne.[2]

Region Skåne is part of the **Vanguard Initiative: New Growth through Smart Specialisation** within the framework of the Industrial Renaissance initiative. The Declaration of the Vanguard Initiative for New Growth through Smart Specialisation was adopted on 8 November 2013 by high political representatives from 10 European regions: Basque Country, Flanders, Lombardia, Malopolska, North Rhine Westphalia, Scotland, Region Skåne, Southeast Netherlands, Tampere Region and Wallonia. The aim of the Vanguard Initiative 'New Growth through Smart Specialisation' is to promote a more effective **coordination of industrial and innovation policies** in Europe in which the regions, their smart specialisation strategies and the bottom-up

[2] http://www.mediconvillage.se/en/news/2013/01/medicon-village-has-grown-more-expected-first-year

industry driven partnerships can play an important role in driving new industrial growth.

The Skåne and Tampere regions that are both part of the Vanguard Initiative are collaborating on the innovation area "**smart and sustainable cities**". The collaboration initiative which has started up recently is based on the corresponding focus of the regions' respective smart specialisation strategies. The starting point is the joint commitment to promote new and emerging sectors of industry and industry-supporting services through open innovation. The aim is to co-operate and where relevant to co-ordinate present and future innovation activities within the area of smart cities and to align regional, national and European funding for joint work. The regions have been active partners in developing the strategic innovation agenda of the Baltic Sea Region Strategy and will work jointly with national authorities to ensure that efforts are aligned. The area of smart and sustainable cities is also prioritised on the European level and future activities involve further European partnerships through funding and engagement in the European Innovation Partnership.

Both regions have leading roles in national ecosystem oriented innovation initiatives. The collaboration therefore includes a number of partners in a triple-helix-setting within both regions. The national agencies responsible for allocating money to these innovation platforms, Finnish national innovation agency TEKES and the equivalent Swedish agency VINNOVA, are active partners in the collaboration and also in developing the **innovation agenda of the Baltic Sea Region Strategy**. The work started in 2013 with an ambitious mapping of collaboration fields and will develop with practical projects in 2014.

Sectors where co-operation will start include sustainable city development, ICT, logistics, media and health and will be targeting horizontal innovation policy-development, in particular:

- innovation ecosystem development for smart and sustainable cities;
- capabilities and models for driving systemic innovation (innovation procurement, platforms and demonstrations);
- collaboration in developing resilient cities and regions, innovation network development and leveraging existing connections between the regions (e.g. Demola open innovation platform and bio bank collaboration), and industry-related projects within the area of smart cities;
- mobility and smart transport demonstrations and working practices (e.g. its applications and public transport);
- big data as a tool for citizen engagement in sustainable development, smart transport and industrial internet (both as research topic and for implementation);
- lighting (research, procurement of innovation and demonstration/implementation of new solutions);
- Sustainable retrofitting of existing buildings /city districts (Dirk Van Melkebeke (Ed.), 2014:23).

There is coordination between advanced manufacturing and education policies in the sense that higher education institutions in many cases are represented in the cluster organisations.

In the field of smart and sustainable cities Resilient Regions Association is one of the cluster organisations involved. According to the CEO of the organisation a key challenge for the future is to become **better at utilising disruptive technologies**. An approach to promote the introduction of disruptive technologies is to establish more test beds, something which is also stressed as being important by Sustainable Business Hub.

3.3 Appraisal of Regional Innovation Policies

In Skåne, the international innovation strategy underlined potential areas where Skåne has the greatest capacity to stimulate innovation through the region's clusters/open innovation arenas. Innovation areas, also called 'white spaces', have been identified as personal health, smart and sustainable cities, and smart materials. Pointing towards these **focus areas for international innovation collaboration**, the key challenges of the need to strengthen internationalisation, productivity and economic growth in the region, and to attract venture capital, are being addressed through the focus on the innovation areas in the innovation strategy. This relates to the challenge for innovation governance facing the region of **creating systematic leadership** in the innovation system. A significant measure in this regard is that the Research and Innovation Committee (FIRS) has decided that Lund University, Malmö University and Region Skåne all allocate human resources to work with each of the challenges relating to the three innovation areas. This facilitates the process towards more systemic leadership of innovation actors and a better use of resources. There are a number of examples of ongoing measures in the region that involve working towards strengthening internationalisation.

