PP06 Region Skåne

**Revised project Report**

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# Revised: Functional review of Blue Growth RIS3 steering process and operational structure. Analysis of Region Skåne.

## Introduction

Region Skåne is responsible for healthcare and public transport, business development, culture, infrastructure, social planning and environmental and climate-related issues in Skåne. With 32,000 employees, Region Skåne is one of Sweden's biggest employers. The overarching vision for Region Skåne is "World Class Quality of Life". Together with the 33 municipalities in Skåne, institutes of higher education, organisations and trade and industry, Region Skåne operates on a broad front to create health, development and sustainable growth in Skåne.
Skåne's geographical location and proximity to Copenhagen has naturally led to intensive collaboration across the Öresund, and the labour markets in Skåne and in greater Copenhagen are becoming increasingly integrated.
2011 Region Skåne adopted its International Innovation Strategy for Skåne. At the same time the principles of Smart Specialisation were taken on board and the former rather broad cluster approach was channelled and concentrated in three strategic priority areas of strength. They do not explicitly include blue growth itself, they are however - to different degree - of cross-sectoral relevance for all blue growth and vice versa. The ambition is to mobilize the potential for economic transformation with a policy that succeeds in facilitating the (unexpected) innovation niches that lie at the interface between areas of knowledge and clusters, with the view of developing new markets around new combinations.

During 2016 a comprehensive evaluation of the Skåne RIS3 system, it's functions and the innovations strategy has taken place.

# 1. Analysis of regional context/analysing the innovation potential

## The general context

Skåne has distinguished itself as one of the most innovative regions in Europe. The region has a highly developed innovation strategy, a significant degree of R&D expenditure (nearly 5 % of GDP), a movement into high-skilled sectors, a strong academic presence and a high proportion of tertiary-educated labour. Skåne also has a strategic location in northern Europe, close to the European continent, with universities that make a substantial contribution to the whole nation´s graduate output.

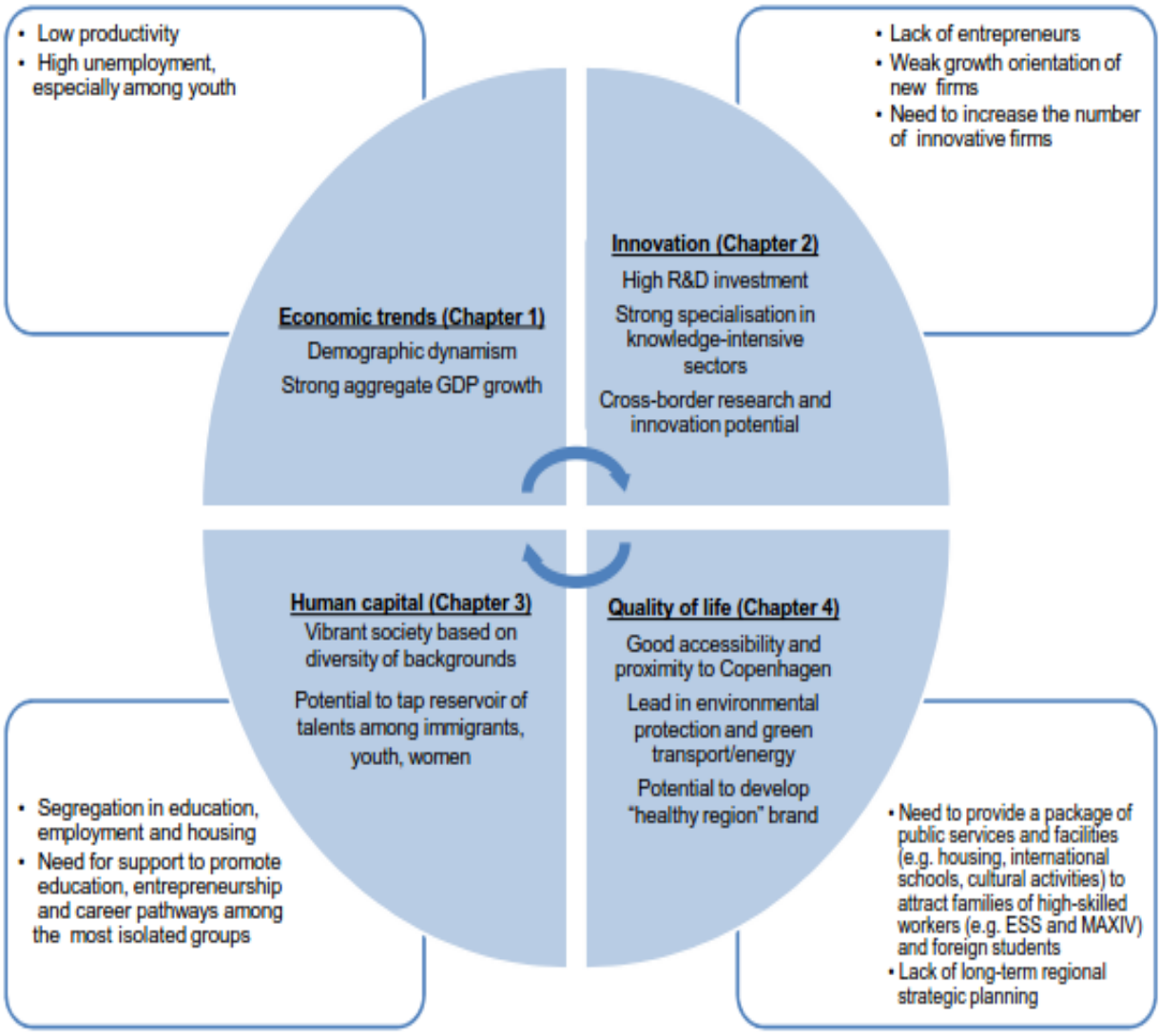
Skåne is also in a strong position to remain at the forefront of sustainable energy use and is leading the way in green public transport. Biogas production, distribution and consumption has developed during the last years. Furthermore, the region´s clean-tech cluster is strong.

However Skåne also has many challenges. The main challenge facing the region is to create value from its substantial innovation assets. Strong performance in innovation is not on par with employment generation and growth. Aggregate growth is weak 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 among the largest research facilities in Europe. Despite universities and highly educated labour, a sizeable number of individuals have only elementary level education, 16 % in Skåne compared to 13 % in Stockholm. Skåne's growth has been lagging behind other comparable Swedish regions. Growth per capita is lagging even more due to high population inflow and Skåne's share of GRP is 11.2 % with a negative trend, while Skåne's share of population is 13.2 % (1.3 million) and increasing. Employment in Skåne is the lowest of all regions in Sweden, 74.6 % compared to an average of 78 % in all regions. The main reason is the high percentage of immigrants without the skills needed on the labour market.

Skåne has a long history of maritime industry. However, the loss of some heavy industrial players in the early 80ies, led to focus on new sectors during the following decades. Never the less, many spin-outs from the former industry are still thriving, many of these companies being involved in different (blue, non-blue) cross-cutting, value chains. This fact is one of the reasons for Region Skåne's engagement in the EU-project Smart Blue Regions.

The figure below summarized Skåne´s strengths and challenges according to OECD (2012)[1].

Figure 0.1. **Summary of main strengths and challenges addressed in the *OECD Territorial Review of Skåne***




OECD (2012) summarized the strengths and weaknesses of Skåne's regional innovation system as follows:

[1] The original figure in the OECD report says "Strong aggregate GDP growth" – that must be wrong.

| Strengths | Weaknesses |
|---|---|
| Strong academic research | Lack of government research institutes |
| High R&D investments, large pool of researchers | Small number of R&D-intensive firms |
| Good general qualification of population/lifelong learning | Too large a share of low-educated people |
| Strong specialisation in knowledge-intensive services | Innovation in the services sector under-exploited |
| Matching specialisation in public research and industry, in medical science, natural and environmental technology, ICT | Lack of entrepreneurs and entrepreneurship |
| Presence of leading large companies | New firms remain small |
| Cross-border openness: centrality in periphery | Short value chains, little production in the region |
| | Intra-regional imbalances in innovation |
| | Limited inflow of foreign students and researchers |

*Source: OECD Territorial Reviews Skåne, Sweden 2012*

According to the OECD Territorial Reviews Skåne (Sweden 2012) is a top research and technology hub. Generally Skåne has an extended public research and higher education infrastructure. It hosts four higher education institutions (HEI), with complementary roles and clear specialization. Focus is on medicine, technical science and natural science (few maritime issues).

- Skåne hosts the largest Nordic university, the University of Lund, with 47 000 students and 5 500 employees, with a high profile in medicine and pharmacology and globally sustainable development, as well as a broad palette of faculties of technologies with world-renowned research teams. However, it has no specific maritime faculty.
- Swedish University of Agricultural Sciences,
- Malmö University, with 23 000 students,
- Kristianstad University College with 10 000 students.

This large endowment in research and higher education represents an important asset for knowledge-based development in Skåne. However, Skåne has few industrial research institutes (e.g. RISE Research Institutes of Sweden, former SP), which in many countries are more natural partners for technology development in business.

