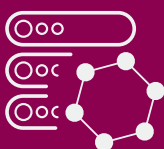


Skåne's Innovation Strategy for Sustainable Growth



TARGET 8.2



2030 Agenda, target 8.2: Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors.

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Published by: Region Skåne 2020

Adopted by the Research and Innovation Council of Skåne on 13 September 2019

www.firskane.se

FOREWORD

This strategy is the Research and Innovation Council of Skåne's (FIRS) strategy for Skåne.

FIRS welcomes all stakeholders to engage with implementing the strategy. The Innovation Strategy is part of Skåne's Regional Development Strategy, The Open Skåne 2030, and combined with the Skills Supply Skills Strategy, its ultimate aim is sustainable growth for the Skåne region.

FIRS is a forum for collaboration between business and academia, as well as municipal, regional and national-level actors. It is a forum where local, regional, national and international efforts can come together with the joint aim of improving the playing field for research and innovation in Skåne through increased and deeper collaboration. This strategy is our common steering document; its content informs our work of collecting existing projects and bringing about new development initiatives in Skåne. FIRS takes concerted action to exploit opportunities and respond with a united front to various events.

FIRS is comprised of members of the political leadership from municipalities and regions, vice-chancellors of the region's higher education institutions, and the business community through the Chamber of Commerce and the chairs of the board of the cluster organisations. FIRS is organised by an agreement between these stakeholders.

From an international perspective, in 2011, FIRS was early to take action when we adopted An International Innovation Strategy for Skåne 2012–2020. In March 2018, FIRS agreed to update the strategy and build on it further. This new strategy was drawn up by FIRS, with the support of a steering committee comprised of representatives from existing stakeholders. The formation of the new strategy was also supported by project management expertise from Region Skåne, the body responsible for regional development and for the FIRS secretariat.

We hope that you enjoy reading it and will be keen to join us in fulfilling the strategy.

Research and Innovation Council of Skåne, 13 September 2019.

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1. Introduction

The world and Skåne are facing major changes in the form of globalisation, automation, climate change and new and digital technology, all of which have an impact on employment, business models, the economy and society as a whole. Skåne's economy needs to be equipped to respond to these far-reaching changes, and to be agile in adapting to a rapidly changing world and market.

Skåne faces challenges in terms of low productivity, falling investment in private research and development (R&D), structural transformation with fewer large companies and skills supply. In Skåne there are also different patterns of development and industry structure in different parts of the region.

That said, we have globally leading technology companies, high-profile start-ups, world-leading research and a long history of innovation. Skåne's prosperity is founded on innovative and successful export companies that have managed to update and convert their production and products in pace with a changing market. This continues to be the key to future success.

There are a number of fundamental factors affecting innovation capacity in Skåne, such as electricity supply, infrastructure, employment, gender equality, skills supply, exclusion, the arts, creativity and access to recreation. These are questions that are primarily addressed by other parts of the regional development strategy, *The Open Skåne 2030*¹, for example within the Skills Supply Strategy.

Skåne's proximity to Denmark, and to Copenhagen in particular, offers unexploited potential and major opportunities for innovation and growth. It is therefore particularly important to continue to develop cross-border regional collaboration.

This strategy is Skåne's Research and Innovation Strategy for Smart Specialisation (RIS3), an advance requirement from the EUROPEAN Commission for accessing its regional funding. The EU's criteria regarding the content of RIS3 have influenced the decisions made in drawing up this strategy. RIS3 is a geographically based strategy that highlights focus areas in which resources for innovation and the knowledge-driven economy are mobilised. A RIS3 is to be evidence-based and build on the regional context and potential for innovation, competences, competitive advantages and potential in global value chains and may include monitoring and evaluation mechanisms. Developing a Research and Innovation Strategy for Smart Specialisation provides a common language with actors in other regions of Europe working on sustainable growth and innovation.

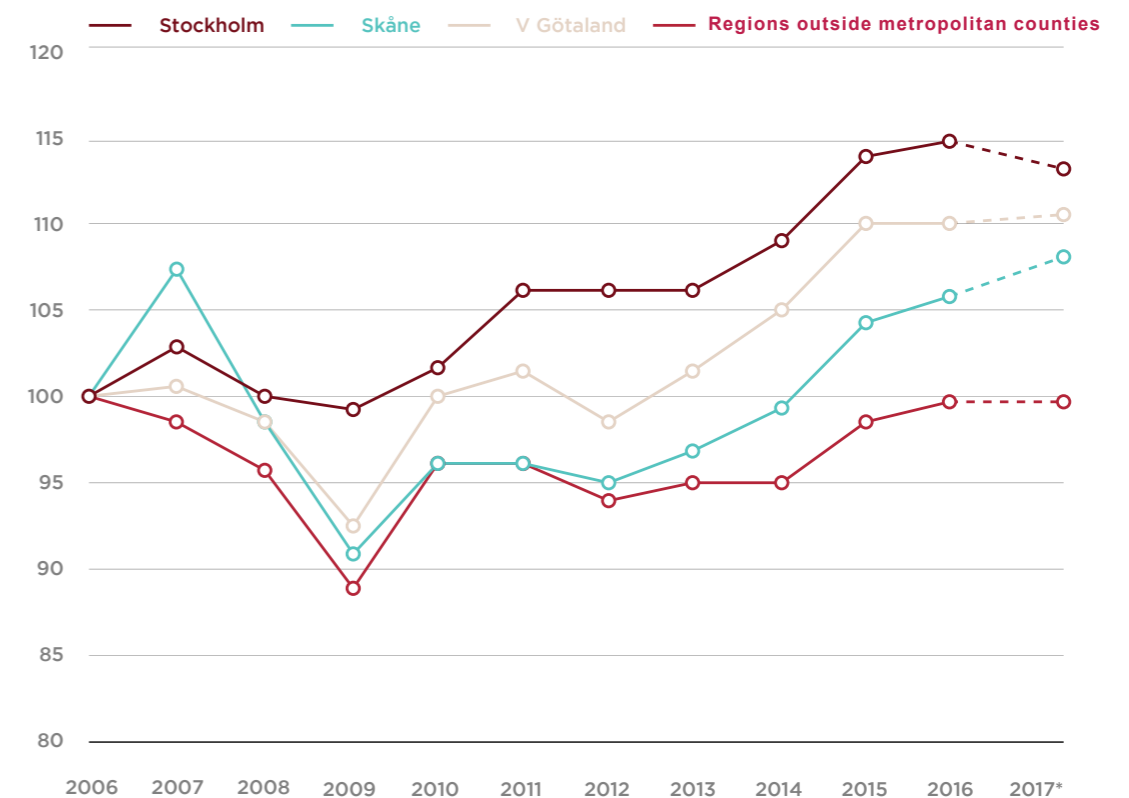
¹ https://utveckling.skane.se/siteassets/publikationer_dokument/rus_slutdokument_210x275_eng.pdf

Skåne's productivity and sustainability challenge

Skåne has had a weak economic recovery since the financial crisis in 2008 compared with other Swedish regions (see diagram 1). At the same time, productivity has slowed across the western world. Resolving the productivity challenge is vital to our prosperity and to safeguarding competitive companies and job opportunities, tax capacity, social welfare, culture and infrastructure. Productivity, i.e. how we work and what we work with, is vital to financing world-class quality of life.

In parallel with the productivity challenge, we globally face a sustainability challenge. This means it is crucial that an increase in productivity and growth does not go hand in hand with a greater burden on global sustainability. Instead, we need to move towards more sustainability and circularity, reduce emissions and take long-term economic and social sustainability into account.

Diagram 1. Business productivity (2006=100)



Source: Statistics Sweden via the Productivity Commission 2019.

* 2017 is an estimate based on preliminary figures from Statistics Sweden on GRP per person employed.



Photo: Kennet Ruona

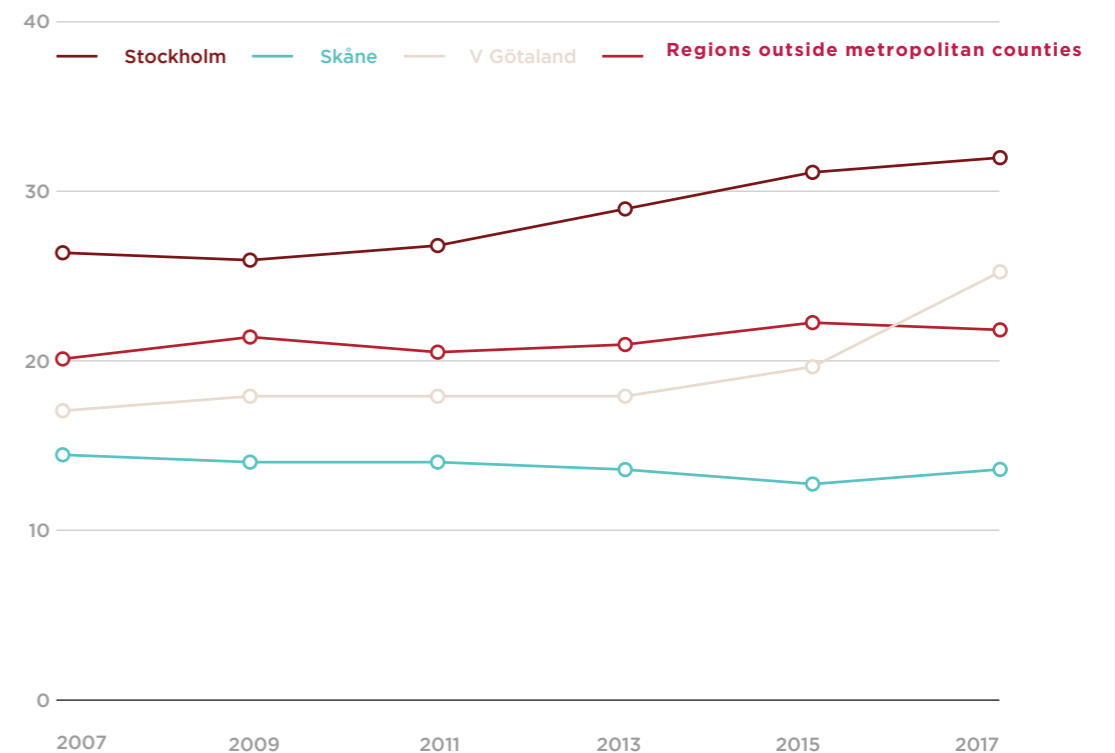
Reasons behind Skåne's productivity challenge

There is no simple answer as to why Skåne's productivity has lagged behind. There are a number of factors that are important for this trend. Some can be attributed to Skåne while others are national or global phenomena.

- In 2009, global demand for industrial products plummeted, hitting Sweden, which is dependent on exports, hard with consequences such as redundancies and falling productivity.
- The digital transformation is partly in a transitional phase with companies and the public sector forced to operate traditional and digital systems side by side, making operations more expensive.
- Skåne has seen shrinking private investment in research and development (R&D), which is strongly linked to companies' innovation capacity (see diagram 2).

- Since 2008, some major companies have cut back or shut down their operations in Skåne, which has affected the technology base, the surrounding ecosystem and not least private R&D.
- Higher education institutions in Skåne educate almost 80,000 students a year, but partly due to there being too few jobs for highly educated people in a wide range of occupations, many of these students then move away from Skåne.
- A large functional labour market is vital if companies are to be able to make use of the best possible skills. In Skåne, we have a huge potential labour market region of approximately 4 million people. However, a lack of integration and transport links within Skåne and between Skåne and the Copenhagen region means that this is not being fully exploited.
- Too high a proportion of the potential workforce is outside the labour market. To retain competitiveness in Skåne in the long term, a larger proportion of the population need not only to be working but to be working in productive jobs, which usually require higher education.

Diagram 2. Companies' R&D expenses, SEK billion



Source: Statistics Sweden via the Productivity Commission 2019.