One example of a collaboration project in the innovation area of smart and sustainable cities is Öresund Smart City Hub (Interreg Öresund) a Swedish-Danish collaboration project including municipalities, regions, universities and cluster organisations on both sides of Öresund, Sustainable Business Hub in Skåne. During the autumn of 2013 the project developed an innovation platform for street lights and in the spring 2014 cooperation in the areas of mobility (cycling) and water management were initiated. The work with the **innovation platforms** is based on the municipalities' existing challenges and explores the potential to use existing technologies and/or develop new products/solutions. This is one way in which companies are engaged in innovation projects and of the regional organisation strengthening cross-border collaboration. Another example is the involvement of Region Skåne in the Vanguard Initiative: New Growth through Smart Specialisation which involves working towards **more effective coordination of industrial and innovation policies** in Europe in which the regions, their smart specialisation strategies and the bottom-up industry-driven partnerships can play an important role in driving new industrial growth. The Skåne and Tampere regions are collaborating on the innovation area "smart and sustainable cities". VINNOVA and TEKES (the equivalent in Finland) are active partners in the collaboration and also in developing the innovation agenda of the Baltic Sea Region Strategy. Collaboration with the Tampere region has been initiated because the two regions have identified similar focus areas in their strategies for smart and sustainable cities, which include smart lighting, refurbishment of buildings, and mobility.

The lack of venture capital is not something which is directly being addressed in regional policy measures. However, as stated by a respondent at Region Skåne the work with challenge-driven innovation within the three innovation areas/"white spaces" should eventually lead to increased interest from investors. Thus, it is an intended effect of the implementation of the innovation strategy. One of the key recommendations coming out of the OECD territorial review that was carried out for Skåne during 2010-2012 was for the region to promote cross-fertilisation of knowledge and experience. This cross-fertilisation may take place along two axes. First, **trans-cluster cross-fertilisation** should focus policy on supporting experimentation and developing expertise at the interface between regional clusters – such as food, life sciences, and mobile media. The Skåne Food Innovation Network provides a good template for potential initiatives along these lines. In the second place, policies aimed at **trans-border cross-fertilisation** must focus on international exchange of ideas, technologies and business practices. The cross-border Öresund Region hosts 38% of combined Swedish and Danish R&D expenditures, but larger international flows of researchers, workers and students will be necessary if the region is to attain the diversity in skills and experience required of a top technology region.

The OECD territorial review refers to the fact that Skåne has distinguished itself as one of the most innovative regions in the OECD. Skåne has been classed by the OECD as a "knowledge and technology hub", with a highly developed innovation strategy, a significant degree of R&D expenditure, a strong academic presence and substantial reserves of highly trained researchers and employees. It has high educational attainments overall and has, in the past decade, increasingly moved into high-skilled sectors. However, the region is not yet realising its full potential in several areas. **Strong performance in innovation is not on par with employment generation and growth**. A young and diverse labour force has struggled to find jobs appropriately matched to their skills, and the region risks failing to capitalise fully on large-scale investments, such as the MAX IV and ESS facilities for materials research, which are to be among the largest research facilities in Europe.

The **main challenge facing the region is to create value from its substantial innovation assets**. Putting businesses at the centre of the innovation strategy will contribute to a more intense focus on the potential for profitability resulting from innovation initiatives and will help strengthen the links between innovation and entrepreneurship, without which the outcome of Skåne's innovation success are likely to be harvested elsewhere. Increasing the share of private funding of cluster initiatives is a clear way to raise private sector involvement and utilise its investment expertise. The involvement of private sector actors in the development of the regional innovation strategy is a positive step in this direction. And the private sector must remain at the heart of the process, driving not only strategy development but also review, and above all implementation.

Finally, a recommendation from the OECD territorial review was that the innovation strategy should proceed along two tracks. Responsibility for the first, "technology push", track of innovation policy involves continued support to higher education institutions and technology transfer mechanisms, and this will remain primarily the preserve of national policy instruments. Regional policy should focus on a second track, aimed at **enlarging the base and strengthening the impact of regional innovation**. Enlarging the base of innovation will require policies aimed at increasing the number of actors engaged in innovation. This will include escalating the involvement of small and micro enterprises in the innovation process, as well as supporting innovation in the public sector – a crucial priority at a time of population ageing, fiscal tightening and rising costs for key public services – and non-technological innovation. At the same time, regional policy must focus on strengthening the impact of innovation, in terms of both growth and employment generation, by fostering small-firm growth (OECD, 2012:14-16).