In addition to this good HEI endowment, Skåne is becoming home to large infrastructures of international importance in materials science: The Max IV Lab, started 2015 and the European Spallation Source (ESS) has a planned start 2019, The Max Lab is a national Swedish laboratory studying synchrotron radiation and its fourth generation – the most powerful synchrotron radiation facility in the world - has been built in Lund. The ESS, a much larger investment, is a top international research facility where neutrons are used to screen a wide range of materials from proteins and plastics to medicines and molecules at the atomic level. These two major infrastructures of international importance will attract a large number of

international researchers to conduct advanced material research, with applications in a broad range of fields: biomedicine, medicine, material technology, nanotechnology, energy research, geology and environmental science.

These research infrastructures are also of importance for innovations within the **blue** field and thus a good example of the broad crosscutting synergies between blue and other disciplines/value chains.

Like many other science and technology hubs, Skåne depends on a few large companies for private R&D activities. The concentration of patents in Southern Sweden in electronic communications technology and in medical science was linked to the presence of ST-Ericsson, Sony-Ericsson and Astra Zeneca, with important research activities. Now little is left of these companies in Skåne, a situation that is a challenge for the region. On the other hand, the Swedish defense industry has its center for subsea research and technology in Skåne.

The disappearance of key players has underlined the less favorable position of Skåne with respect to value creation from innovation. As OECD notes in the 2012 report, in spite of important R&D and patenting activities in Skåne, strong HEI and public research infrastructure, the spillovers from these input activities are not likely to be captured in the region. Globalization of value chains, deficient entrepreneur-ships and weak SME innovation explain why these strong assets are not sufficient to significantly contribute to growth and full employment in the region:

- The internationalization of production functions of large firms has gone faster than the internationalization of R&D function: hence the return on private R&D investments by large firms located in Skåne are mostly captured abroad.

- Economic exploitation of public R&D in the form of academic spin-offs take place, but the number of those firms remains limited. Weak entrepreneurship also explains the low number of new technology-based firm's creation (in OECD comparison). When they are created these firms tend to remain small. Hence the economic returns on R&D are not easily retained locally either.

- Indicators used to characterize the "innovation power" of a regional innovation system are weak proxies of the innovation phenomenon because they miss the important share of innovations that are not science- or technology-driven, but never-the-less generate new business and employment. As in many other EU-regions, too few SMEs in traditional sectors in Skåne innovate, SMEs are insufficiently open to external sources of knowledge and face a variety of innovation barriers (many of these not linked to technology).

Like in many of the most advanced OECD regions with high labour cost, value chains in Skåne are in general quite short. The regional economy is dominated by large multi-national companies, which increasingly carry out production in lower labour cost countries.

OECD stated 2012 that the need to reinforce the diffusion power of Skåne's regional innovation system provides a rationale for a two-track innovation policy. A

technology-push answer is insufficient and needs to be completed by a demand-driven response. The objective for policy should not be to establish full value chains within the region through local research exploitation, since this is unrealistic for a Swedish region in globalized world. OECD underlines the need to target business innovation rather than technology transfer and research exploitation, with the aim to enlarge the base of innovative firms. This is a key challenge for policy since it departs from the traditional linear approach for innovation policy. This demand-driven approach embraces a much broader view of innovation:

- It targets both new and existing firms;
- It considers all sectors, including those so-called low tech sectors (which often innovate through smart use of existing technologies);
- It spreads to all of the regions corners;
- It targets all types of innovation, technological and non-technological, in industry and services;
- It covers innovation in the public sector too.

OECD identifies four areas for improvement necessary for the efficient implementation of the recently adopted "smart specialization" strategy:

- outcome-driven policy,
- effective cluster policies,
- reinforcing international dimensions of innovation and
- putting business to the center of the strategy.

As we will see below, these needs are covered by the Skåne International Innovation Strategy for Skåne. They provide the basis for the currently ongoing work with clusters and smart specialization.

However, there are still considerable gaps in the implementation. We will come back this below.

The **"International Innovation Strategy for Skåne" was** adopted 2011 and consists of three parts. The strategy includes a vision, *Europe's most innovative region by 2020*, and it describes what is needed to realise this vision, including six sub-strategies. A number of other documents describe the background in the form of more in-depth analyses, evaluations and background reports. The last part describes the ownership for the process leading to an action plan. The strategy reflects the interplay between the regional, national and international dimensions.

**Six overall priority areas of intervention – sub-strategies -** have been identified to strengthen Skåne's innovation capacity. The priorities/substrategies are dependent on each other to be fully effective.

**1. Develop systemic leadership (From "I-mode" to "we-mode")**

To strengthen innovation capacity in Skåne, the systemic leadership needs to be strengthened. This priority was notably addressed by the creation of two advisory bodies, Skåne Research and Innovation Council (FIRS) and the Sounding Board for Innovation in Skåne (SIS), a cooperative forum for innovativeness in Skåne.

**2. Broaden the sense of what innovation is - include more people (From high tech to broad tech)**

A strong innovation capacity requires a broader view of innovation, an inclusive approach and the ability to engage many parties and resources that can contribute and act to promote shared growth. New working methods and new views of innovation need to be encouraged. These could entail new approaches to social innovations, for example, or creative industries.

**3. Streamlining the support structure for innovation (No wrong door in)**

By strengthening the shared whole, promoting openness and making the total resources visible, there is potential to streamline and strengthen the roles within the support structure for innovation. Financing, control and monitoring should be developed where necessary. Entrepreneurs should be provided with the support and the conditions they need in order to succeed. This is a key area and a vital part of the continuing work on an action plan.

**4. Developing new innovative areas and creative environments**

Strengthening the ability to identify and develop new innovation areas is one of the success factors for innovation of whole systems and increased innovation capacity in Skåne. There is great potential for synergy in the intersections between the region's different strengths, and also between different industries and areas of knowledge. Not at least the **blue growth** field.

To generate growth in new innovation areas, by exploiting unexpected opportunities in the mentioned intersections there is a need for new ways of working and new skills..

**5. Developing international cooperation**

To generate growth in the globalised marketplace, institutes of technology and universities, companies and even public bodies need to develop ways of strengthening their international competitiveness. It is essential to gain access to international expertise to create a unique innovative capability. Knowledge production in the region must therefore be implemented together with the best in the world. The open innovation arenas should be stimulated to develop more strategic alliances and strengthen international links. Different forms of collaboration with other regions should be developed.

**6. Strengthening innovation capacity in existing industry and public sector activities**

Sweden has traditionally experienced close cooperation between certain parts of industry and the academic world, in the pharmaceutical and automotive industries and the ICT sector, for example. Small and medium-sized enterprises need more active cooperation with institutes of technology to strengthen their innovation capacity. There has been a shortage of effective ways of working together with companies. Strong relationships and new methods that focus on strengthening innovation capacity within our existing industry, and cooperation between large and small companies play a crucial role. Also the public sector has a major role to play in creating the conditions for innovation within its own activities.

Innovations are not only generated from new knowledge; they often represent a new application of existing knowledge. New combinations of existing knowledge and skills need to be promoted. This is especially true between large, medium-sized and small enterprises. Furthermore, there is a need to improve skills in sales and marketing, particularly in small and medium-sized enterprises.

As the strategy was adopted, also the concept of Smart Specialization started to become integrated in the Skåne innovation work:

**Smart Specialization in Skåne – S3 areas**

Within the framework of Smart Specialization Region Skåne supports the innovation climate in **three strategic priority innovation areas** that are considered to be well placed to create successful innovations:

- **Smart Materials** attempt to exploit the global growth potential when the facilities ESS and MAX IV[2] are established in Skåne including the research that is carried out at Lund and Malmö universities. Ambitions are that the new facilities will be integrated into the region's overall development and launch Skåne as one of the world's leading locations for research, development and innovation. All this combined with attractive and excellent living conditions, and with great international luminosity.

- **Smart Sustainable Cities** is about knowledge, products, services and systems at the intersection between a broad range of technological areas, between technology and users, co-operation and governance models, stakeholder engagement, financing and business models that solves cities' sustainable challenges. Focus innovation activities as:

  - retrofit and regeneration for sustainability in existing buildings and city districts
  - smart collaboration and financing models
  - smart lightning
  - smart mobility
  - smart energy/heating/cooling

  Executed through demonstration projects in Malmö and Lund.

- **Personalized Health** works under the assumption that several of our major global challenges are about personal health. The primary purpose of innovation at personalized health is through regional, national and international cooperation to create conditions for the development of innovative and globally scalable solutions for good health, quality of life and personal involvement in the future of health care. The initiatives in the field of innovation will complement and support the development of both health systems as biomedical research and innovation.

[2] See page 5

Each of the three areas of innovation in the innovation strategy have their own strategic group. The strategic groups meet regularly and they are the driving force for the strategic implementation in each area. For each area a position paper has been adopted by the Research and Innovation Council in Skåne (FIRS). The position paper includes concrete actions for each priority area during the upcoming years.