What can we do about the productivity challenge?

To increase productivity in Skåne we need to stimulate an even more knowledge and innovation driven economy that helps to provide solutions to global challenges through scalable innovations. Skåne is to be an attractive place for companies, researchers and entrepreneurs.

The chain from free basic research to launched innovations offers overlapping areas of interest for a number of different actors in Skåne. In these areas of interest, we are often stronger together than individually. Questions such as major investments in research infrastructure, collaborative research, business clusters, incubation, testbeds, vibrant innovation environments and relations with national and European innovation funding bodies are some areas where joint interests are often found.

The productivity challenge should not be underestimated; yet at the same time there is a great deal in Skåne's favour as a competitive and knowledge-driven economy. Skåne often comes high in rankings of the most innovative regions. Skåne has globally leading technology companies, high-profile start-ups, world-leading research and a long history of innovation. Our prosperity is founded on innovative and successful export companies that have managed to update and convert production and products in pace with a changing market. Skåne is also a node in the Baltic Sea Region and Scandinavia, making us well placed for greater interaction with the outside world. Proximity to Copenhagen, a major international airport and a potentially large labour market on the other side of the Öresund open up major opportunities.

The purpose of this strategy is to be a long-term agenda for cooperation between key actors in Skåne so as to promote innovation, address weak productivity and boost business with sustainability as a matter of course and a competitive advantage. The challenges that the region faces are great and complex. It is therefore important to continue to develop cooperation between business, higher education, the public sector and civil society to create the best possible conditions for innovation. The Research and Development Council of Skåne, the body behind the strategy, is a vital forum for this work.

The strategy shares the overarching vision for Skåne of the Regional Development Strategy (RUS) and together with Skåne's Skills Supply Strategy,² it serves to fulfil the visions for Skåne as an engine of sustainable growth set out in RUS. To resolve the productivity challenge, this strategy and the Skills Supply Strategy must be coordinated.

In order to measure whether Skåne is closer to realising the vision and purpose, FIRS has set *higher productivity* as an overarching objective.

The vision for the strategy is that Skåne is to be a globally competitive economy that drives sustainable growth.

² Regional Strategy for long-term sustainable skills supply in Skåne. This strategy is currently under review.

Fact box 1: sustainable growth³

Growth is sustainable when we can meet our needs today – economic, environmental and social – while enabling future generations to meet their needs.

This strategy is based on underlying reports and input from regional actors and can be summarised in a number of choices looking ahead:

- Which areas are strong, which offer major potential for the future in business and research, and where do key actors in Skåne identify overlapping needs to work together?
- How should we jointly work on these areas?
- How can we be more strategic in our work to secure cooperation funding in these areas?
- Work on the strategy will be monitored on an ongoing basis in a three-year cycle.



Photo: News Öresund

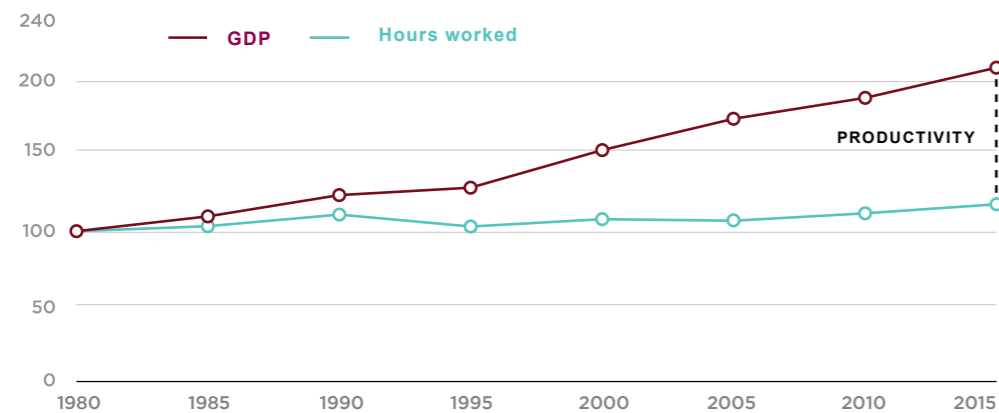
³ tillvaxtverket.se/om-tillvaxtverket/uppdrag/hallbar-tillvaxt.htm

2. Innovation, productivity and growth

From innovation to growth

Growth can be attained through higher employment and increased productivity. While employment is about how much we work, productivity is about how and with what we work. About 80 percent of our growth comes from productivity.

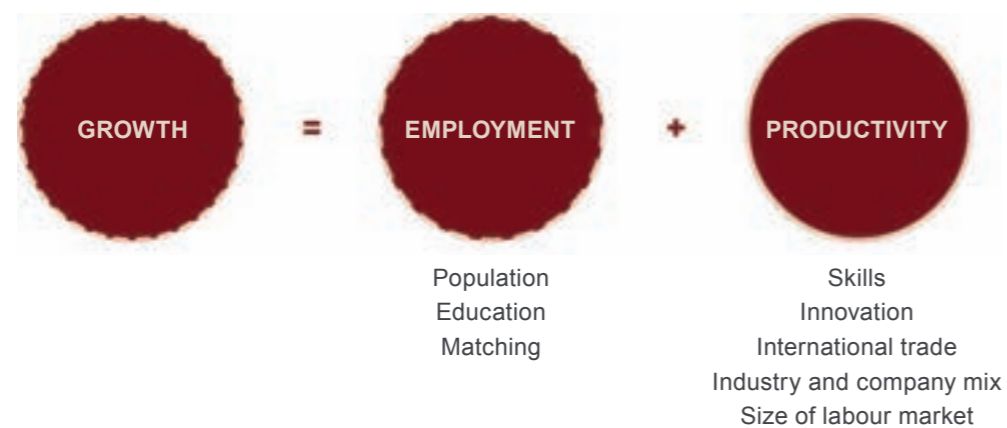
Diagram 3. Productivity as a proportion of growth



Source: The new geography of productivity 2017 (updated 2018)

In global competition it is through productivity that we compete. Higher productivity can be attained through innovation and skills development, in other words new innovative working methods, technologies, products and markets and more trained personnel. We also need to ensure that the broader perspective of how well we succeed as a society and production per inhabitant grows.

Figure 1. The components of growth



Source: The new geography of productivity 2017 (updated 2018)

Innovation can be defined as something new – a product, service, process or business model – that is put to use. The purpose of innovation may vary and may, for example, be directed towards the different sustainability aspects, processes, technology, marketing, organisation or changing societal systems. An innovative business community creates high productivity and boosts the capacity of the economy for development, in other words its capacity for renewal and adaptation. However, innovation must always be understood in relation to entrepreneurship. Innovation relies on entrepreneurial behaviour that spots new research and new ideas. These are identified by the entrepreneur, whose work then drives innovation. Innovations start to genuinely drive productivity and growth once they are spread on a large scale and through follow-up innovation.

Fact box 2: different types of innovation⁴

Product innovation: A good or service that is new or significantly improved. This includes significant improvements in technical specifications, components and materials, software in the product, user friendliness or other functional characteristics.

Process innovation: A new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.

Marketing innovation: A new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.

Organisational innovation: A new organisational method in business practices, workplace organisation or external relations.

System innovation: An approach to address complex societal challenges that are systemic by nature and demand simultaneous changes to technical, economic and social systems. Usually a broad set of actors is required, working together for the long term to achieve change by mobilising the private sector, public actors, academia and civil society in technological development, market changes, regulation and social change.

⁴ OECD: oecd.org/site/innovationstrategy/defininginnovation.htm; OECD (2015), System Innovation: Synthesis Report

From idea to innovation

Innovations arise through new combinations of new and existing knowledge, skills and resources. Entrepreneurs are crucial in realising innovations, while innovation comes about in interaction between actors. What becomes innovations and where they come about, is determined by the surrounding system. This system comprises a set of laws and norms that steer relations between the innovation-creating actors, the knowledge base the actors have to develop new solutions, and access to capital to finance development and innovation work.

Many companies are engaged in open innovation and cooperation with customers, suppliers, knowledge institutions and sometimes competitors to develop new solutions is becoming increasingly essential. There has been a simplified linear view of innovation whereby the public sector funds basic research, which develops into applied research, which is then commercialised by companies. This view has changed in recent years and the picture of a more complicated system is emerging. This is a network of interaction and relations between large and small companies, entrepreneurs, research and education institutions, the public sector and individuals, which is often called an innovation system or an innovation ecosystem.

Innovation takes place both in the form of radical new ideas which lead to major changes, and in the form of incremental change. Research indicates that new companies contribute more to structural change, while large companies are better at research and development (R&D) that improves existing products. The importance of large companies for the regional economy cannot be overestimated. Large companies have a big market presence and expertise about what global markets demand. They contribute to investment in R&D as well as development of regional value chains. The relationship between large companies and SMEs is also important to the regional economy.

In regions there is a concentration of companies in different industries, known as clusters. Companies in densely populated environments with several companies from the same industry, specialised contractors, customers and academia are more productive and innovative. Regions with several clusters are even more innovative as they both promote specialisation effects and create opportunities for cross-fertilisation. This makes places single-track as development builds on actors' existing knowledge. To promote development in a cluster of companies, cooperation can take place in cluster organisations.

Increased investment in R&D has a positive effect on growth overall which exceeds the individual investment. This link primarily concerns private investment, making it difficult for the public sector alone to increase its own investments in R&D. Consequently, the public sector works to strengthen innovation environments where investments in R&D are to support innovation development and private investment.

The public sector plays several roles in enhancing innovation opportunities: i) through its impact on rules of play such as legislation, policy and taxes, ii) by financing education, research and innovation, iii) on the demand side as clients and through public procurement, iv) as developers of society, the public sector or of overlapping areas of interest between the public sector and the private sector.

Predictable public rules of play together with the capacity to predict shifts are vital for companies' capacity to survive. For example, many companies appreciate the UN's 2030 Agenda as it creates clarity about the direction society is to take regarding legislation looking ahead. A long-term innovation-friendly public sector is therefore essential for how innovative a country or region becomes. In order to seriously gain an impact from and with innovation in the public sector, the core businesses themselves must be deeply involved.

Historically, the public sector has found it difficult to find individual winners to support among companies. There is also a risk of distorting markets. Therefore, many initiatives have recently instead been focused on supporting knowledge development, technologies, shifts in technology or greater joint societal mandates; plus initiatives to strengthen the innovation system with a higher concentration of both R&D investment and stronger relations between innovation actors in clusters.





Photo: Kennet Ruona

3. Underlying conditions and systems for innovation

Skåne's underlying conditions

The general underlying conditions linked to starting businesses, competences, business climate and legislation to carry out innovation work in Skåne are good, even if there are certain challenges. Skåne's economy has an inherent duality. Skåne has a divided economy with a higher proportion of knowledge-intensive companies and specialised services in the west, while the east has a higher proportion in the manufacturing industry. The population is split with many highly educated people, but at the same time a higher proportion of people with little education than Sweden as a whole. We have a labour shortage in areas requiring a more highly educated workforce while in some parts of the population there is low employment.

Skåne is one of Sweden's two main gateways with good connections to continental Europe. Proximity to Copenhagen Airport, three regional airports, good rail and road connections, and four ports mean Skåne is well-placed logistically for people and goods. Hamburg is five hours away, and that will almost be halved in a number of years once a new fast link between Denmark and Germany is completed.

As a stand-out border region with 4 million inhabitants, Skåne has a large joint labour market shared with the Copenhagen region and southern Sweden. This offers great potential for growth, attractiveness and competitiveness in a regional and national perspective. There is great development potential in terms of deeper education collaboration.

Skåne's business community and the outside world

Skåne's business community is broad and the industry structure largely reflects that of Sweden as a whole. However, in the south-west there is a higher proportion of highly productive sectors than in the rest of Skåne. Lund is the city in Sweden with the highest number of innovations per capita over time in Sweden and Malmö is in fifth place per capita in terms of applications for European patents.