Synergies exist between strategies and measures implemented at the regional level and national level strategies. The national strategy for regional growth policy 2014-2020 that is guiding the development of regional development strategies and the Structural Funds programmes has as one of its focus areas to strengthen **international and cross-border collaboration**, which is clearly being pursued through various strategies, measures and cluster organisations in Skåne, not least in the Baltic Sea Region context. Moreover, the draft Structural Funds Programme 2014-2020 for South Sweden will lead to further policy measures in the region to strengthen innovation and SME competitiveness, once it has been approved.

3.4 Good Practice Case: Test Beds and Innovative Public Procurement

The good practice case is centred on activities of the cluster organisation Sustainable Business Hub (SBH) which operates in the field of environmental technology. SBH has had two overall focus areas for its members, one involves developing the home market (testbeds, pilot projects, seminars and conferences), and the other involves increasing export of environmental technology solutions (fairs, study trips, missions, B2B international). In 2012, SBH introduced a third key focus area, innovation and R&D (innovation processes, innovation procurement, and support for firm's applications).

In the following, approaches to which SBH is working to facilitate test beds and innovative public procurement are introduced.

Much of the organisational development at SBH has happened with the help of the ERDF co-financed project "Swedish Model for Clean Growth" which was run during the period 2007-2010. The project owner was Region Skåne, and it was managed by SBH. The purpose of Swedish Model for Clean Growth was to develop an environmentally-targeted innovation system, which would strengthen the competitiveness of cleantech firms.

Within the activities of Swedish Model for Clean Growth targeted at the public sector the **test bed approach** was developed. The idea behind the test bed approach is that municipalities can support firms by testing new products for them before they are brought to the market. At SBH the main purpose was to help the member firms of the organisation get the opportunity to have municipal test installations. In order to clarify the situation and interest of the member firms of SBH a questionnaire was sent to them asking about new products, and obstacles in relation to selling them. Subsequently SBH set up meetings with Heads of business development departments and purchasers at a number of municipalities in Skåne. In connection with this, SBH had a dialogue with the municipalities about the opportunities for them to consider test purchasing of cleantech products, and to consider this as a part of the local business support system. Sustainable Business Hub carried out two so-called test beds, where purchasers from municipalities met representatives from construction and cleantech firms during the project period, and since then the "test bed" concept has been widely used in Skåne also in other areas than cleantech.

One of the test beds involved the firm Knycer AB which was started up in 2006 with the idea of developing a drying cabinet which does not use heat and thereby consumes less energy than other drying cabinets which are commonly used in Sweden. The firm was located at the business incubator Minc. After the initial development stages, in the beginning of 2009, a first version of the drying cabinet was ready to be tested, and Knycer sold their product to Malmö City after a meeting, also with participation from SBH, where the purchasers agreed to provide a test bed for two cabinets at a local kindergarten. Initially, the kindergarten experienced problems with the cabinets, which were not functioning as well as intended. During the first period, the cabinets were sent back to the firm which had developed them and with some adjustments they started functioning as intended. In 2010, the product was launched commercially, and after the first test purchase by Malmö City, it started selling first in other municipalities in Skåne, and then across the country. The main clients today are municipalities. In 2010 Knycer moved from Minc to its own facility based in Skåne. The opportunity to test the practical use of prototype cabinets in an environment in which they were planned to be used was essential in the initial development of the drying cabinet.

A current priority of SBH is to work to promote **innovative public procurement**. Important in this regard, similarly to the work to promote the test bed approach, is for SBH to provide more information and communicate with the relevant public procurers about how innovative public procurement can be approached. In connection with this it is important to also gain the support of the local and regional politicians, i.e. that they will make innovative public procurement a priority. In order to promote innovative public procurement SBH organises meetings bringing together relevant triple helix actors to discuss needs and requirements in advance of public institutions' plans to issue tenders. The intention is to raise the quality of the innovative public procurement process by beforehand having a discussion about the complexities of the environmental technology solutions needed.