**Blue Growth** is not a focal area by itself in Skåne but of cross-sectoral relevance for all the three priorities and vice versa. The key focal areas above, will bring the potential for economic transformation if the policy succeeds in facilitating the (unexpected) innovation niches that lie at the **interface between existing clusters**, with the view of developing new markets around new combinations.

**What has changed (or not changed) during the period 2009 – 2016**

During 2016 an analysis of Skåne's capability to innovation in comparison with 10 other leading innovation regions were performed (see also M&E in part 7). Important outcomes:

- Quality of top university on level with other regions
- Many Skåne enterprises apply for patent for their ideas
- High and increasing public R&D investments
- High but decreasing private R&D investments
- Strong and growing knowledge intensive service sector
- Small but growing high technology industry – still few women
- Low GRP in comparison with other regions
- The system has moved towards more focus on the entrepreneur and more professional advisors
- The system is better prepared for supporting innovation of services and social innovations
- Lacking basic financing and project making still a challenge for smaller players
- There is still a lot to do for a comprehensive external analysis, market research and business intelligence
- There are now more arenas for cooperation, but models for cooperation are still lacking
- Still need of better coordination between the actors in the supporting system
- One of the big challenges is still monitoring and data for evaluation
- The region is still strong concerning knowledge building
- The RIS3/innovation strategy is still primarily an instrument in the hands of Region Skåne. A formal plan for coordinated action is still needed.

## Blue Growth - Maritime Skåne, history and potentials for the future

The dominating maritime economic activities are today

- Building and repair of merchant vessels
- Building, repair and maintenance of floating structures
- Equipment suppliers for the shipping industry
- Short sea shipping
- Passengers ferry services

However, there are a lot of Skåne companies actually involved in the blue sectors, who have relations with different value chains, but never the less many of them would hardly identify themselves as belonging to the “blue” sector. Thus the blue sectors and blue activities are not always clear visible.

### Shipyards

Skåne has a long history of maritime industry, specifically related to the Kockum shipyard in Malmö, one of the world biggest shipyards in the 1950-70ies with about 5500 employed, during some years even the biggest regarding tonnage delivered. However, this huge shipbuilding industry broke down in the early 80ies, as it was not able to compete with Asian players with lower man costs. Another large shipyard nearby was Öresundsvarvet in Landskrona until it layed off all 3500 employees in 1975.

The breakdown of the shipyards was traumatic and since that time Skåne has not identified itself with maritime industry, and less and less with industry and manufacturing at all. Focus of attention has shifted towards the upcoming sectors of “the post-industrial society”: media, communication and mobile services, life sciences, environmental engineering and packaging. In the same time specialisation in construction and trade, hospitality and transports has remained high in Skåne.

However, the former industry left a huge impact with spin-outs, patents, competence, will to investments, infrastructures. The global company Alfa Laval with a large maritime portfolio and with its HQ in Skåne still guarantees a large number of businesses for suppliers and end users. Thus, in reality the blue industry continued to flourish, more and more in the shape of a great palette of smaller companies related to shipping. So it comes that today the Skåne industry offers a wide range of products and services within that field, ranging from safety valves to ballast water treatment systems, from load optimisation systems to communications and design, from monitoring systems to scrubbers and more. A great number of Skåne based companies related to the “blue” maritime industry offers products and services that contribute to reducing the environmental and climate impact of shipping.

The biggest repair yards in northern Europe is also located in Skåne, using the location and facilities of the former Öresundsvarvet. Numerous ship owners use this ISO14000 certified shipyard for carrying out the regular inspections, repairs and upgrades. The industry works on the global market and is successful due to its quality and flexibility, as well as responsiveness to customers’ needs.

Another part of the industry is involved in the value chains for renewable energy, specifically wind energy. Within this area, Skåne offers a wide range of products and services, from production of wind towers to the tiniest components used in power plants.

**Shipping/ports**

This sector, consisting of shipping companies and ports is of great importance in Skåne. The high energy efficiency of maritime transports is very much in line with energy and climate policy of Region Skåne. However, road transports are today dominating the cargo flows in and trough the region, causing traffic jam and emissions. Thus there is a great potential for short sea shipping to take over considerable amounts of goods from land based transports, a fact that was confirmed by a current study.

Region Skåne is working together in projects with the academy (Lund University), industry and SMTF to develop fossil free solutions for shipping (methanol, methane, hydrogen, power).

There are six highly specialized ports in Skåne, two of them are EU TEN-T traffic network core ports (Copenhagen-Malmö port, Trelleborg). The Skåne ports have large share of the Swedish maritime transports, 45 % of the ships goes to a Skåne port.

**Equipment and services**

One of the global leading maritime technological companies is located in Skåne: Alfa Laval in Lund. There are also several other strong players in this field, as Chris-Marine, Kockumation Group, Scanunit and LK Valves, as well as companies manufacturing port equipments as Cargotec and Kone Cranes.

Several companies specialized on interior ship design are located in the region, among the world leading Tillberg Design.

**Fishery**

For centuries the fishery sector has been of great importance for several coastal Skåne villages but is now declining fast because of disastrous situation considering fish stocks in the surrounding seas.

**Aquaculture**

When it comes to aquaculture, there is a small but growing industry, reaching from algae cultivation to Recirculating Aquaculture Systems (RAS) in symbiosis with other food production systems. There are also test facilities for mussel farming. This sector will most probably grow fast, reflecting the consequences of decreasing fishery and a high demand for fish among consumers.

**Blue energy**

The Baltic Sea has a considerable potential for production of offshore wind energy at significant lower costs compared to North Sea conditions. The Baltic Sea offers lower waves, less salt and other climate advantages as well as the possibility to be built nearer shore. It offers excellent conditions to test and demonstrate HVDC grids within a wind farm and further to shore in cross-border demonstration projects.

For the time being low energy prizes and the lack of long term rules (taxes, subsidies etc.) delay the development of BS wind energy. The political ambitions in EU/Sweden/Skåne considering the phasing out of fossil based energy, however indicates that offshore wind energy in the Baltic Sea will play a big role in the future. There several sites with good wind conditions along the Swedish south coast.

**Blue academy**

The World Maritime University (WMU) is placed in Malmö. It is a postgraduate maritime university founded by the International Maritime Organization (IMO), a specialized agency of the United Nations. Established by an IMO Assembly Resolution in 1983, the aim of WMU is to further enhance the objectives and goals of IMO and IMO member states around the world through education, research, and capacity building to ensure safe, secure, and efficient shipping on clean oceans. WMU is an organization by and for the international maritime community.

Lund University is one of the leading research players concerning combustion engines, with high relevance for new fuels, non-fossil fuels, fuel efficiency and environmental technology development related to shipping.

## 2. Setting out the RIS3 process - functional processes on the public side.

**General aspects**

Region Skåne has, according to the Swedish legislation on regional development, responsibility and a permanent mandate from the Swedish state to coordinate regional development issues and to head the work to draw up the regional development strategy. Skåne is one of few exemptions in Sweden where the regional government has been authorised competence in regional development. The national government agencies (county administrative boards), initiate strategies and operational work in other regions regarding regional development.

The regional development strategy provides the framework and the direction for the development work in Skåne, it has, however, to be translated into actions by specific action plans. In the **blue** field such an action plan was adopted in 2015. It consisted of two parts:

a) **Climate change challenge**: sea level rises, coastal erosion, flooding, and climate change adaptions;

b) **Actions for the Maritime Sector**: Taking advantage of the potential in **the blue growth** sector in Skåne, both regarding environmental aspects and business development;

The action plan concentrates on actions considering mapping activities, network building, markets, innovations and skills/competence and is built upon the cooperation Region Skåne with Swedish Maritime Technological Forum, SMTF (see below). The plan focus on the shipping sector and its subcontractors/suppliers, offshore wind energy, leisure boating and ports. The Blue growth concept is particularly highlighted in its international context and with its link to smart specialisation, as well as the synergies with Skåne strategic innovation areas of strength.