As a whole, business in Skåne has seen moderate economic development in the period 2008 to 2016 both in terms of processing value and number of employees. However, there are differences within the region. The financial crisis continued to suffocate economic activity up until 2014, when recovery seriously took off. Seen in terms of processing value, development has been weaker in Skåne than in Sweden's other metropolitan regions.⁵

Skåne is in the middle of a transition from highly productive manufacturing industry to advanced service sectors, e.g. in tech, life science, the packaging industry and environmental technology. Skåne is also one of Sweden's foremost regions in terms of enterprise. However, enterprise takes place to a lower extent in knowledge-intensive industries.

⁵The Productivity Commission – cooperation between a number of FIRS' stakeholders – pointed out that low productivity has posed a challenge for Skåne in recent years

Through exports of goods and trade, a large proportion of our jobs are directly or indirectly linked to the competitiveness of our companies. As Sweden has many major export companies and a small domestic market, global competitiveness is vital. However, Skåne is underperforming on the export side, with only approximately 8 percent of Sweden's total exports. Three-quarters of Sweden's trade takes place within Europe and Skåne's trade with Europe is even slightly higher. Skåne has approximately 6,000 exporting companies. We are thus extremely dependent on the world around us.

Alongside major international companies, we have start-ups that attract considerable investment. Skåne is the fourth region in the Nordic countries in terms of attracting venture capital investment and has a long history of innovation. Since the 1990s, innovations have been concentrated in information and communication technology (ICT), life science and the food and packaging industry. ICT is highlighted as the area that engenders the most innovations.

Technological development in digitalisation is the strongest current global technological shift. Many companies in Skåne are at the forefront of this move. At the same time, like the rest of Europe, we so far lack major companies with the capacity to drive the development of platform technologies. This makes us even more dependent on the world outside Europe, especially the US. A better functioning and joined-up European market for digital products would have further benefited many companies in Skåne and in Sweden.

Research

As a knowledge and growth region, Skåne stands out in having had a university since 1666 that today ranks as world class. Without Lund University, Skåne's situation regarding innovation, productivity and growth would look very different. A number of other research actors and research infrastructures have since emerged, such as the research facilities ESS and MAX IV, unique in the world, making Skåne an even stronger and more complete knowledge region.

Research is strong in Skåne and Lund University is the leading research institution in the region, responsible for 84 percent of published articles in Skåne. Other important research actors in Skåne are Region Skåne, Malmö University, the Swedish University of Agricultural Sciences' (SLU) Alnarp campus, Kristianstad University, ESS, the World Maritime University and the Swedish Forest Agency. Articles from higher education institutions in Skåne are cited 47 percent more often than those from higher education institutions in other European regions. Research in Skåne is generally of good quality compared with the Nordic and the European average.

Skåne's primary research strength is in life science. This is a research area with a combination of volume, breadth and cutting edge expertise that other areas are unable to match. In total this field is responsible for 40 percent of articles published in Skåne. Besides life science, the natural sciences also stand out. Medicine is the biggest specific area but dentistry, agriculture and biology plus physics and astronomy are also prominent.

Extensive and excellent research is carried out in Skåne in several research areas. The eight categories considered to be the most interesting for the strategy are: life science,

physics, agriculture and food, climate, the environment and energy, chemistry, materials, technology and data science.

The average for Skåne's research institutions' proportion of co-publications with industry is in line with the average in the Nordic countries. Research actors in Skåne win competitive funding mainly in their strong research areas of health and technology science. National institutes for applied research are important for mobilisation and for attracting financing for cooperation and testbeds in other Swedish regions. In Skåne, we see a lower presence of such institutes, fewer testbeds and lower volumes of national financing of collaborative research and innovation processes. Furthermore, actors in Skåne have been less successful in calls for EU funding for collaborative research and innovation.

In general, more may need to be done to stimulate broader collaborative constellations in research and innovation in Skåne, so as to be able to be a stronger competitor for financing of collaborative research and innovation in the future, both in Sweden and internationally. In Scandinavia, institutions in Skåne publish the most within Sweden, and to a lower extent with Denmark, despite their geographical proximity. More can be done to achieve cooperative partnerships in the Greater Copenhagen region. Additionally, more actors in Skåne need to improve their participation in the EU's research and innovation programmes. Currently it is mainly Lund University which is successful in these programmes.

Roles of the public sector linked to innovation

Public sector actors in Skåne have long worked for innovation by participating in and driving innovation collaboration with the business community, academia and civil society. Public sector actors are active in projects in national innovation programmes and several municipalities run innovation platforms with a focus on working together to strengthen and develop innovation capacity. Skåne also has testbeds run in collaboration between the public sector, academia and industry.

Clinical research at Skåne University Hospital is prominent and is an example of the public sector's role and importance in driving collaboration on innovation. Skåne is very well placed for clinical research, offering major benefits for clinics, business and society.

Several public sector actors in Skåne are actively working to encourage innovative welfare solutions and procurement. So far, innovation or functional procurement is limited to a couple of examples regionally and major potential continues to lie in changing procurement processes rather than running individual procurements.

As with procurement processes, an additional way for the public sector to take a leading role and drive innovative development locally and regionally is to tackle land use and planning processes in new ways where the public sector makes it clear to the developers what is expected of them in the short and the long term. This approach has begun to be developed in Skåne's municipalities.

To continue developing dynamism in the areas where the public sector are major needs owners, there is a need for expanded expertise among several public sector actors and several parts of the public organisations involved in the processes.



Skåne's innovation system and support system

An innovation system comprises a long row of actors who are mutually dependent on each other. Semi-formalised relations – e.g. FIRS – enable the constant creation of commonly adopted agreements on how collaboration and cooperation can work better to foster shared interests.

In recent years, private R&D has reduced in Skåne, while both Lund and Malmö Universities have been successful in attracting more research funding. However, the increase in public R&D does not cover the loss seen in private R&D. When private R&D falls, the links between research and companies shrink and important collaborations for knowledge building in academia reduce.

The companies and higher education institutions in the region have developed international networks. Internationalisation is necessary in order to benefit from key knowledge and link up with well-resourced actors internationally. Knowledge from outside is necessary so as not to risk stagnation in the longer term. Development has to take place with the best actors from the most important places in the world.

Today's Skåne has an extensive, multi-faceted structure of actors working to promote innovation, entrepreneurship, business and company development in what is termed a support system. Not all actors work with innovation alone; some have a more general development remit. There is a certain amount of specialisation in terms of target groups, support, and industrial focus, but there are also overlaps. The actors are found in different parts of Skåne and offer services for different phases and situations in the development of a company or a business concept.

One challenge is that there are no private actors steering the support system. It comprises sub-systems and is funded by private and public actors at local, regional, national and European level. This means the system as a whole is hard to grasp and the organisations change constantly, making it difficult to steer jointly. This also leads to a risk of under-funding of operations and functions. At the same time, this can lead to a more multi-faceted promotion system better capable of meeting the needs of different entrepreneurs.

There are parts of the support system that are less developed than in comparable regions in Sweden. For example, Skåne has fewer testbeds and research institutions than comparable regions that can constitute important components in innovation environments. These functions are those that often arise following focused collaboration between business, academia and the public sector. The system is also less developed in the eastern parts of Skåne.



Photo: Kennet Ruona

4. Strategic choices and priorities beyond 2020

All in all, Skåne is a small place in relative terms, with a limited number of actors with genuine power to influence development. In the light of this, one of the vital success factors is being able to join forces and concentrate resources – where we can attain scalable effects and our interests overlap – rather than spreading ourselves thin.

This strategy contains three fundamental parts with joint choices to boost innovation in Skåne:

1. Identifying prioritised areas around which to concentrate our efforts.
2. Achieving impact together through collaboration.
3. Prioritisations for strategic financing.

Prioritised areas for innovation in Skåne

The prioritised areas are divided into two types of focus areas: specialisation areas and broad business promotion efforts. The specialisation areas are mainly based on areas where Skåne's industry offers major potential for growth, where there are overlaps between business and research, and opportunities to drive development via collaboration. Broad business promotion initiatives seek to increase innovation capacity mainly in small and medium-sized companies with growth ambitions by meeting their needs for funding, export support, digitalisation, work on the green transition and business advice.

The strategy acts at an overarching level in relation to the UN's Sustainable Development Goals (SDGs) to encourage economic productivity through diversification, technical innovation and upgrades, as described in target 8.2: "Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors." Furthermore, several of the specialisation areas address global mega trends and all contribute innovations to at least one of the SDGs.

Global challenges and the SDGs

In Skåne we have long been working on innovation that addresses global challenges. Where global challenges exist, there is an opportunity to improve the lives of a large number of people and simultaneously to reach out to major markets.

Since Skåne's joint innovation effort began, about a decade ago, the UN's Sustainable Development Goals have been adopted. At the UN Climate Conference in Paris in 2015 (COP21) all the countries of the world united in undertaking to help reduce greenhouse gases to mitigate global warming. In Sweden, the goal has been set that the next generation is to inherit a better environment than that of today. This has an impact on innovation and business development in several fundamental ways, both globally and regionally.

- Public and large amounts of philanthropic financing of innovation is targeted towards the climate and sustainability goals.
- Legislation around the world is being designed in line with the SDGs, which means that companies need to adapt their operations in order to survive.
- In globally connected and export-dependent Sweden, where companies are often thinking globally from day one, it is particularly important to be sensitive to and at the forefront of this trend.

Innovation and entrepreneurship have been highlighted by the UN as being particularly essential if we are to have a chance of attaining the SDGs. sou (2016:72), the most relevant and extensive Swedish government inquiry into innovation and entrepreneurship, which also factors in the SDGs, points out that innovation and entrepreneurship can specifically contribute towards eight of the 17 SDGs.⁶ With this in mind, Skåne is judged to be particularly well placed to contribute to six of these goals, not least through the energies of its business community. The 2030 Agenda, based on its targets, is addressed within the respective priority area in line with Table 1. However, none of the 17 SDGs can be achieved at the expense of another and success is needed in all areas if the overarching objective of the 2030 Agenda is to be able to be achieved. It is mainly through solutions in Skåne's areas of specialisation that we can do our bit towards global sustainability through this strategy.

Clarification table 1:

Tech: 7.3, 11, 2

Life science and health: 3.3, 3.4, 3.9, 3.B, 12.7

Food: 12.2, 12.3, 12.7, 13.3

Advanced materials and manufacturing: 12.1

Smart sustainable cities: 6.3, 6.4, 6.B, 7.1, 7.2, 7.3, 7.A, 11.1, 11.2, 11.6, 11.B, 12.5, 12.7, 13.1

ESS, MAX IV and the Science Village innovation system: 3.B, 7.A

⁶ Swedish Government Reports (sou) 2016:72, Entreprenörskap i det tjugoförsta århundradet (Entrepreneurship in the 21st century), page 67.