Cross-border cooperation between SBH and CLEAN (previously Copenhagen Cleantech Cluster) has been strengthened through the Interreg project Oresund Smart City Hub (2012-06-01 - 2014-07-01). The project has tested models on how public demand from authorities (local/regional) can meet the ideas and solutions offered by

the companies and knowledge institutions in the Öresund region. The overall aim of the project is to create a permanent cross-border innovation platform enabling innovation partnerships with a focus on green growth, cleantech and smart city solutions (Oresundskomiteen, 2012). The two cluster organisations have learned that they have different approaches to promoting innovative public procurement. While SBH has a more general discussion with stakeholders about the challenges and solutions needed, at CLEAN the challenges are identified after interviews/discussions with selected interlocutors. In Denmark they thereby also identify the specific "problem" to be solved quicker, while it takes longer in Skåne, but also engages more stakeholders. Currently, a procurement process is under way in the capital region concerning water sensors, where the “problem owners” are the municipally-owned water companies. As part of the project discussions have been taking place with the water companies, and SBH is working to include Swedish actors in the process. Cooperation between SBH and CLEAN is planned to continue.

3.5 Possible Future Orientations and Opportunities

The future opportunities for South Sweden’s innovation policy highlights that increased international collaboration and investments in research infrastructure are crucial.

Previous studies highlight the following opportunities for the region’s future development:

Strengthen international collaboration

Policies aimed at trans-border cross-fertilisation must focus on international exchange of ideas, technologies and business practices. In the future larger international flows of researchers, workers and students will be necessary if the region is to attain the diversity in skills and experience required of a top technology region (OECD, 2012: 15). The challenges related to strengthening the internationalisation of the region could be addressed through collaboration initiatives in the region’s areas of strengths. Moreover, the challenge of weakened productivity and economic growth is addressed.

ESS and MAX IV

The Oresund accounts for a large share of total Swedish and Danish R&D. 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 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 (Nauwelaers, C., K. Maguire and G. Ajmone Marsan, 2013).

Similarly, regional stakeholders highlight the following opportunities for the region’s future development:

Strengthen exports and internationalisation

The region has a location advantage and EU enlargement and future economies has changed the image of southern Sweden's development potential in terms of exports and internationalisation, with close connections to the Southern Baltic region, Eastern Europe and the Oresund region. The Fehmarn Belt link provides increased opportunities to tie the region together with Hamburg/North Germany.

In South Sweden there is a real concentration and specialisation in areas such as ICT, transport/ logistics, life sciences, food, etc. There is also a significant concentration in environmental technologies, with a focus on thermal technology, water purification, ventilation, waste recovery and system solutions. Within most of the areas of strength there are cluster initiatives. There is an ongoing effort to strengthen the innovation system and the regional leadership and to strengthen innovation in the "white spaces" between innovation areas, i.e. new innovation areas that can be developed in the intersections between different industries and areas of knowledge. 'White spaces' that have been identified in Skåne are personal health, smart and sustainable cities, and smart materials.

Opportunities related to large scale research infrastructure investments

Investments are high in both public and private R&D as a share of GDP in Skåne. In coming years, multi-billion investments will be made in research infrastructure in the region through the establishment of the research facilities ESS and MAX IV, which increases the innovation capacity and will attract workers and researchers to the region. The region has an extensive collaboration between local, regional, national and international actors in order to strengthen the development and proliferation effects of the research facilities (Skåne-Blekinge, 2014).

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Appendix B Stakeholders Consulted

1. Maria Lindbom, Strategist, Region Skåne (date of interview 15 05 2014).
2. Magnus Qvant, CEO, Resilient Regions Association (date of interview 15 05 2014).
3. Douglas Almquist, Administrative Director, Sustainable Business Hub (date of interview 15 05 2014).
4. Björn Lagnevik, Business Developer, Region Skåne (date of interview 09 09 2014)
5. Sara Persson, Business developer EU Programmes, Region Skåne (email correspondence June 2014).
6. Elisabeth Landén, Project Coordinatior, Region Blekinge (email correspondence June 2014).