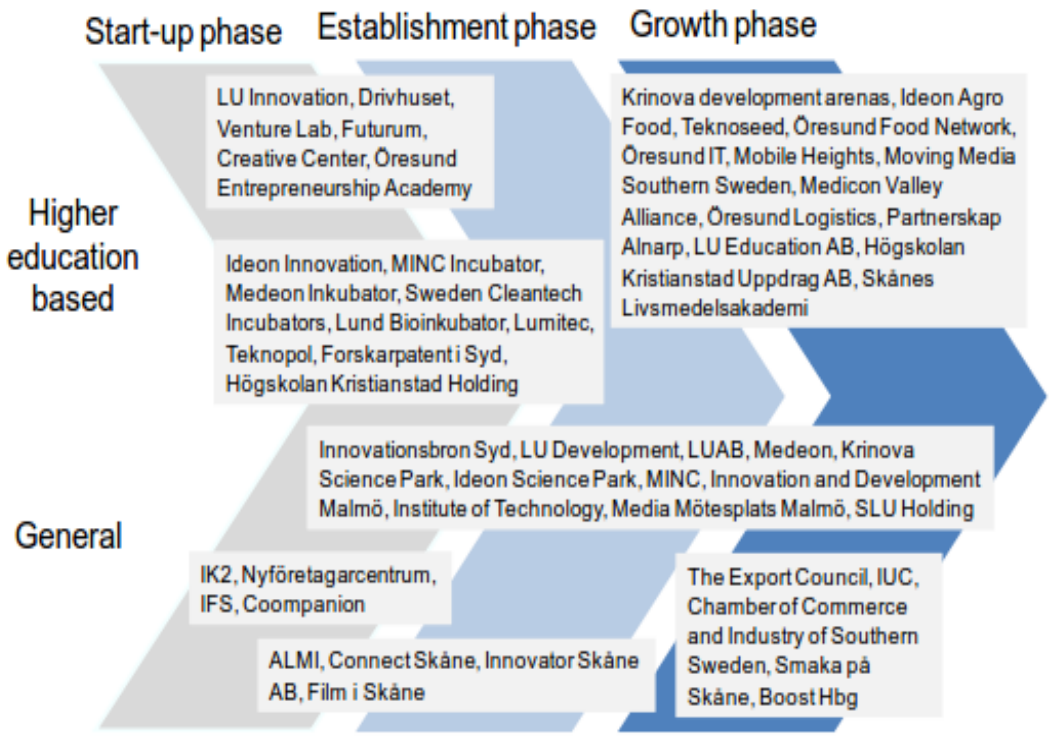
In the last few years, a lot of work has been done in Skåne to develop the innovation system, together with the stakeholders in the region, including Sweden's innovation agency, Vinnova and the Swedish Agency for Economic and Regional Growth (Tillväxtverket).

There are many – often public financed – actors, having a supporting role within the regional innovation system. The system is not always easy to overview, however there is a considerable amount of diversity and specialisation. The players work with different target groups, in different geographical parts of the region and offer different kind of services specifically for different phases and situations related to the development of businesses. However there are also some overlaps that should be dealt with.

The actors belong to the following categories:

- Regional development responsible system leader = Region Skåne
- Clusters
- Science Park & Incubators
- Meeting places, network, arenas for cooperation
- Business/company development & capital
- Marketing and & attraction
- Academy & Research actors

The innovation support system has been illustrated as follows (the illustration is not fully up to date):




*Source: Region Skåne (2009), "Skåne's innovation capacity: a situation analysis", Region Skåne.*

Since the above illustration was made a lot have changed, for example Clin Trials, Innovator Skåne and Teknopol has merged into one organisation, Innovation Skåne AB, described below. 2012 Swedish Maritime Technological Forum (SMTF) became an important Blue Growth regional player, as well as Krinova Incubator Science Park (some blue links and associated partner in this project), with its focus on food (e.g. aquaculture), environment (e.g. water innovations) and health.

Krinova Incubator Science Park is today a strong innovation environment, created by the Municipality of Kristianstad, Kristianstad University and the regional business sector.

Studies show that relatively substantial resources are invested in the early stages of innovation to pick up ideas that have the potential to become new enterprises, but that the support structure for businesses is weak. The structure for picking up service innovations is poor, access to risk capital is too limited and the need for a systematic external world and market analysis is great, and not satisfied. The analysis also shows that better coordination of the efforts of the various players is needed, along with increased internationalisation of the supporting bodies. The documents of the innovation strategy are owned by the Skåne Research and Innovation Council (FIRS) and Sounding Board 2.0 for Innovation in Skåne. These actors are a strategic council and a forum in which universities, institutes of technology, municipalities, arenas, industry, the public sector and student representatives can work together to support innovation and create the conditions for growth. FIRS and Sounding Board 2.0 are examples of governance bodies and are described below. The aim is to ensure acceptance of the strategy by the diversity

of actors in the regional innovation system. Neither of the two bodies have decision-making power.

**Governance of the Skåne Innovation Strategy**

The **Research and Innovation Council in Skåne (FIRS)** includes top leaders of the universities, regional political actors, municipalities, regional authorities, as well as businesses and industry. Besides its strategic mandate, FIRS is a network of leaders who can be brought together quickly to act jointly whenever a need arises. It works as task force for crises and changes, as well as a long-term strategic enabler. For example, during the restructuring that took place after AstraZeneca closed its site in Lund (which led to a new Triple Helix Science Park: Medicon Village) or when Sony Mobile carried through a major downsizing (which among other things led to many new start-ups through joint action). FIRS meets four times a year and the agenda is prepared by a secretariat with partners from Region Skåne and Lund University. In June 2016 FIRS backed three position papers for the three priority innovation areas in Skåne.

**Soundingboard 2.0** has a similar role but is composed of people at a more operational level and the representation of enterprises is larger. It is a discussion forum and meeting place for mobilizing, joining forces and also coordinating innovation supporting players. Here are joint regional efforts put together to address the challenges the region faces. It is also about taking advantage of all the opportunities available. The work of the Soundingboard 2.0 is change and action-oriented. Prior to initiating implementation, all relevant players in the Skåne's innovation and entrepreneurship system are invited to discuss how increased participation and a more visible cooperation could lead to creation of more growth and more jobs in Skåne. Within Soundingboard 2.0 recurring meeting places are created throughout the region and held on a regular basis.

In 2016, the partners behind FIRS started a process to accelerate the implementation of the innovation strategy to be able to deliver on the vision: *Europe's most innovative region by 2020*. The stakeholders in FIRS, are now working with strategic plans on how to accelerate the development within each of the three S3 areas in the coming four years 2016-2020, thereby developing the role of the cluster initiatives as open innovation arenas involving the end-users. The regional cluster development programme will provide the guiding principles for the upcoming period in implementation of smart specialisation strategies. We will come back to this in (part 6. Defining an action plan with a coherent policy mix).

**Innovation Skåne,** is owned by Region Skåne and provides professional business guidance across all sectors to entrepreneurs, innovators, researchers or anyone with great ideas and the ambition to build a strong, internationally minded enterprise. Innovation Skåne has a track record with startups, projects and industry partnerships which makes the organization a leader in Sweden's innovation system, who actively pioneers new methods to provide the best support to emerging enterprises.

**Competence Collaboration Skåne** (acronym in Swedish: KOSS): The national government tasked in 2010 each region to establish a regional competence

platform. KOSS was subsequently formed in 2012 in Region Skåne in order to secure this collaboration. The mission of KOSS is to create a consensus among stakeholders in the regional skills and educational planning, both in the short term and the long run. Competence issues is a clear example of development that goes across several policy instruments and that is clearly linked with emerging challenges. Creating development in this area requires a clear synergy between the activities of municipal, regional and national players. KOSS consists of a steering committee and a working group with representatives from the Employment Bureau, the Municipal Association Skåne, Region Skåne (Chair), the County Administrative Board in Skåne and the group of Southern Swedish universities.

**The Skåne cluster initiatives**
Region Skåne works with businesses as well as universities and university colleges to further strengthen cluster initiatives that possibly lead to long-term, innovation-based growth in the region.

There is a clear focus to use the options for growth coming up in the interface and new combination of disciplines, technologies and sectors, driven by the need for new solutions and products that cannot be provided by one sector alone.

There are now 10 clusters where Region Skåne is a member and cofinancer in the **Food**, **Life Science**, **IT, Mobile Media**, **Environmental engineering** and **Packaging** sectors, as well as in **the Blue Growth field**.

The clusters include ca 1500 companies and organisations. The cluster have existed since 1-20 years and receives each about 100.000 – to 200.000 Euro/year from the region.

- **Media Evolution**, a cluster – or rather a thematic area - for new media (digitalization) that has attracted considerable attention. It has 400 members, large and small, which are involved in everything from digital games and application development to films and the web. It offers network, learning options and expertise in the field of digitalization. Close by its physical site is also the building **Media Evolution City**, which offers offices, conference facilities and meeting places.
- The Danish-Swedish **Medicon Valley Alliance** is one of the largest open innovation arenas within life science in Europe. There are more than 230 triple helix members.
- **Mobile Heights** with 62 members focuses on Internet of Things, wireless communication and mobile services. Closely linked is the **Mobile Heights Business Center**, which strengthens the entrepreneurs' potential for feedback and coaching.
- **Packbridge (the packaging cluster)** works to develop the next generation of packaging and logistic solutions, as well as with the integration of the whole value chain, that actually can be found in the region. There are 230 member companies.

- The mission of **Skåne Food Innovation Network** (Livsmedelsakademin) is to develop the food sector together with members and influential partners. They are 150 members, focus on networking and cooperation and engage in training, trainee programmes and PR.
- **Sustainable Business Hub** is Sweden's largest network within cleantech with more than 100 members, and it is working to help environmental companies to start up and to operate and existing companies to develop on national/international markets.
- **Resilient Regions Association** is rather a platform aiming at building a more resilient society with robust functions and flows – a society with the ability to quickly overcome and recover from societal pressures. The 30 members are companies as well as public players and organizations.