Table 1: How "Innovation for sustainable growth" can be part of fulfilling targets in the 2030 Agenda

3 GOOD HEALTH AND WELL-BEING	6 CLEAN WATER AND SANITATION	7 AFFORDABLE AND CLEAN ENERGY	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	13 CLIMATE ACTION
TARGET 3-3 REDUCE NON-COMMUNICABLE DISEASES	TARGET 6-3 IMPROVE WATER QUALITY AND REDUCE POLLUTION	TARGET 7-3 INCREASE RENEWABLE ENERGY CAPACITY	TARGET 11-3 SAFE AND AFFORDABLE HOUSING	TARGET 12-2 SUSTAINABLE MANAGEMENT AND USE OF NATURAL RESOURCES	TARGET 13-1 STRENGTHEN RESILIENCE AND ADAPTIVE CAPACITY TO CLIMATE-RELATED DISASTERS
TARGET 3-4 REDUCE MORTALITY FROM NON-COMMUNICABLE DISEASES AND PROMOTE MENTAL HEALTH	TARGET 6-4 INCREASE WATER EFFICIENCY AND SECURE FRESHWATER SUPPLIES	TARGET 7-4 DOUBLE THE RENEWABLE ENERGY SHARE	TARGET 11-5 SUSTAINABLE AND RESILIENT TRANSPORT SYSTEMS	TARGET 12-5 REDUCE GLOBAL PER CAPITA WASTE	TARGET 13-3 BUILD KNOWLEDGE AND CAPACITY TO MEET CLIMATE CHANGE
TARGET 3-9 REDUCE INEQUALITIES AND DISEASES, PREVENTION, TREATMENT AND PROMOTION	TARGET 6-6 SUPPORT LOCAL ENGAGEMENT IN WATER AND SANITATION	TARGET 7-4 PROMOTE ACCESS TO RENEWABLE ENERGY AND CLEAN ENERGY	TARGET 11-6 REDUCE AIR QUALITY POLLUTION	TARGET 12-6 SUBSTANTIALLY REDUCE WASTE GENERATION	
TARGET 3-8 SUPPORT RESEARCH DEVELOPMENT AND INNOVATION, ACCESS TO AFFORDABLE MEDICINES AND VACCINES			TARGET 11-8 IMPLEMENT POLICIES FOR INCLUSIVE, RESILIENT AND SUSTAINABLE CITIES	TARGET 12-7 PROMOTE SUSTAINABLE PUBLIC PROCUREMENT PRACTICES	

Specialisation areas

FIRS has prioritised six specialisation areas with potential for growth. The selection criteria are not homogenous and have been defined on the basis of different backgrounds and intervention logic. What all apart from ESS, MAX IV and the Science Village innovation system have in common is that they are based on existing business clusters in Skåne. A further selection factor is that there is a clear link to prominent research environments. In these areas, the greatest potential lies in creating innovation-driven growth through cooperation and reinforcing synergies and cluster effects. Selection is also based on an assumption that business development is path dependent, i.e. the companies of tomorrow will be building on the strengths of today.

Although specialisation areas have largely been identified based on industry strengths, this does not mean that all initiatives in these areas always have to have immediate commercial goals. Initiatives such as pure research investment, social initiatives and environmental initiatives in or on the fringes of the specialisation areas, and which reinforce them, are also important.

The fundamental concept underlying the specialisation areas is that initiatives must:

- Have the potential to strengthen emerging areas of technology and industry.
- Promote long-term development, strategic collective action, between relevant actors in research and innovation, and work across disciplines and boundaries.
- Have the opportunity to contribute towards system innovation or solutions to global challenges outside Skåne's and Sweden's borders.

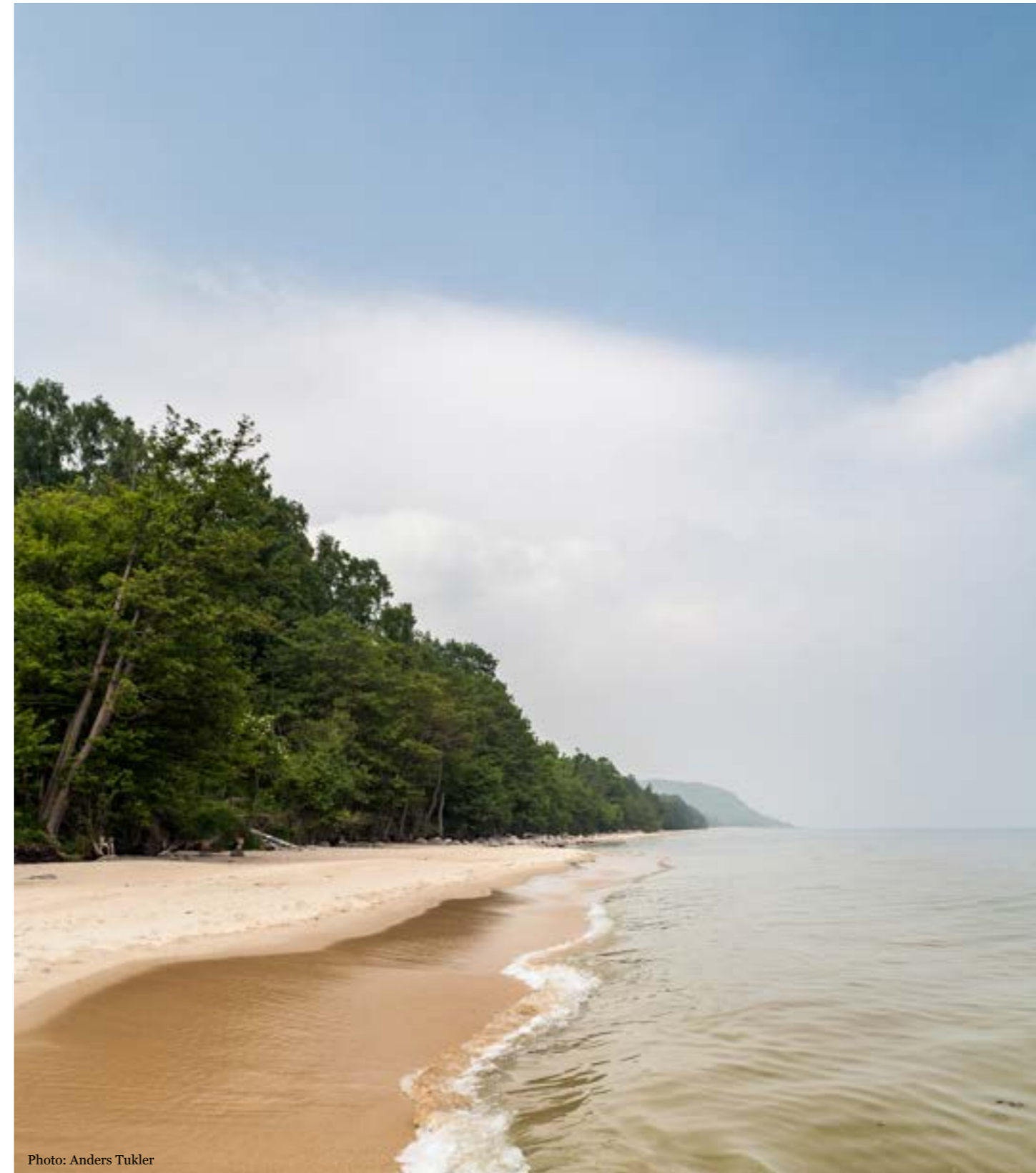


Photo: Anders Tukler

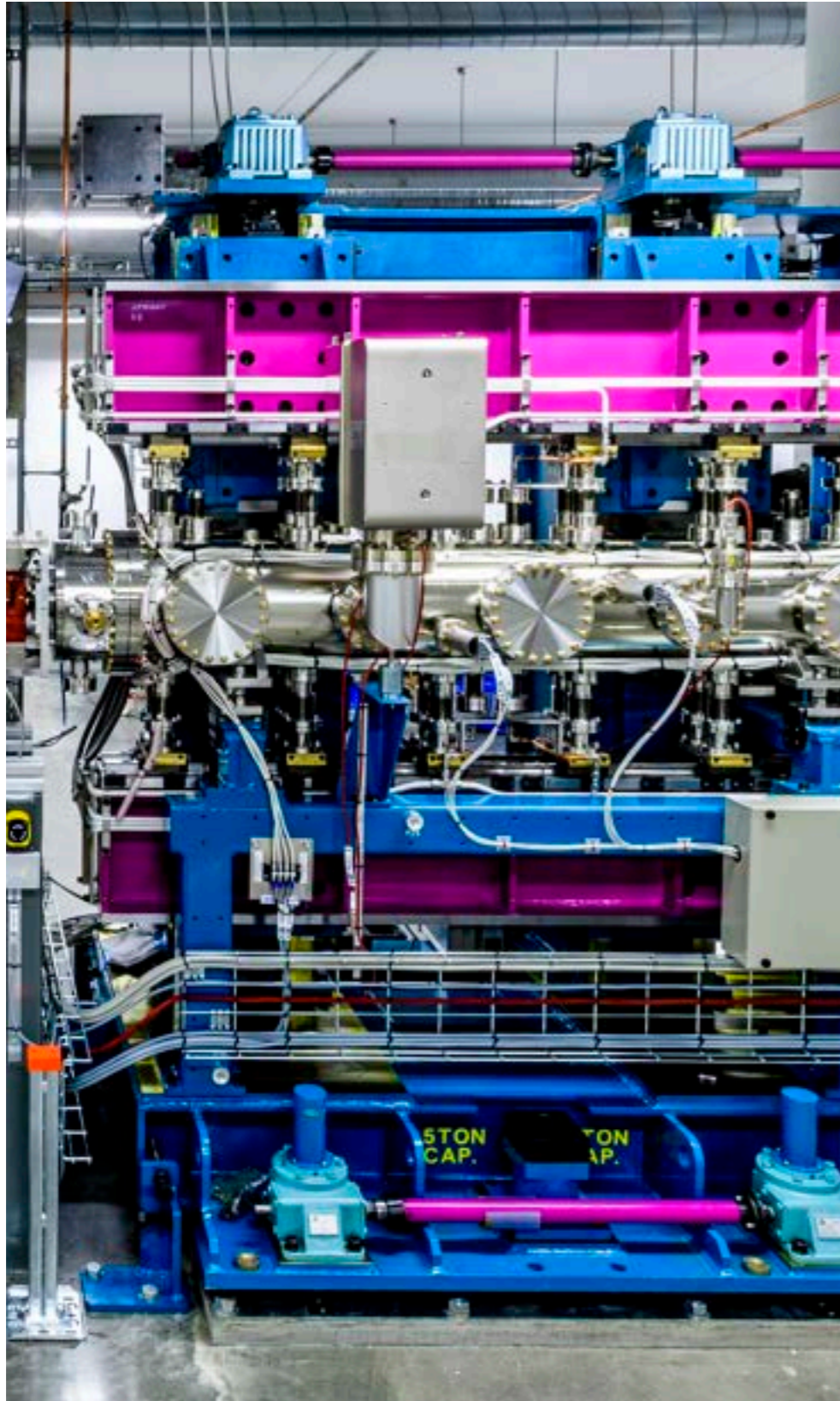


Photo: Kennet Ruona

Tech

In Skåne there is a broad spectrum of companies selling digital hardware and software solutions, known as tech companies.⁷ Skåne is home to leading global companies and high-profile start-ups. Their operations run from hardware and network solutions, via sensors and the internet of things, to different forms of digital apps and consultancy services. The region boasts advanced technical expertise in deep tech, which includes artificial intelligence, the internet of things, 5G, image recognition and big data. Video games are a small but rapidly growing segment.

The regions in Sweden that have managed to make the switch from traditional industry to a focus on digital technologies are those that are the most innovative and have enjoyed the strongest growth. Research in mathematics and data science at Skåne's higher education institutions has had an impact in the world of research, but is not more specialised than in other places. Skåne also has strong education environments for tech-related competence. Tech is also the area where the highest number of innovations are generated in Skåne.

The companies are largely international but are also important as customers for subcontractors and consultants at regional level. Together they form a dynamic cluster, bringing together competence that can also drive ongoing digitalisation of other sectors. It is not unusual for the larger companies to become fertile ground for ideas that are then spun off to new companies. This is also reflected in Skåne's tech companies having been successful in attracting investment. Skåne is the fourth largest Nordic region, after the capital cities Stockholm, Copenhagen and Helsinki, when it comes to attracting investment in tech start-ups.

Skåne enjoys particularly favourable regional factors that are influencing the sector's development and seeing it develop more strongly than the national average, in terms of employment, processing value and productivity. Meeting the business sector's skills needs is a major challenge. However, there are regional differences here, with a concentration of tech companies in western Skåne and with most of the larger companies in the Malmö/Lund region where 10 percent of all employees are engaged in ICT, which is more than twice the proportion in north-west Skåne.