Appendix C Statistical Data

	SE22 Sydsverige	Country	EU27	Year	Source	Performance relative to	Performance relative to
	SE22	SE	EU27			EU27	SE
ECONOMIC INDICATORS							
GDP per capita (Euros)	34800	40800	25200	2011	Eurostat	138,1	85,3
Long term unemployment rate	2,00	1,40	5,10	2013	Eurostat	255,0	70,0
Labour productivity growth (%)	1,96	2,63	2,19	2001-2011	Eurostat	89,6	74,5
RCI 2013	0,73	0,44	0,00	2013	JRC	148,7	114,9
Share of employment in agriculture	0,02	0,02	0,05	2011	Eurostat	40,2	100,4
Share of employment in industry (including construction)	0,19	0,20	0,25	2011	Eurostat	75,4	95,1
Share of employment in business	0,29	0,28	0,30	2011	Eurostat	95,9	103,3
Share of employment in public sector	0,33	0,32	0,25	2011	Eurostat	130,8	100,6
Share of employment in S&T	0,12	0,12	0,09	2011	Eurostat	136,8	98,5
Specialisation in number of local units by NACE	0,27	0,30	0,36	2012	ISI-Eurostat	74,5	89,5
Employment in 2 and 3 star clusters (strong clusters)		21,53	31,39	2010	MERIT-CO	100,0	100,0
WIDER FRAMEWORK CONDITIONS							
Institutions	83,00	83,00	43,55	2010	RCI	190,6	100,0
Macroeconomic stability	100,00	100,00	58,20	2010	RCI	171,8	100,0
Infrastructure	85,00	78,25	74,64	2010	RCI	113,9	108,6
Higher education/ Training and Lifelong Learning	91,00	81,63	70,07	2010	RCI	129,9	111,5
Labour market efficiency	66,00	74,63	55,03	2010	RCI	119,9	88,4
Market size	52,00	40,88	50,27	2010	RCI	103,4	127,2
Business sophistication	40,00	39,25	43,16	2010	RCI	92,7	101,9
It is important to think new ideas and being creative	0,50	0,49	0,54	2010	MERIT-ESS	93,3	103,0

SE22 Sydsverige		Country	EU27	Year	Source	Performance relative to	Performance relative to
RESEARCH & TECHNOLOGY INDICATORS							
Employees with ISCED 5-8 (% all employees, ISCED 2011)	41,0	39,9	33,5	2013	Eurostat	122,3	102,8
Business R&D (% GDP)	3,29	2,33	1,29	2011	Eurostat	255,0	141,2
Government R&D (% GDP)	0,12	0,15	0,25	2011	Eurostat	48,0	80,0
Higher Education R&D (% GDP)	1,09	0,90	0,48	2011	Eurostat	227,1	121,1
EPO patent applications (per mln population)	352,48	275,16	110,48	2009	Eurostat	319,0	128,1
Employment in medium-high & high-tech manufacturing (% total employment)	3,90	4,50	5,60	2012	Eurostat	69,6	86,7
Employment in knowledge-intensive services (% total employment)	50,30	51,50	39,00	2012	Eurostat	129,0	97,7
Total R&D personnel (% active population) - all sectors	2,40	2,49	1,66	2011	Eurostat	144,6	96,4
Structural funds on business innovations (Euros per mln population)	22,31	76,65	77,74	2007-2013	Eurostat	28,7	29,1
Structural funds on core RTDI (Euros per mln population)	6,33	49,44	63,01	2007-2013	Eurostat	10,0	12,8
Change in Employment in medium-high & high-tech manufacturing (%-point)	-0,57	-0,95	-0,38	2008-2012	Eurostat	95,4	110,0
Share of innovators receiving public financial support (SMEs, CIS 2010)			9,95	2010	MERIT-CIS	100,0	100,0
BUSINESS INNOVATION INDICATORS							
Technological (product or process) innovators (% of all SMEs)	45,93	47,38	37,85	2010	MERIT-CIS	121,3	96,9
Non-technological (marketing or organisational) innovators (% of all SMEs)	40,86	42,15	39,83	2010	MERIT-CIS	102,6	96,9
Innovative SMEs collaborating with others (% of all SMEs)	16,94	17,47	8,89	2010	MERIT-CIS	190,5	96,9
SMEs innovating in-house (% of all SMEs)	17,81	17,90	22,63	2010	MERIT-CIS	78,7	99,5
Share of turnover of newly introduced innovations new to the market	4,03	4,22	4,67	2010	MERIT-CIS	86,1	95,4
Share of turnover of newly introduced innovations new to the firm	3,86	4,15	8,71	2010	MERIT-CIS	44,4	93,2

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