- **Swedish Maritime Technological Forum (SMTF)** is an outspoken **blue,** business-oriented and business-driven cluster organization who represents the full spectrum of suppliers to the shipping-, offshore- and the leisure boat industry. SMTF is a cluster organisation which was formed jointly by Region Västra Götaland and the maritime technology industry in West of Sweden. To strengthen the resources and increase the possibilities for participating in larger projects, SMTF was approached by RISE, Research Institutes of Sweden, in 2017. RISE is fully owned by the Swedish state. This has resulted in a long terms solution, where SMTF and its participating companies continue as a network and cluster organisation within RISE, and take part of its resources for development. RISE has offices all over Sweden, so establishment of any new SMTF office will be smooth.

SMTF strives to increase the competitiveness of Swedish shipping and its related services on a national and international level. As representatives of the maritime technology industry SMTF facilitates the progressive development of Swedish enterprises and innovations and enable them to reach a broader market.

SMTF engage in projects representing current or future possibilities and challenges in the maritime sector; from maritime cluster evaluations to lightweight materials, reduction of exhaust gas emissions from ships or new business models for the marinas and harbours and not at least offshore energy. The focus is on creating profit and added values in coherence with an environmentally sound framework, in business, innovation and development projects.

The SMTF networks provide the ca 100 paying members, as well as potentially future members, with quick access to what is happening in different maritime fields and enable them to make new contacts and business associates. This is done, for example, by analysing relevant sub clusters, markets and trends. Fairs, crucial sector events, workshops and seminars are used for network development and communication of knowledge, statements and messages. SMTF has finalized a mapping of the blue sector and its companies in Skåne and gained a quite clear picture of the situation.

The concept of Blue Smart Specialisation has lately been a core issue for the SMTF Skåne engagement, since Region Skåne is a member of the Vanguard Initiative (VI). VI is about reindustrialization in Europe through regional cooperation and smart specialisation. VI works with a group of pilots, each aiming at new competitive value chains to meet the needs of tomorrow within specific areas. SMTF, with expertise, is for the sake of Skåne engaged in the specific pilot, called ”Advanced manufacturing (ADMA) for energy related applications for harsh conditions”. It is primarily about renewable offshore energy and tackles challenges in a field where, as an example, new products and services are urgently needed to cut total costs for energy production (see below for more).

SMTF focuses not at least in this VI process on the extensive industrial base of subcontractors in Skåne, many of them have been linked to big companies as Tetra Pak, and are now looking for new markets for their advanced and manufacturing of high quality (stainless steel, non-corrosion technologies, high standard wielding etc.). Some of these players have already found their way to the maritime and offshore market, but there is clearly a further interest as well as a potential for more of the enterprises within the blue market.

As the blue cluster organisation in Skåne SMTF plays a key role as inter-mediary for blue issues. SMTF also cooperate close with other intermediaries and clusters as well academic and national players, in and outside the region. SMTF is involved in several interregional and EU-projects and has an advanced international network.

SMTF suffer to some degree under its under-critical size and the permanent race for funding resources. To solve this problem, new collaborative structures are under investigation.

- **IUC Syd:** Industrial Cluster IUC Syd with its 60 members focuses on industrial players in general.

**Innovation area Smart Material – mobilizing around ESS and MAX IV**

As described above, this area is one of three Skåne strategic innovation areas of strength picked out in the region. There is the ambition to pool resources, enabling the development of a world leading nanomaterial industry, by creating cohesive value chains, leading from basic research in nanoscience to nano-production in Skåne/Sweden. Four major actions for this purpose are: a new research laboratory for prototypes (linked to Lund Nanolab), a facility for the pilot production of nano products (ProNano), an institutional function that can facilitate the linkage between research and industry, and a model for venture capital, supporting long term investments (Spirit Ventures).

New materials and nano-technological solutions are of great relevance for the blue field, an example for cross-sectoral, cross-cluster processes and cross-cutting value chains.

**From clusters to open innovation arenas and smart specialisation**
One of the processes that has taken place based on the International innovation strategy for Skåne is the movement from traditional clusters to open innovation arenas. As a consequence of the fact that different industries have moved closer together (e.g. maritime subsectors and land based sectors) it has become obvious how important it is to provide meeting places for players from different backgrounds with different types of knowledge. Region Skåne thus has a policy to support clusters both in existing and emerging industries, and focuses on finding new at the interface between clusters. Thus regional competitiveness must not be restrained by narrow cluster concepts, based on specialisation only.
One central principle in the currently ongoing work with the regional cluster development programme in Skåne is that cluster initiatives and smart specialisation have to converge to create internationally competitive (open) arenas for innovation.

## 3. Understanding of the target group

The target for a RIS3 multilevel implementation system consist of the following categories of players:

- Companies
- Entrepreneurs
- Universities and university colleges
- Consumers and end-users
- Intermediaries
- Politicians
- Public players

Below, primarily the companies are described.

**The academy**
See part 1 (universities in Skåne, Blue academy).

**The companies**
Many of the Skåne companies involved in the blue sector have relations with different value chains and some of them would hardly identify themselves as belonging to the "blue" sector. These are companies with links to the food industry such as process systems, packaging, but also clean tech, heat and power and machinery. A key group are mechanic enterprises with advanced manufacturing as well as those with high competence in systemic solutions. Many of them have their roots in Tetrapak manufacturing industry, a global player, today with hardly any production left in Skåne.

Examples of such advanced manufacturing companies with one foot in the Maritime Energy sector:

- Backer BHV AB (large firm): Equipment for power transfer or conversion;

- Kristianstads Industriservice AB (SME): Marine fabrications: Platforms & structures, Cables & terminations, Pipelines & valves; Maintenance & operation;
- Herrströms Mekaniska Verkstads AB (SME): Platforms and structures
- Liedholms Maskinteknik AB (SME): Platforms and structures

These companies, as well as Vattenfall have been engaged in the Vanguard Initiative Pilot on advanced manufacturing within offshore energy, a process carried out by a group of EU regions and that is described later in this report (see below).

During a recent mapping we identified 169 maritime companies, with a total of 5.150 employees and a turnover of 25 billion SEK (2.6 billion €).

## The biggest maritime players in Skåne

The 15 biggest players in the region have a turnover about 22.5 billion SEK (2.3 b €). The Alfa Laval department Marine & Diesel is counting for 14.7 billion SEK.

The dominating blue sectors are related to shipbuilding/repair and maritime transports (short sea shipping, passenger ferry services and ports).

| | Company | | Turnover (1000 SEK) |
|---|---|---|---|
| 1 | Alfa Laval AB Marine & Diesel - (only Marine & Diesel!) | Manufact/services | 14 735 000 |
| 2 | SAAB Kockums | Shipyard (military) | 1 861 137 |
| 3 | Finnlines Ship Management Aktiebolag | Shipowner | 1 458 074 |
| 4 | Cargotec Sweden Bulk Handling AB (MACGREGOR BULK) | Manufact/services | 845 906 |
| 5 | Copenhagen Malmö Port Aktiebolag | Port | 801 109 |
| 6 | Madremar AB | Shipowner | 682 817 |
| 7 | Wagenborg Shipping Sweden AB | Shipowner | 555 006 |
| 8 | Helsingborgs hamn AB | Port | 356 927 |
| 9 | Oresund Heavy Industries | Shipyard (repair, reconstruction) | 346 828 |
| 10 | Konecranes AB | Manufact/Services | 315 476 |
| 11 | Trelleborgs Hamn Aktiebolag | Port | 226 681 |
| 12 | Kockumation AB | Manufact/services | 213 881 |
| 13 | Scanjet Marine AB | Manufact/services | 212 937 |
| 14 | Opsis AB | Manufact/services | 177 781 |
| 15 | Chris Marine AB | Manufact/services | 127 143 |
| | **Σ** | | 22 916 703 |

These 15 companies have about 3800 employees.

A look at **pivotal companies in the shipbuilding and ship repair sector:**

**Alfa Laval**

Alfa Laval is by far the largest Swedish maritime company and has its HQ in Lund, Skåne. The total turnover is 4 billion €, however the department relevant for the shipping sector, Alfa Laval Marine & Diesel, has a turnover of ca 1.5 billion €. With over 2000 patents, Alfa Laval products are found in almost all bigger ships: Products for energy efficiency, environmental performance and safety (separators, heat exchangers, fresh water generators, ballast water treatment, tank treatment). Their customers are ship owners, diesel machinery and offshore.

**Kockums AB – today a department of Saab**

About 500 of the employees, mainly engineers, are at the Malmö HQ, 600 at the shipyard in Karlskrona in the neighbour region Blekinge. The “Kockums” department of Saab manufactures submarines, smaller ships etc. for the Swedish defence. A speciality opening up for the future is the development of light weight technology for components as well as whole ships. This technology will contribute more and more to higher energy efficiency. Saab uses 28 % of the turnover for R&D.

**Description of some of the blue SMEs (shipbuilding, devices and ship repair)**

Many of the blue SMEs have a considerable share of their sales on the global arena. They have relatively few employees but are never less competent innovators and exporters.

**Kockumation**

Kockumation Group consists of several high technology companies (Kockums Sonics, Polarmarine and Texon), spin-offs during the 60ies and later on from the earlier Kockums plants. Kockumation supplies a range of high technology products, systems and services on a global basis.