FIRS will work to:

- Strengthen research and innovation environments and collaboration with the business community, including through an investment in AI.
- Position Skåne in the world as an attractive tech knowledge centre
- Develop a digital innovation hub that spreads digital knowledge in the region and also supports tech companies in the EU.

⁷ The tech area covers companies that are driving technological development. For the digital transition in the business sector as a whole, see digitalisation (4.1.3.1).

Life science and health

An increasing number of countries and regions are moving towards a more systematic approach to healthcare, with an ambition to work with the entire health chain from health promotion via prevention to diagnosis and treatment. Life science in Skåne is a sector with clear challenges and strong development potential.

The life science sector covers companies working on the development, production and distribution of drugs and medical technology, basic research, clinical research and some aspects of healthcare. The sector is undergoing change, partly to do with engaging with tech and big data and partly to do with an increasing focus on prevention. Life science in Skåne is well-known internationally and is responsible for 16 percent of Swedish life science with 6,700 employees. Add in the Copenhagen area and this figure goes up to more than 50,000 employees, making Greater Copenhagen the biggest life science labour market in northern Europe.

The business structure in Skåne is characterised by small research-intensive companies that were launched on the stock exchange at an early stage to bring in capital. The choice of early listing is linked to these companies experiencing a shortage of venture capital and institutional investors. Few life science companies in Skåne have the ambition to grow into larger companies and their business models often build on licensing, takeovers and buy-ups, making skills in transactions increasingly important for success.

At higher education institutions in Skåne, health and medicine are the areas that are in the forefront, and dental health is a research area with a high impact. This brings well-educated labour and new knowledge to the innovation environment, which has made Skåne an attractive place to locate to. In the same way, healthcare, especially Skåne University Hospital and the clinical research conducted there, is crucial to the development of the life science sector in Skåne.

For life science and health, product development, research, social care and healthcare are interdependent. Some of the potential for health and welfare innovations that exists requires systemic solutions where the public sector and industry collaborate, test and scale up, often with academia and civil society. Such systemic solutions are important in this field, but in combination, individual companies' innovations and the purchasing power of the public sector can also drive strong development in the area.

FIRS will work to:

- Develop research and innovation environments that attract capital, skills and drive innovation in different environments. More testbeds and opportunities for clinical trials are especially important.
- Increase the commercialisation of research.
- Foster stronger and in-depth cooperation between social care, healthcare in Skåne (especially regarding Skåne University Hospital), academia, local government, the business community and promoter actors.
- Promote internationalisation in the Öresund region as well as Europe and globally.



Photo: Kennet Ruona



Food

A significant proportion of all food produced in Sweden comes from Skåne. The region has strong assets throughout the food system from primary production via processing and packaging, to the retail and consumer stage and a well-developed innovation system. The sector is primarily prioritised due to the more productive processing industry, plus the link to primary production and a complete ecosystem. There is a unique concentration of food-related research and education and well-established successful collaboration between higher education institutions, the business sector and society. The region has several strong research fields with critical mass, e.g. agricultural science, biology, plant research and food science. The intersection between life science and agronomy and food research is a prominent strength, especially regarding diabetes and metabolism, which in recent years has successfully developed evidence-based innovative healthy food concepts.

In Skåne, about 11,000 people work in food processing and, measured in terms of number of employees, Skåne is responsible for 20 percent of Sweden's food processing. Skåne's food companies are large compared with the rest of Sweden. Skåne's food exports have almost tripled in ten years. Processed food is responsible for two-thirds of total exports. Seen in terms of results per employee, the beverages industry is a profitable and productive sector.

Skåne has a significant start-up scene with new food companies in everything from sustainable fish farming to biodegradable plastic cutlery and is home to Sweden's largest incubator with a food profile.

At the same time, there are challenges. Several food companies have restructured their operations and, among the large companies, sales and the number of employees have shrunk significantly in the past ten years. In the equivalent period, however, the regions' small and medium-sized food companies have increased in number, sales and employees. A large proportion of the sector in Skåne has low receptive capacity for R&D and a low level of education.

The transformation taking place in the global food system demands multi-disciplinary efforts and collaboration. The area faces several types of changed consumption patterns, e.g. in ethical and sustainable food and packaging, plant-based products, healthy food and drinks, new forms of distribution and experiences. Here in Skåne, we are uniquely placed to exploit innovation opportunities to respond to this transformation. In recent years, strides made in Skåne in terms of patents, processes and products have achieved major spread. Drying techniques, freezing techniques, oat products and probiotic products are just some examples that have changed the market.

The great potential lies in linking together research and expertise from areas adjacent to the food sector and in driving long-term challenge-driven investments capable of leading to disruptive innovations. Some focus points of major strategic importance in a ten-year perspective may be:

- Increased food production in a circular and bio-based food system, which includes new ingredients and adapted process methods as well as efficient water consumption and ecocycle solutions.
- Food for quality of life and health, where, not least, rapid developments in genetic research and research on the composition of gut flora are producing new opportunities to understand the health effects of diet, followed by work towards innovations in precision nutrition.
- New opportunities to improve food safety and consumer behaviour throughout the value chain, partly through digitalisation, new forms of packaging and logistics.
- FoodTech, which encompasses innovation opportunities in everything from precision farming, IoT, AI and 3D-printing to health apps. Here, for example, the region's prominent tech sector may support data-driven technology development for the entire area. This development is well on the way with increased activity and development opportunities in this direction having been noted among large and small tech companies.

FIRS will work to:

- Put in place several strategic research and development projects plus good access to pilot facilities, testbeds and cooperation arenas.
- Strengthen incubation and acceleration for start-ups with a focus on growth companies with high scalability.
- Ensure that Skåne's food system is at the forefront on sustainable food production and consumption in the public and private sector.



Photo: Kennet Ruona

Advanced materials and manufacturing

The manufacturing industry accounts for up to a quarter of Skåne's processing value, a sizeable proportion of exports, and, despite ongoing automation and robotification, a large number of employees in Skåne. In a broad sense, Skåne's industry is underperforming, however, seen in terms of processing value in relation to Sweden as a whole. The advanced manufacturing industry is a part of the manufacturing industry in which the products that are produced have higher added value and a higher knowledge content.

Advanced materials and manufacturing is a strength area in Skåne spanning several sub-sectors, with specific strengths, specialisation and a concentration of companies in packaging, cooling and ventilation technology, chemistry, plastics and rubber. These are highly productive and drive innovation. Cooling technology and the packaging industry, in particular, are among the most prominent innovative sub-sectors in Skåne and here there are also links to Skåne's food industry. The chemicals industry in Skåne displays stronger employment and productivity growth than in other parts of Sweden.

The manufacturing industry is in the throes of a transition from unqualified to qualified labour. The number of employees is falling while companies in the industries are employing. One important explanation is that companies are buying in different services from external companies. At the same time, many companies are investing in different forms of robotisation, automation and digitalisation, and are employing people with new types of skills. There are indications that the companies are encountering difficulty attracting and recruiting staff to the industry and the need for people with a technical education is increasing in these companies.

Its high proportion of exports means Skåne's manufacturing industry has high exposure to the outside world which makes development in this field particularly sensitive to the global economy and global trade fluctuations.

There are links to research in this field, e.g. in chemistry, engineering, packaging and manufacturing. Research on materials is judged to be strongest in the region in this specialisation area and in the longer term, the link to the European Spallation Source and MAX IV should not be underestimated. A structure has been created that supports high-tech companies in Skåne to deliver to research facilities. A national supplier organisation enables companies from the region and Sweden-wide to forge international contacts, exchange knowledge and launch new development areas.

Sweden's industrial companies are trailblazers on sustainability but Swedish industry still accounts for a considerable proportion of Sweden's carbon dioxide emissions. It is therefore particularly important for investments made in advanced industry in Skåne to take into account the UN's SDGs. A focus on a digital and sustainable transition in Swedish industry is also a focus in Smart Industry, Sweden's national strategy for new industrialisation, adopted in 2016.⁸

FIRS will work to:

- Boost competitiveness through knowledge building and dissemination with the help of automation, servicification and robotisation.
- Strengthen knowledge on sustainable production to promote value creation and competitiveness in the industry through increased resource efficiency, sustainable production and circular business models.
- Build and disseminate knowledge on developing and improving production materials, and their processing to improve competitiveness and an opportunity for more resource-efficient production.
- Establish testbeds, development environments and strengthen research in areas that help to strengthen industrial production, especially access for SMEs.

⁸ regeringen.se/informationsmaterial/2016/01/smart-industri---en-ny-industrialiseringsstrategi-for-sverige/



Photo: Kristianstad Municipality/Mattias Roos

Smart sustainable cities

In 2050 the earth will have a population of almost 10 billion, 70 percent of whom will be living in cities. In Sweden, 85 percent of the population already lives in towns and cities, which has led to us developing smart, efficient solutions for the complex systems that make up a city.

Smart sustainable cities are founded on a combination of strengths in several commercial areas and societal challenges. This in particular is an area where Skåne's cities have clearly expressed the ambition to innovate together with the business community, academia and civil society. Malmö, Lund and Helsingborg are achieving this in the form of the innovation platforms M21 and Future by Lund as well as the investment in the future represented by H22.

Much of the potential for innovation in the urban environment requires systemic solutions in which the public sector and industry collaborate, test and scale up, often jointly with academia and civil society. Such systemic solutions, based for example on social innovation, are important for smart sustainable cities, but individual companies' innovations and the purchasing power of the public sector can also drive strong development in the area.

In terms of the business community, this area predominantly relies on some of Skåne's major industries, energy and heating, construction, property, water, waste and recycling plus IT. Several of these sectors are characterised by a high proportion of municipally owned companies, a factor that limits the potential of investments as there are fewer opportunities for growth and scaling up. The public sector being at the forefront of development will become increasingly important for disseminating innovations, however. From a regional perspective, the sector is naturally decentralised as development is mainly carried out in the city concerned.

The energy industry in Skåne is dominated by E.ON and publicly owned companies. The processing value is high but varies hugely from year to year in line with fluctuating energy prices. Among smaller energy companies there is a trend towards wind power and biogas, for example, and the Copenhagen region is home to Vestas, the largest wind power company in the world. Skåne has a large construction industry, dominated by major actors with a relatively low knowledge content and medium processing values. Skåne and the Copenhagen area are strong in the pan-industry field of cleantech, which largely overlaps with smart sustainable cities. In cleantech, scalability and export opportunities are predicted to be good. The area Smart sustainable cities also overlaps with smart mobility and transport solutions where there is a drive for development in Skåne and some high-profile research, plus some operations in the automotive industry.

Higher education institutions in Skåne are important in enhancing the region's research on climate, the environment, renewable energy and fuels, the internet of things and water and recycling. Additionally, the higher education institutions highlight sustainable urban development as a strategically important area for further development. There are many examples of companies and innovations founded on knowledge from higher education institutions in Skåne.

FIRS will work to:

- Exploit the power inherent in Skåne's innovative cities and attract companies by initiating and facilitating testbeds where companies of different sizes can develop solutions in real environments.
- Promote innovative procurement and urban development processes with a high degree of innovation and sustainability.
- Coordinate and strengthen joint communication on what is happening in the area in municipalities, the business community and in research in Skåne.



Photo: Leif Jansson

ESS, MAX IV and the Science Village innovation system

ESS and MAX IV are two research facilities unique in the world that have the potential to highlight large amounts of Swedish and international research, so creating international interest and greater attractiveness and leading to an influx of skills to Sweden and the region. This hosting provision offers unique opportunities but also makes great demands of regional and national joint efforts to fully realise its potential.

The parties in Skåne will actively work together to ensure good regional hosting with national accountability that, in collaboration with other partners, fosters the emergence of a national and international innovation system surrounding the research facilities.