**Chris-Marine**

In the same way as Kockumation, Chris-Marine exist since 50 years and is as well global leader with several products. The company provides solutions and services for optimizing diesel engines/machines, automation and service systems.

**Oresund Heavy Industries – Oresund Dry Docks**

Öresund Heavy Industries AB (OHI) started 2003, using the facilities after the big Öresundsvarvet shipyard in Landskrona. Today we find here a flourishing industry again.

Oresund Heavy Industries AB is the parent company of the subsidiary companies Oresund Dry Docks AB and Oresund Steel Construction AB. The group operates within the fields of ship repairs and reconstruction as well as the manufacturing of large, complex steel structures.

During recent years, the group has experienced impressive growth. This is mainly due to the substantial investments made in order to meet the increasing demand for

its services. Oresund Heavy Industries offers leading competencies within each area of operation, a continual increase in capacities and not at least an ideal location – situated on the edge of the Öresund, one of the world's busiest shipping routes.

An upcoming segment are heavy offshore constructions and the company is well prepared for large scale development of offshore wind in the Baltic Sea. Since 2015 Enercon has localized a production of wind towers on the site.

Not only that this Landskrona shipyard  is one of Europe's biggest dry docks, including a floating dock, 800 m quayside, huge indoors areas, a multitude of facilities for service, re-/construction, handling of large structures with high capacity cranes, it also forms a highly potent cluster of maritime technical companies. The operations here are based upon a comprehensive cooperation with a large palette of suppliers and subcontractors, over 700, in and around Skåne and as well as in neighbouring countries. Each project has it its own special need as concerns competence and services. Several companies have established branches on the site. The company itself has about 100 employees.

**Opsis**

Opsis focus on gas analysis for emission control based on optical technology, including air quality monitoring, process control and data management.

**Maritime transports**

This sector, consisting of shipping companies and ports is of great importance in Skåne. The high energy efficiency of maritime transports is very much in line with energy and climate policy of Region Skåne. However, road transports are today dominating the cargo flows in and trough the region, causing traffic jam and emissions. Thus there is a great potential for short sea shipping to take over considerable amounts of goods from land based transports, a fact that was confirmed by a current report.

Two categories of maritime transports are dominating: passenger ferry services and short sea shipping. 24 companies are involved in short sea shipping, including a turnover of 250 M € and 150 employees. Almost all of the ferry lines however, are owned by multinational players with their headquarters outside the region. HH-ferries as an example, is owned by an infrastructure fund. TT-line (turnover 6 M €, 282 employees) is however based in Trelleborg, Skåne.

The ports are European frontrunners in terms of environmental performance (waste management, power supply etc.). The HH-ferries between Helsingborg and Helsingör, for example, are now transformed to power based operation for zero emission. Two of the Skåne ports are European TEN-T traffic network core ports:

- Copenhagen-Malmö-Port (CMP): Turnover 80 million €/Y, 400 employees, 8000 ships/year, cargo 15 million tonnes;
- Port of Trelleborg: 25 M €/year, 1872 employees, 11 million tonnes/year

The port of Helsingborg is another international interface with a turnover of 36 million €, 230 employees, 8 million tonnes/year.

Further ports are Ystad, Landskrona and Åhus.

## 4. Developing a shared vision

The OECD, in its 2012 territorial review of Skåne, believes that the strategic approach for innovation policy in Skåne is in line both with system challenges diagnosed by the organisation (see above) and with "smart specialisation" concept. It is stated that the policy process that led to the adoption of Skåne's innovation strategy was a well-informed, well-articulated strategic process. Regional dialogues involving a large set of regional actors and two international peer review exercises were undertaken with the view of developing a regional innovation strategy for Skåne. Key documents were produced, leading to a shared vision of the strengths and weaknesses of the region, and paved the way towards the "International Innovation Strategy for Skåne 2012-2020 adopted in October 2011 (see part 1).

The strategy includes a vision and priority areas of intervention. It starts from a shared vision of Skåne as a top innovative region in Europe, where assets are fully exploited to create an attractive, internationally oriented and sustainable innovation environment. The strategy aims at developing innovation areas where Skåne has unique capabilities and which respond to global challenges. The main way to reach the strategy's overall objective is to develop "knowledge-based open innovation arenas" to engage in international collaboration. The concept was primarily built on a number of existing clusters, but is now, as an adaption to Smart Specialisation, based on the three focal areas of strength, already mentioned (see above). However, the existing cluster initiatives are still a core element in the Skåne innovation system (see below).

Late 2015 the preparation of the regional cluster development programme was initiated, based on an evaluation of the cluster work so far. Important further dimensions for this process were environmental aspects, equality, non-discrimination and diversity. The programme was a result of an iterative process, involving the cluster initiatives and of learning from earlier cluster strategy as well as evaluations of these.

Region Skåne has together with the cluster initiatives defined objectives related to the capabilities needed to fulfil shared vision of Skåne as a top innovative region in Europe. This objectives are described under 6. below.

## 5. Identifying the priorities

The policy process that led to the adoption of Skåne's innovation strategy was a well-informed, well-articulated strategic process. Extensive analysis by academics and consultants, as well regional dialogues involving a large set of actors, and two international peer review exercises were undertaken. In the framework of this process together with experiences learned in the cluster initiatives, as well as the

dialogue with FIRS and Soundingboard (see above), confirmed the choice of priority areas.

## 6. Defining an action plan with a coherent policy mix, financing etc.

During 2016 a comprehensive work started to further implement actions under innovation strategy, based on the priorities and the recommendation of the OECD.

OECD suggestions on improvements in regional innovations policy:

- ensuring outcome-driven policy with the help of better monitoring and evaluation,

- effective cluster policies, focusing on cross-cluster opportunities,

- reinforcing international dimensions of innovation and

- putting business to the centre of the strategy.

The **Skåne cluster initiatives** described in part 1 are gathered in sectors or around societal challenges, each one having specific competences, unique companies and specific experiences. One of the main tasks for cluster initiatives is making competences meet each other who usually don't come together. In this way the ground is laid for new approaches for innovation. Research shows that the most radical innovations making difference for society arises when crosscutting innovation processes are initiated. This may happen at the interface between sectors, areas of knowledge or established areas of application. Strategical support to cross-cluster cooperation is probably the most effective way to strengthen the regional capability to develop collaboration with new emerging global industries and services.

At the centre of the cluster initiative development and smart specialisation are the open innovation arenas. The **new regional cluster development programme**[3] states that to fulfil shared vision of Skåne as a top innovative region in Europe, some **preconditions** must be established and some capabilities strengthened. These are summarized below. The red thread is the capability that help us contribute to increased crosscutting links between sectors and areas of growth.

- **Strengthen the capabilities to lead and operate open innovation processes**. This capability is about the development of a new kind of competence about how complex processes about open innovation may be managed. It is about methodology as well as getting people to lead open innovation processes in a successful way.
- **Develop structural capital**[4] **and services around open innovation processes**. This capability opens the door to build continuously documented

[3] Still to be adopted by regional political level

[4] Applied systems supporting development processes, management and production as well as models for knowledge transfer and documentation.

knowledge about open innovation processes, a knowledge that can be spread and used again and again. This knowledge is also a competitive factor that can be packed as different services.

- **Create common open innovation arenas between the cluster initiatives**. This capability means that concrete projects and processes are operated by crossing the boarders between clusters, sectors and perspectives of knowledge, meeting the societal challenges and needs of companies.
- **Ensure an increased reception capacity for new innovations.** This is about involvement of the presumptive future user of new innovations. It is also about influencing policymaking in the long term.
- **Work for an increased mobility between the cluster initiatives for learning and renewal.** This can be achieved by internships between the clusters, rotation of staff and common projects.
- **Work for increased resource efficiency.** This also is about finding a model to involve more cluster initiatives in one project, as an example, by a common business development function generating common projects. It is also about sharing functional resources.
- **Create a common crosscutting R&I platform for the cluster initiatives where the needs of businesses and organisation can be met.**

The **deficits** related to the structures and basic activities of existing cluster initiatives that need to be addressed are:

- Deficit in long term financing and ambiguity about the results expected by Region Skåne and the municipalities, making it more difficult for the cluster initiatives to work long term and strategically.
- A need and potential for extended collaboration with Skåne municipalities and the other cluster initiatives concerning financing and applications to different programmes.
- The need to take the cooperation of the clusters to a new level by sharing competences and by arranging a joint bank credit to guarantee a long term liquidity for projects.
- Region Skåne and the cluster initiatives need to increase their cooperation with regard to the three RIS3 priority areas.
- Gaps concerning the integration of equality and diversity, which lowers the attraction for the concerned sectors and limits the innovation capability and profitability.

To qualify for the cluster development programme the cluster initiatives must meet certain conditions and criteria. There are clear expectations formulated concerning the long term effects of the Cluster Development Programme. For the specific cluster initiative a list of specific requirement (related to the need of capabilities and current gaps – see above) have to be met to ensure that the long term goal can be reached. The programme is accompanied by a draft financing model (yet to be decided on a political level). The model is based on an increasing share of collaboration and of company based financing as well project based financing.

As mentioned in part 1, three strategic innovation areas were prioritized in the Skåne RIS3: Smart materials, Smart sustainable cities and personalized health.
For each area a position paper has been adopted by the Research and Innovation Council in Skåne (FIRS). The position paper includes concrete actions for each priority area during the upcoming years.

**Source of financing**

The sources for financing the innovation supporting system in Skåne are on different geographical levels:

| | |
|---|---|
| EU/international | ERDF, CAP/rural programme, FP7, Horizon2020, Nordic Innovation |
| National | Vinnova, Swedish Agency for Economic and Regional Growth (Tillväxtverket), The Knowledge Foundation, Almi (Advisory Services, Loans and Venture Capital) |
| Regional | Region Skåne |
| Local | Municipalities, Associations of municipalities |
| University/Univ. colleges (see page 4) | |
| Private | Private co-financing of EU-project, research projects and financing of players within the system |

| Actors/activities | EU | National | Regional | Local | Academy | Private | Others | Total |
|---|---|---|---|---|---|---|---|---|
| Marketing/attraction | 9 | 0 | 109 | 0 | 0 | 0 | 0 | 117 |
| Business dev./capital | 11 | 23 | 58 | 15 | 6 | 6 | 37 | 154 |
| Cluster | 14 | 25 | 19 | 2 | 3 | 11 | 15 | 89 |
| Science Park/ Incub. | 3 | 10 | 12 | 21 | 1 | 4 | 10 | 60 |
| Meeting place/arena | 0 | 1 | 2 | 6 | 0 | 18 | 10 | 29 |
| Policy support | 2 | 16 | 7 | 0 | 0 | 0 | 0 | 25 |
| Others | 2 | 0 | 10 | 0 | 0 | 0 | 0 | 12 |
| R&I | 53 | 219 | 22 | 9 | 41 | 79 | 2 | 424 |
| Financing of business & innovation | 4 | 427 | 0 | 0 | 0 | 43 | 0 | 474 |
| **Total** | 98 | 721 | 238 | 53 | 50 | 160 | 67 | 1386 |

Financing (Mn SEK) of the innovation supporting system in Skåne 2015

In the last few years, a lot of work has been done in Skåne to develop the innovation system and enhance innovativeness. This work has been carried out by the stakeholders in the region, VINNOVA and the Swedish Agency for Economic and Regional Growth (Tillväxtverket). As the table show the innovation system has a turn-over about 140 million Euro. National players provide the biggest contribution.

The Regional Development Fund for Skåne-Blekinge (ERDF) is managed by the Swedish Agency for Economic and Regional Growth, in collaboration and partnership with regional political actors, academia and industry, prioritizing different projects.

**The Operational Programme – Skåne-Blekinge Regional Structural Fund Programme (ERDF)**
The chosen policy mix of the Skåne-Blekinge programme is based on the needs and prevailing conditions in Skåne-Blekinge and are in line with regional growth strategies. There is 61 Mn Euro for the current programme period.
Priority axes include:

**1. Smart growth – innovation (44 M SEK approved until end of 2015)**
Specific objectives:

- Increased cooperation for sustainable, efficient innovation infrastructure that delivers results.
- Increased capacity for innovation in the region, focused on the region's strategic areas of strength (relevance for the regions RIS3!).

**2. Smart growth – SMEs (183 M SEK approved)**
Specific objectives

- Strengthened entrepreneurship and enterprise.
- More new enterprises with growth potential
- Increased growth in existing SMEs.

**3. Sustainable growth – low-carbon economy (20 M SEK approved)**
Specific objectives

- Reduced climate impact through SMEs increasing their use of renewable energy sources while becoming more energy-efficient.
- Reduced climate impact through the public and housing sectors increasing their use of renewable energy sources while becoming more energy-efficient.

**4. Inclusive growth – Broadband (11 M SEK approved)**
Specific objective:

- Improve opportunities to access broadband.

**5. Sustainable urban development**
Specific objectives:

- More innovations in response to local societal challenges that contribute to sustainable urban development.
- Strong local entrepreneurship for employment growth.

**Concrete RIS3-related action in the Blue field:**

**The Vanguard Initiative New Growth through Smart Specialisation**
One of the pilots within the Vanguard Initiative is the demand and user driven pilot "Advanced Manufacturing (ADMA) for Energy Related Applications in Harsh Environments", that seeks to make the EU the global leader in manufacturing robust high integrity components for marine renewables and offshore energy applications. The main goal of this specific, Blue Growth related pilot is to create new business opportunities and increased growth for the sector by helping larger companies expand their supply chains with innovative SMEs across Europe, and by providing smaller companies with new, high-demand customers to grow their businesses. The initiative is led by the Basque Country and Scotland, while 11 other European regions take part, Navarra, Lombardy, Norte, Flanders, Asturias, Dalarna, South Denmark, Skåne, Ostrobothnia, Andalucía and Emilia-Romagna. The activities of the pilot are structured around the four core functions of the Vanguard Initiative methodology:

- **Learn**. This function includes activities such as data sharing, value chain mapping, exchange of good practices, workshops and study visits, and the development of guidebooks and manuals for business intelligence.

- **Connect**. This refers to activities such as industry brokerage, matchmaking events (including virtually), the development of demonstrator ideas, and broadly using the pilot as a collaboration space.

- **Demonstrate**. Under this function, the pilot would serve as a virtual incubator, providing start-up space for demonstrators, serve as a structure for leveraging public and private funds, provide ideas and mobilise inter-regional infrastructure pooling, and deliver projects related to identified common challenges and technology needs.

- **Commercialising**. This function relates to the use of the learn / connect / demonstrate functions and services to promote demonstrators, agenda setting and policy outreach at EU, national and regional levels.

The Pilot has up-to-date implemented a series of actions related to the Learning function. In 2014 an extensive scoping study was undertaken, which developed a core 'inventory' of energy-related resources existing across the Pilot regions and emphasized on the collaboration potential among these regions to explore new cross-regional market opportunities. The study delivered a database of over 200 pivotal companies and organisations (including relevant infra-structure, specialist research centres, and networks across the EU) that operate and compete in the market areas and value chains the Pilot is focusing (offshore oil and gas and marine renewables – notably wind and wave energy).

Following the learning activities, the Pilot progressed with the connecting function, i.e. creating synergies and collaboration schemes among businesses that share similar interests and face international challenges. Work for this function was initiated in August 2015 with the design of a Technology Roadmap, which aims to find joint solutions for industry stakeholders on a bottom-up idea generation approach. The roadmap highlights industrial capacities and technology needs and in parallel, consolidate the most important and relevant international challenges and demands from industry stakeholders across the Pilot's market areas. So far, work for the Technology Roadmap has included the following activities: the identification of industrial challenges and technology areas; an industry survey; the production of a set of back-ground notes, Technology Roadmap workshop preparations; and the Technology Roadmap Workshop itself, hosting over 130 participants.

Adding value to the final steps of the technology road mapping exercise, a Vanguard Initiative Matchmaking event has provided a unique opportunity for companies from the European offshore energy market areas to further explore concrete examples of potential collaboration activities. The conclusions from the workshop and the Matchmaking event have fed into the Technology Roadmap, published autumn 2016.

During the Matchmaking Event, the Pilot hosted five sessions, during which three pre-selected opportunity cases were discussed, namely:

- Real condition testing of new materials: Composites, steels, ductile iron and light metals
- Optimised corrosion management, including modelling, sensing and design
- Cost reduction in offshore wind

The match-making event identified key messages from industry and defined the next priority steps for the development of the Pilot. The current trends of oil prices and the weaker competitiveness of the Marine Renewables Energies in comparison to other methods of generating green electricity, has put a widespread emphasis on cost reduction across the offshore energy industry sector. Considering that cost efficiency requires an aggregate thinking of all value chain processes and actors involved, the message stemming from the sessions' write-ups translates into the need for coordinated European solutions to international challenges.

On the basis of the Pilot's activities so far and the conclusions of the matchmaking event's sessions, a number of priorities have been identified which will influence the forward agenda for the Pilot.

The Vanguard matchmaking event also hosted other pilots, as the one dealing with nanotechnology, opening up for *cross sectoral interfaces and exchanges*. Thus the Vanguard Initiative has, among other things, been very interesting from the perspective of cross-sectoral and cross value-chain processes, i.e. between offshore energy challenges and advances within smart material, represented by another Vanguard Pilot: "Vanguard Initiative Pilot Project on New Nano-enabled Products". This pilot was initiated by Region Skåne and is now co-led by the region, with a strong engagement from local players.

Many partners collaborate across the whole value chain in the nanotechnology development: the universities, the region, companies, innovation support actors, etc. The new initiatives include: pilot production facilities, risk capital, nano-safety, industrial research centres etc. Materials Business Center is under development to be a business oriented membership organization, connecting industry, entrepreneurs, research institutes and universities with materials related operations. The vision of Materials Business Center is to be a global epicentre for new products and businesses based on materials technology and innovation in Southern Sweden. After the Vanguard matchmaking event, a meeting was organised with the marine tech industry on how nanotechnology could be the enabling technology within specific areas of the marine tech industry.
The Vanguard Initiative has so far been helpful in establishing a link between different actors, who now know each other's existence, and have confidence in each other's ability and willingness to cooperate.