The vision for work in this specialisation area is to develop innovation systems that exploit to the full the unique opportunities that the establishment of the new research facilities offers by effectively linking the facilities and Science Village with regional, national and international research and innovation systems such that more research actors are established and more companies are involved with closer links to innovation actors and more collaboration with research environments.

This specialisation area is future-focused and does not build on Skåne's existing industrial strengths. For the business community in Skåne, the major advantage is not the proximity to advanced research facilities but the unique opportunities that will arise in the wake of ESS and MAX IV. Over time, a number of knowledge environments in life science, materials science and other areas will develop around these facilities, opening up business opportunities. The opportunities will arise through access to specialist labour, easier access to collaborative partners and an opportunity to conduct experiments at ESS, MAX IV or explore specific problems.

Thematically, today there is a regional focus on the potential offered by nanotechnology, a strong research area in Skåne, with active entrepreneurs and great potential to make use of the research facilities. The emergence of a strong innovation environment around research into nanotechnology – which integrates the whole value chain from concept to market – can create ground-breaking solutions to global challenges. There is also a focus on the research and industry area of life science, strong in the Öresund region, with perhaps the greatest potential to exploit the facilities. Other regionally strong areas that can benefit from the facilities are food, packaging and tech. The processing and analysis of experimental data is another area where there are good regional opportunities to actively participate in developing the facilities and their methods.

Central areas for investment involve stimulating, supporting and lowering the threshold for both industrial and academic actors to use and develop techniques, methods and products in relation to the research facilities. The initiatives should also promote development in the local area and help Science Village to grow as a globally leading research and innovation arena in association with ESS and MAX IV.

FIRS will work to:

- Promote development in the local area and help Science Village to grow as a globally leading research and innovation arena.
- Collaborate to attract global companies and innovation actors.
- Gather around a few thematic focuses, based on strong research fields and Skåne's specialisation areas.
- Create effective access to ESS and MAX IV, for example through meeting platforms such as MAXESS Industry Arena and developing entry environments and support infrastructure.



Photo: Filip Bunkens

Broad-based business promotion initiatives

In addition to the specialisation areas, there is a need to coordinate broad-based efforts to raise innovative capacity and growth mainly in SMEs across Skåne. Companies with ambitions to grow and good circumstances to do so are found in all sectors.

There are a number of different organisations and functions whose purpose is to support the birth and development of companies across the region. The support system addresses financing, export support, business advice, establishment and foreign direct investment.

The broad business promotion initiatives in Skåne should be determined in relation to four strategic focuses:

- Work for a regional support system that operates region-wide.
- Clearer dialogue and coordination between national, regional and local promoter actors.
- Better digital packaging of joined-up offerings from promoter actors.
- Funding from the European Regional Development Fund (ERDF) in Skåne-blekinge for investment in SMEs should be allocated to (see descriptions below): digitalisation, green transition, innovation and growth support, export support and new markets, companies in a development phase

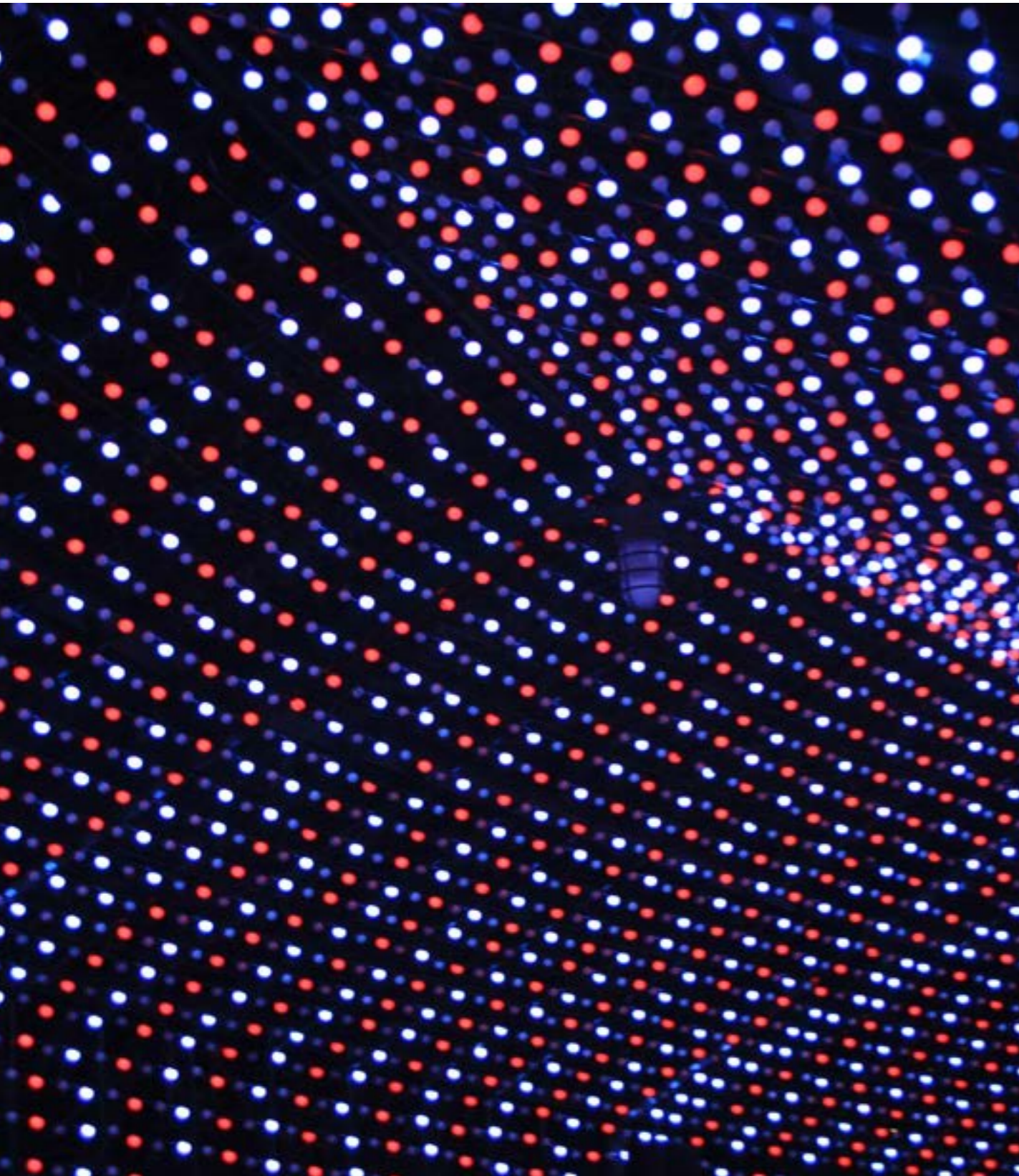


Photo: David Moore

Digitalisation

The ongoing digitalisation of our society means that companies and other organisations are challenging and competing with each other with new business models on a bigger playing field and in a more intensive way. Digitalisation is a challenge that companies have to tackle if they are to continue to be competitive, but also an opportunity for those who find the right pathway through the transition. Digitalisation changes companies' entire value chains, production, sales and distribution. Going digital, being able to handle and adapt their solutions to customers – with the help of data – is a question of survival.



Green transition

New demands are being made of citizens, government agencies and companies to move from non-sustainable solutions to fossil-free and resource-efficient alternatives. Skills boosting initiatives are needed to support the development of business models, techniques, processes and products by the business community. This may involve industrial production as well as increased use of sustainably produced materials and fuels. Particular focus should be placed on creating knowledge about circular business models and production systems.

- Encourage companies to adopt sustainable practices and to integrate sustainability information into their reporting cycle (target 12.6)
- Sustainable management and efficient use of natural resources (target 12.2)
- Promote public procurement practices that are sustainable (target 12.7)



Funding for innovation and growth

It is crucial to strengthen business development and innovation capacity throughout Skåne. Innovation management, financing and commercialisation initiatives are ways in which we support companies that are not currently innovation leaders. There is also a need to promote openness to develop business via cooperation with suppliers, customers and other companies or organisations. Digital tools such as evaluation of own professional skills and webinars should be used to help as many people as possible. Training in innovation management, commercialisation and law can also be key elements. There are also good examples of initiatives carried out to these ends using funding from the European Social Fund.



Export support and new markets

Good conditions for export contribute to long-term competitiveness and business development. The collaboration initiative Exportcentrum Skåne offers companies information on exports, new markets and financing solutions plus guiding them to the right export promotion organisation. In the long term, this cooperation will boost the export capacity of SMEs in Skåne.

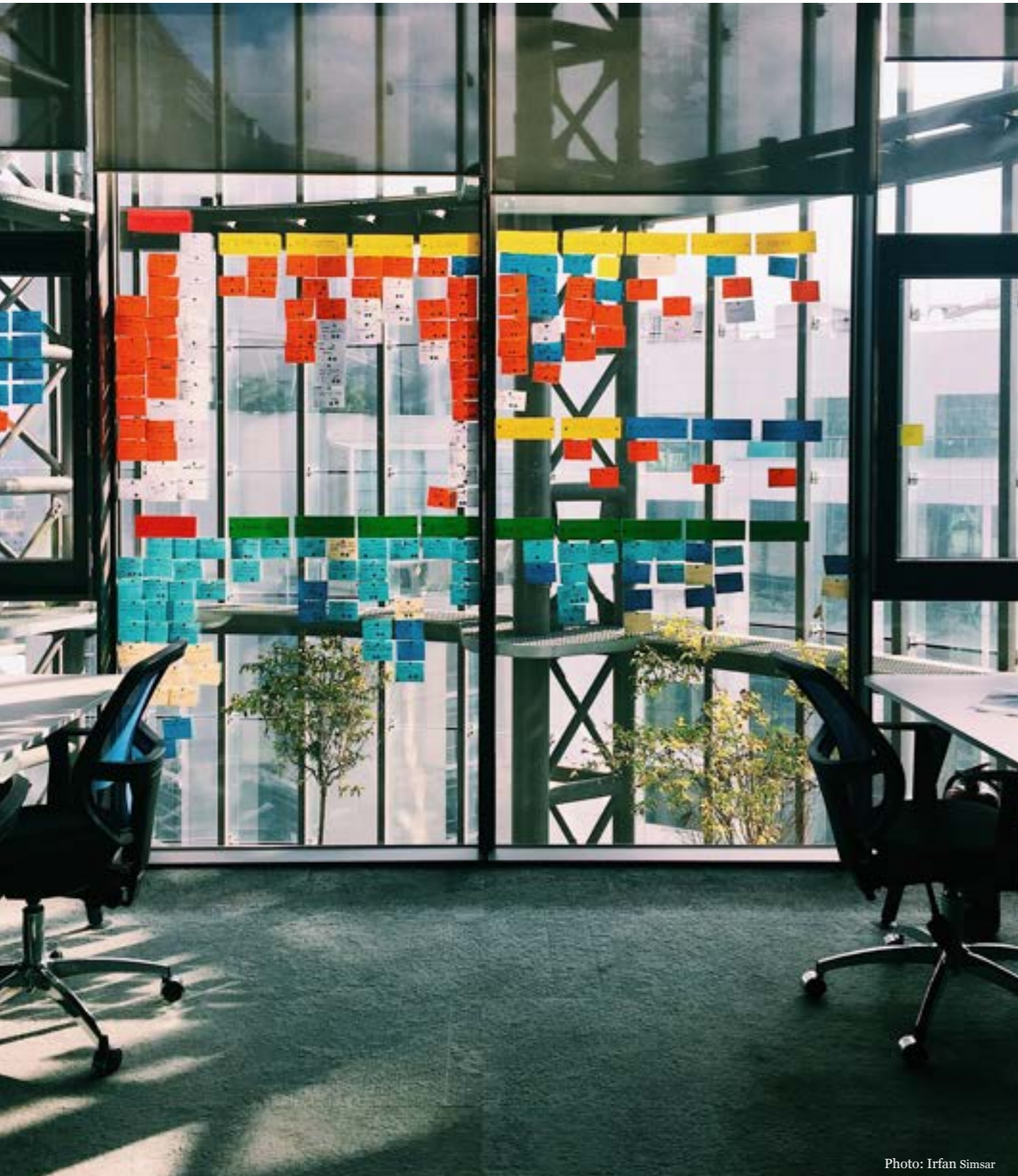


Photo: Irfan Simsar

Financing companies in the development phase

Access to financing through loans, venture capital and in some cases grants, is vital for companies in different development phases. In some early and risk-prone phases, companies often have no alternatives to public financing. At the same time, vital work is being done at regional level by linking entrepreneurs together with business angels and venture capital companies. Finally, there is sometimes an important link where public venture capital is co-financed with private venture capital. Much of the venture capital financing is provided by consortia of public or private investors operating in the company's different development phases.

Making a difference together

Skåne's development is not steered by private organisations but influenced by a number of actors bound together in collaborations and relationships. For this strategy to have an effect, a high level of collaboration and coordination is necessary. It is essential that the parties in Skåne develop cooperation further to achieve the ambitions of the strategy.

We need to take a more joined-up approach and join forces to an even greater extent in areas where it is important to take concerted action. Not all actors in FIRS are included in all contexts, only where they have a role to play. FIRS therefore sets up four visions for joint action to enable the strategy to make a difference to Skåne's development. These visions form the basis of FIRS' joint long-term efforts.

Following the adoption of the strategy, FIRS' stakeholders should clarify the role that their respective organisation can take on in relation to the strategy. Working together does not mean that all stakeholders are included in all parts of the process. FIRS also welcomes actors other than FIRS' stakeholders to act in line with the strategy.

Joint leadership through FIRS

FIRS has a coordinating role and a role in signposting the direction of joint development of the innovation system in Skåne. FIRS will develop concerted efforts on the strategic coordination of research and innovation in Skåne where FIRS' stakeholders have a mutual interest in working together, and continue with reactive work that does not counteract the strategic choices of the strategy.

FIRS is to ensure that the strategy is put into practice, which includes monitoring and evaluation as set out in chapter 5. FIRS will review the strategy every three years.

FIRS appoints cross-organisational groups for the respective specialisation areas to be tasked with coordinating the work through innovation agendas. The groups will involve relevant actors, identify bottlenecks to innovation, formulate needs, identify financing opportunities and carry out joint activities. International cooperation will be increasingly important both in terms of tackling global challenges and engaging in global innovation networks. The groups should take a far-sighted, focused approach to identify and monitor relevant networks, collaborations and opportunities able to contribute to the prioritised areas, e.g. within the remit of the Vanguard Initiative and the European Commission's Thematic Smart Specialisation Platforms.

The groups are to clarify the focus of the respective area and ensure that the priorities defined during collaboration are clearly needs-driven. It will be particularly important to involve to a greater extent companies that are research and innovation leaders and who have a significant impact on the regional economy, known as anchor companies.

Cluster organisations in Skåne seek to gather together actors in academia, the business community and the public sector and formulate and act on joint agendas. FIRS' stakeholders are behind these organisations, making it important to clearly set out the role of relevant cluster organisations in the respective innovation agenda.

Furthermore, there may be a need to form working groups over the course of the process on questions of a common nature that do not fall within the remit of the specific specialisation areas, such as communication and exercising influence.

FIRS' approach will be developed and set out in a separate document, clearly setting out organisation and structure.



Photo: Matteo Vistocco



Photo: Pierre Chatel Innocenti

Joint development of the support system for innovation

The organisations in the support system have a key role to play in implementing the strategy. All of FIRS' stakeholders are co-owners of, or influence, many of the supporting organisations. FIRS needs to work to develop a support system that spans Skåne's specialisation areas with effective organisations with appropriate functions. Where there are overlaps, FIRS' stakeholders are to strive to forge close links, and, where necessary, for consolidation. Underlying knowledge needs to be produced to identify needs for change.

The role and function of the promoter organisations will constantly change. Where strategic focuses change it is desirable that FIRS' stakeholders enter into dialogue. This is also the case for new major investments to ensure that parallel tracks are avoided.

The support system should move towards supporting new companies, growth companies and companies that apply research. Development must match the needs and opportunities pointed out in the prioritised areas of the strategy (4.1).

FIRS will work to increase access to support functions across Skåne, also outside the region's dominant innovation environments. Together, the stakeholders can develop Skåne's collective innovation capacity and ensure that there is access to strong nodes for innovation support in all four corners of the region. A special programme should be produced for this. This programme is to aim to include exchanging experiences, developing methods, innovation procurement, benchmarking and coordinating activities but is also to serve as a platform for jointly initiating, driving and learning from innovation projects and cross-border regional collaboration.

Concerted effort for attractive innovation environments

Attracting companies and private R&D, collaborative research, and establishing research institutions and testbeds are vital to attractive innovation environments. To attract companies, key skills and investment to the region, it is necessary to make a concerted effort surrounding our overlapping interests.

Skåne's higher education institutions carry out strong and excellent research. At the same time, there is a raft of challenges requiring concerted action linked to financing applied research, private R&D, collaborative research within the EU's framework programmes, and testbeds.

FIRS will work to increase and improve applications for collaborative research from Skåne within the EU's research programme and calls from national government agencies. The majority of analyses show that Skåne is under-performing in terms of financing of, and

access to, regionally based testbeds and test environments. An associated issue is a low presence of research institutes. Institutes encourage the development of testbeds and the dissemination of research results and have a positive impact on innovation processes. FIRS will work to increase the number of testbeds, test environments and the presence of research institutes linked to the specialisation areas.

We recognise that these factors are interlinked and that in Skåne we need to strengthen both individual actors and our combined capacity to collaborate. We need to increase the participation of major companies in concerted efforts to promote R&D and test environments, and to increase the level of applied technical research and the presence of research institutes.

Joined-up analysis and communication of Skåne

FIRS needs to act in concert, with joined-up communication to make its efforts more transparent. This will be achieved by developing and communicating the FIRS brand. Additionally, there is a need for a better overview of Skåne's innovation system. FIRS also needs to expand work on business intelligence and monitoring its interests.

Here in Skåne we need to develop a more strategic approach to the wider world. This involves monitoring the changes occurring in global value chains and emerging innovation environments in a structured manner. It also involves seeing how other regions and areas are working to boost their industry and their strengths.

Together, FIRS' stakeholders are working to develop underlying data and joint working methods to conduct dialogue with national and European actors to influence funding, legislation, etc. This underlying material needs to include a holistic picture of Skåne's strengths, the way in which FIRS brings efforts together, the strategic networks in which FIRS' stakeholders need to coordinate their participation, etc.

FIRS will work with a shared, clear picture of the status and strengths of the business sector, research and innovation in Skåne. This is sought by the business community and other parties. FIRS will work to highlight FIRS' own initiatives and the activities carried out in line with this strategy. Consistent communication with a single voice also helps to develop relations between the actors in and outside Skåne by providing an overview and greater clarity.

One joint initiative is to produce, disseminate and act on analyses and underlying knowledge on the development of Skåne and conditions for carrying out work on innovation and growth, in relation to the world around us.

Producing better statistics in order to analyse, compare and describe developments in Greater Copenhagen in terms of data on the labour market, sectoral development, innovation and value chains across the Öresund is of particular importance.

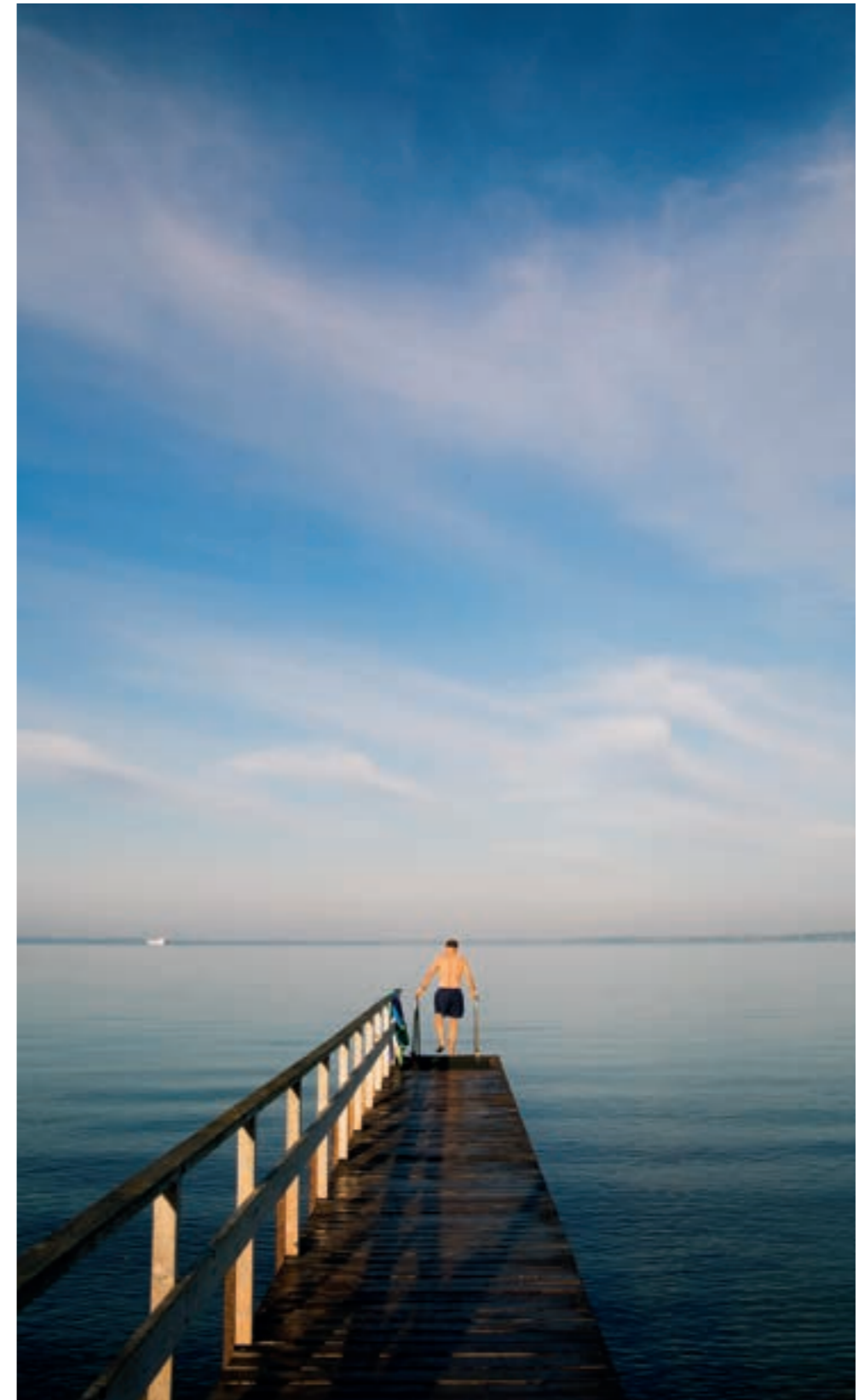


Photo: Studio E



Strategic financing

FIRS plays a significant role in bringing together the main funding bodies in the innovation and enterprise promotion system and in being a strong voice that increases available resources by exercising influence. FIRS can operate strategically on funding in several different ways:

- FIRS' stakeholders' own budgets.
- Allocation and coordination of funding from funds and sources of financing that FIRS' stakeholders are able to influence, predominantly regional funding.
- Joint influence on national and European funding bodies and securing funding in line with our prioritised areas.