# 7. Monitoring and evaluating

**Evaluation of the innovation policy**

OECD (2012) concludes that Skåne's regional innovation policy is a good model to follow to address the frequent weaknesses of regional innovation policies. According to OECD, the core ingredients that make Skåne's regional innovation policy a good prototype for the new wave of policies are the following:

• The role of public authority is to act as a facilitator of change and catalyst of interfaces. The role of Region Skåne is to improve conditions for innovation, notably by supporting platforms for increasing synergies between actors from the region and beyond.

• The policy goal is to improve system coherence, resilience and evolution capacity. This is a difficult role which requires much more policy intelligence and efficient policy mixes, than the traditional role of resources allocator.

• Interventions are selective and concentrated, targeting promising growth areas and concentrating resources on those areas with a view to build critical masses in world-class excellence clusters. This capacity of selecting priority areas has been developed both thanks to good knowledge of the regional potential and through a bottom-up process to leverage knowledge present with existing actors.

• The strategy is outward-oriented, as it takes into account Skåne as a functional region rather than being confined to administrative borders, and sees the region's specialisation in an international perspective. Cross-border policies are present and the very goal of regional interventions is to bring regional actors on the international scene.

• The strategy combines effective leadership and strong stakeholder involvement: it is the result of a collective endeavour led by Region Skåne, perceived as a legitimate leader, and involves the academic world, public authorities and the business community, as well as innovation users. The recent establishment of Skåne Research and Innovation Council (FIRS) and the Sounding Board for Innovation in Skåne (SIS), testifies the drive towards enhanced stakeholder involvement.

• The approach is experimental and evidence-based: in addition to the contribution of regional stakeholders, the strategy is nurtured by numerous studies, expertise, and peer reviews and the analytic knowledge at the disposal of decision makers is remarkable.

However, despite this good model of innovation OECD also pointed out 2012 that better integrated monitoring and evaluation were needed to support implementation of the regions innovation policy. Clearly defined and tangible goals were a necessary first step in order to identify the aims of innovation policy. Appropriate data generation and monitoring were necessary in order to fine-tune the policy toolbox on the basis of accrued experience, assessing the impact of policy initiatives based upon their contribution to strategic goals. According to OECD the region lacked an integrated and systematic view on all initiatives and projects that were implemented. Furthermore, increased private sector involvement in the development and implementation of regional innovation strategy was important.

**The monitoring and evaluation system in Skåne**

2009 Region Skåne initiated a first functional analysis with the purpose of analysing the capabilities in the support structure for strengthening growth, innovation and entrepreneurship. That was the first of this kind of functional analysis being performed in Sweden. Skåne was also first in Sweden to adopt an international innovation strategy as well as a RIS3.

2012, in the framework of the scrutiny of Region Skåne's growth conditions by OECD, there was also a basic follow up of the analysis performed 2009, focusing on resources for R&D, cluster, actors of the innovation system.

2015 Region Skåne decided to make a more in-depth follow-up of the 2009 functional analysis, especially looking for changes in relation to the challenges and weaknesses that were identified 2009. It was also decided to evaluate the innovation strategy. Based on this Region Skåne would then as a next step analyse and identify future needs of actions.

The 2016 evaluation, covering the period 2009-2015, focused on:

- How the functions of the innovation system have developed
- To what degree there have been changes of the functions of the system
- If new functions have been established
- Description of how the Skåne innovation system relates to the outside world (local, regional, national, EU)

- Financing of the Skåne innovation support system
- Mapping of the main financial sources of the players
- Description of the development of the financing of the system
- Description of the current situation concerning the three priority areas of innovation as regards their links to the functions of the innovation system
- Suggestions how to develop these functions

Concerning the evaluation of the strategy itself:

- Efforts and interventions that have been done concerning the sub-strategies (page 6-7)
- Description of the shifts to new levels in the work process since 2011 as the strategy was adopted
- In-depth descriptions including experiences from some selected approaches
- Indication where further efforts are needed and which are the remaining challenges
- Indication whether Skåne realises the vision to become " Europe's most innovative region 2020"
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**The method for functional analysis of innovation strategy and support structure**

The analysis of the functions of the Skåne innovation system and the evaluation of the Skåne international innovation strategy was based on a comprehensive material including both quantitative and qualitative data. During April – September 2016 50 interviews with actors and key persons linked to the innovation system were made, but also with people outside the region to provide an external perspective on shifts and changes.

**The actors of the support system**

One starting point for the evaluation was an analysis of the diversity of actors, sorting them in the different categories within the innovation support system in Skåne:

- In the centre: The system leader, responsible for regional growth: Region Skåne
- Clusters
- Science Park & Incubators
- Meeting places, network, arenas for cooperation
- Business/company development & capital
- Marketing and & attraction
- Academy & Research actors

By putting the different players into categories and also placing them on a geographic map it was made possible to follow the development during the period and provide a picture illustrating the development. The structure and composition of the categories

is described qualitatively, but also from a quantitative perspective (allocation in Skåne, number of organisations, number of people, men/women).

**Analysis of the financing system**

It was checked how successful the **academic sites** were attracting money to research and education on research level. For this purpose revenues, from funding to research and education were listed per site, as well as for each site more specifically the funding from each funding agency. The share the sites were receiving from different sources was also described quantitatively.

Moreover, the analysis accounted for the levels of successful participation of the sites in Horizon 2020/FP7: number of participation, percentage in relation to other Swedish regions (or corresponding organisations), number/percentage of coordinators, amount granted funding/percentage.

The analysis also mapped the financial resources channelled through those actors and structures supporting innovation and business development in Skåne: How much money is there in the system, who are the financiers and to which kind of activities/ actors does the money flow. Private company funding was however excluded. Following categories were used for this mapping:

Actors:

- Marketing and & attraction
- Business/company development & capital
- Meeting places, network, arenas for cooperation
- Clusters
- Science Park & Incubators
- Academy & Research actors

Activities:

- R & I
- Financing innovation and companies
- Policy support
- Other

**Capability for innovation in a European perspective – benchmarking**

Another part of the analysis was based on benchmarking with 10 leading innovation regions in Europe. The indicators used were quantitative and generally based on RIS related variables, each indicating position and change concerning innovation capabilities. Data were taken from Eurostat and Times Higher Education and used on NUTS 2 level.

Indicators and the principles by which they were applied:

| Indicator | Our definition | Construction of variable |
|---|---|---|
| Level of education | Capability for knowledge building | Share of population 30-34 year with higher education (…) |
| University ranking | Capability for knowledge building | Times Higher Education yearly ranking |
| Patent application | Capability for entrepreneurship | Applications in relation size of the regional economy |
| Copyright applications | Capability for entrepreneurship | Number of Community design in relation to size of regional economy |
| Private R&D investments | Capability for entrepreneurship | Investments in own R&D as share of of regional economy |
| Public R&D investments | Capability for mobilizing and attracting resources | As share of regional economy |
| Knowledge intensive services | Capability for mobilizing and attracting resources | Employment (share of total empl) |
| Knowledge intensive industry | Capability to analyse and manage changes (economy, societal etc.) | Employment (share of total empl) |
| Business based research financing | Capability to analyse and manage changes (economy, societal, business etc.) | Funding from industry per empl at highest ranked university (academic staff) |

**Analysis of functions of Skåne's innovation system and their changes 2009-2015.**

This analysis was based on interviews and workshops.

Six functions were analysed in relation to the focus RIS3-areas (strengths and weaknesses):

- The function that creates long term legitimacy for innovation
- The capability to create and invest in strategic relations
- The capability to analyse and handle changes in the surrounding world and market
- Mobilizing and attracting resources

- Knowledge building
- Entrepreneurship and innovation capability

**Evaluation of the Skåne international innovation strategy**

The strategy includes sub-strategies, providing a kind of roadmap for what that has to be done to reach the strategy. However there are not yet any traditional action plans, including activities, responsibilities and roles and not either any interim goals or indicators for measuring step forwards linked to the strategy/sub-strategies. In that respect a traditional monitoring and evaluation of the strategy was not possible. In the same time, the scope of the strategy is very large, with a complexity of impacting factors.

Having that in mind the evaluation of the strategy was based on a so called *strategy alignment* approach, identifying and evaluating activities, processes, projects and measures being carried out in Skåne, in line with the ambitions and with the direction expressed in the strategy and it's sub-strategies.

The classical challenge with such an evaluation is of course to estimate to what degree the observed changes actually depends on or is a result of the actions we have in mind. Changes could have happened anyway.

The analysis used the method *proof of progress* evaluating mainly qualitative changes and is based on, as a first step identification of actual changes and movements in Skåne, and then as a seconds step use of interviews for finding proof that the changes are related to the strategy and its sub-strategies or other RIS3-directed work, or if the changes are the effects of other circumstances. The analysis is reinforced and deepened by statistics and case studies etc.