This strategy is Skåne's Smart Specialisation Strategy and steers how regional funding for smart regional growth is to be allocated as far as Skåne is concerned. To increase the effectiveness of investments funded by regional funding, the focus should be on working on fewer but larger projects which are more coherent over time. Structures to strengthen the link between the prioritised areas and structural funding should be created, as should structures to forge links between FIRS and the Structural Fund Partnership. FIRS should influence agencies concerned to seek to increase attractiveness and reduce the administrative burden to enable more relevant actors to benefit from regional funding.

FIRS will work to ensure that initiatives within the European Social Fund (ESF) more clearly support a structural transformation that develops the prioritised areas of the strategy. Cross-border regional programmes such as Interreg Öresund-Kattegat-Skagerrak (ÖKS) should clearly be linked to and used for prioritised areas in this strategy. Above all, life science investments should be prioritised, alongside actors in Greater Copenhagen.

This work should seek to increase the allocation of strategic cooperation funding from national research and innovation funding bodies. Skåne lags behind comparable regions in this respect. Regions in Sweden that have worked more strategically on this have been more successful. This work may involve supporting applications and building stronger consortia, but also strengthening dialogue with national agencies.

FIRS should appoint a working group tasked with analysing the structures and collaborative models capable of increasing and broadening participation in the EU's sectoral programmes, especially regarding collaborative projects in Skåne's specialisation areas. The groups are to assist the groups appointed by FIRS for the respective specialisation area in working on forward thinking and strategic planning for the sources of financing in the EU that are not allocated to a geographic region, such as thematic programmes and investment funds. Particular focus should be placed on the EU's research and innovation programme and the proposed new programme for interregional collaboration on innovation.

FIRS should investigate the feasibility of a fund-in-fund set-up for financing innovation investments to create a financial strength for investing in particular joint initiatives.

5. A learning system – evaluation and monitoring

A smart specialisation methodology was followed in drawing up this strategy. The methodology emphasises the importance of the process being entrepreneurial, experimental and evidence-based, making learning, evaluation and monitoring key. A learning system that monitors efforts on an ongoing basis means that work is constantly refined and adapted. The monitoring will follow a three yearly cycle.

The monitoring work is founded on the effect logic that will be developed via the practical work on the strategy. Effect logic shows how the joint efforts will be structured and the results and effects they are expected to achieve. This logic is shown in table 2 below. Effect logic derives from the long-term effects that we seek to attain together by implementing the strategy.

Table 2. Effect logic – examples of challenges, initiatives, result targets and effects

Examples of challenges	Examples of initiatives	Examples of results	Examples of effects
Working conditions and sustainable growth	Set up knowledge centres	More highly qualified jobs	Well-developed innovation systems in our areas
Low productivity	Set up research institutions	More venture capital	Sustainable growth and productive employment for all
Health and wellbeing	New education programmes	More exports	Health and wellbeing for all at all ages
Water and sanitation	Research and innovation projects	More private R&D	Access to and sustainable management of water and sanitation for all
Sustainable energy	Testbeds and pilot environments	More patents	Access to financially affordable, reliable, sustainable and modern energy for all
Sustainable cities and communities	Support for applications	More research articles	Inclusive, safe, resilient and sustainable cities and communities
Consumption and production	Collaborative projects	More R&D funding to our areas	Sustainable consumption and production patterns

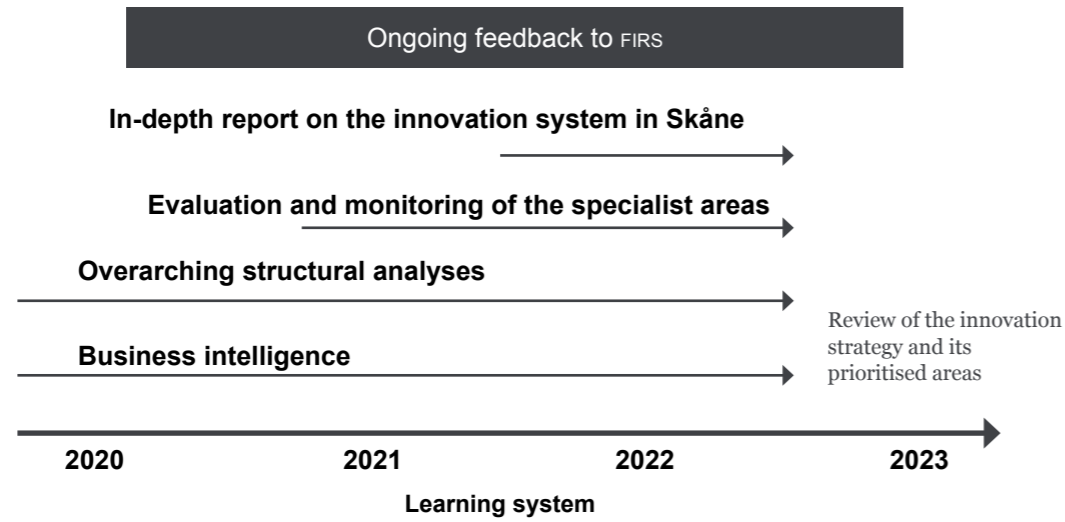
Examples of challenges	Examples of initiatives	Examples of results	Examples of effects
Climate change	Support to clusters, networks and platforms	More actors taking home EU R&I funding	Greater resilience to climate-related risks and mitigating the consequences of climate change
	Exercising influence	More cooperation funding from the EU and national financing bodies	More testbeds and research institutions operating in S3 areas

Because the effects are not expected to be achieved in the short and medium term, they are broken down into overarching measurable targets, which can be monitored and evaluated over time. The table also shows examples of joint initiatives expected to lead to the results stated and contribute to the effects. The left-hand column of the table sets out the overarching challenges from which our joint work in Skåne on innovation for sustainable growth is derived. The effect logic will be developed and linked to the innovation agendas that are to be developed for the respective specialisation areas.

The effect logic is the foundation of the learning system that will be developed. The learning system is partly designed to provide a knowledge base for steering the process in the right direction and partly to provide underlying data to everyone involved on how well different initiatives and forms of processes are working. The system is also designed to build trust in the process, motivation, transparency and openness on the use of public funding. The knowledge base comprises data from quantitative and qualitative sources, e.g. official statistics, surveys, current research and interviews.

FIRS' groups for the respective specialisation area take on a central role in constantly monitoring development. The results from the system will be delivered partly via and to these groups but also in various reports issued by Region Skåne. The results will be communicated via joined communication platforms and easily accessible communication material will be produced for FIRS' stakeholders to use.

Figure 2. Learning system model



A learning system needs to be drawn up on several levels; firstly specifically for each prioritised area and secondly at overarching level. We need to constantly work with different types of underlying data, e.g. key figures, to determine whether we are working in the right prioritised areas, whether we have a good mix of initiatives, whether individual initiatives are the right ones and whether the initiatives are being carried out correctly and by the right actors. Monitoring and evaluation of both implementation and results will be carried out for the prioritised areas. This will be linked to the specific circumstances and initiatives in these areas. The groups for the respective specialisation areas will follow up this material and use it in their strategic work. The data will support both those who steer strategic processes and those who implement projects and initiatives.

Furthermore, we will carry out more wide-reaching structural analyses of the development of the economy and the innovation system in general, e.g. how productivity and employment are developing in different sectors and geographies.

There will also be a business intelligence function. This will monitor the development of key actors and sectors in Skåne but also developments in other countries and sectors to find good examples and early signs of change in the wider world.

Every three years a thorough follow-up of innovation work in Skåne will be compiled, containing statistics and different forms of best practice to illustrate the work. Within the remit of this monitoring, long-term impacts of innovation work in Skåne will be examined. The monitoring will form a basis for adapting joint initiatives and strategic choices where prioritised areas will be revised.

Learning systems, evaluation and monitoring must constantly be kept in proportion to the ambitions and intensity of the joint work on this strategy and its innovation agendas.





6. References and sources

Specific analyses

Business report, Region Skåne 2019. (forthcoming)

Analysis of industry areas in Skåne, Ramboll Management 2019.

Analysis of research strengths in Skåne, Ramboll Management 2019.

Data from reference forum, Kontigo 2019.

International Benchmarking of regional innovation councils, Emily Wise 2018.

Data from Vinnova, the Swedish Energy Agency and Formas on innovation funding to organisations in Skåne.

Data from the Regional Innovation Scoreboard, European Commission.

Input and reference forum

The steering group appointed by FIRS to draw up the strategy comprised representatives from:

The City of Malmö
Lund University
Malmö University

The City of Helsingborg
Krinova Incubator & Science Park
Media Evolution Southern Sweden

Input was provided by the following organisations and constellations:

Business Region Skåne
Centrum för landsbygdsinnovation
The City of Helsingborg
Ideon Science Park
Innovation Skåne AB
iuc Syd
Kompetenssamverkan Skåne (koss)
Kristianstad municipality and
Krinova Incubator & Science Park
Lund municipality
Lund University
The City of Malmö
Malmö University
Chamber of Commerce and
Industry of Southern Sweden
Swedish Agency for Economic
and Regional Growth

Medeon Science Park & Incubator
Medicon Valley Alliance
Medicon Village Innovation AB
Mobile Heights
NanoLund
Packbridge
Pretium
Region Skåne
RISE Research Institutes of Sweden
Skåne European Office
Skåne Food Innovation Network
Sustainable Business hub
Swedish Maritime Technology Forum

Tillväxt Östra Skåne

Kristianstad municipality	Östra Göinge municipality
Bromölla municipality	Tomelilla municipality
Hässleholm municipality	Simrishamn municipality
Höör municipality	Osby municipality
Sjöbo municipality	Hörby municipality
Ystad municipality	Skurup municipality

The following organisations have participated in our reference forum:

Cluster organisations in Skåne

Sustainable Business Hub	Packbridge
Mobile Heights	iuc Syd
Medicon Valley Alliance	Swedish Maritime Technology Forum
Skåne Food Innovation Network	CoDest

Klimatsamverkan Skåne (Climate)

Skåne County Administrative Board	Region Skåne
Association of Local Authorities in Skåne	

Food forum

Region Skåne	Lund University
Skåne Food Innovation Network	Kristianstad municipality
SLU Alnarp	Krinova Incubator & Science Park
Federation of Swedish Farmers Skåne	Kristianstad University

Personal health (FIRS strategy group)

Region Skåne	Lund University
Skåne Food Innovation Network	The City of Malmö
Medicon Valley Alliance	The Civil Society Network in Skåne
Mobile Heights	

Smart sustainable cities (FIRS strategy group)

Region Skåne	Lund municipality
The City of Malmö	Malmö University

Smart materials (FIRS strategy group and reference group)

Lund University	Region Skåne
Malmö University	Innovation Skåne
Science Village Scandinavia	Big Science Sweden
European Spallation Source, ESS	RISE

Cultural and creative industries

Members of Region Skåne's sectoral council for cultural and creative industries (KKN).

Other KKN actors who provided input for the Innovation Strategy are:

Form Design Center
Game Habitat
Film i Skåne
Boost HBG

Social economy and non-profit sector

Coompanion Skåne	Winnet
IM	Skåne City Mission
Malmö Ideella	Mindpark/THINK
Svedala municipality	Baseline consulting
Region Skåne	Psykbussen
The Civil Society Network in Skåne	VÅGA
Företagarna region syd	

Young entrepreneurship

Drivhuset	Snilleblyxtarna
Ung Företagsamhet Skåne	Kristianstad University
Malmö University	Forza
Venture Cup	Skåne startups
Venture Lab	SLU Alnarp
Transfer	



Photo: Louis Reed

Other sources

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Guide to Research and Innovation Strategies for Smart Specialisations (RIS 3). European Commission (2012). Luxembourg: Publications Office of the European Union.

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Hur har det gått i Skåne? - Uppföljning av det regionala utvecklingsarbetet. (How has it gone in Skåne? – Follow up of regional development work) Region Skåne 2018. (digital tool)

Sydsverige Live! (South Sweden Live!) Ed. Pernilla Johansson. (2017).



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