Helsinki-Uusimaa Regional Council

EVALUATION OF RESEARCH AND INNOVATION STRATEGY FOR SMART SPECIALISATION (RIS3) IN THE HELSINKI-UUSIMAA REGION

Helsinki-Uusimaa Regional Council Publications
E 230 - 2019

Helsinki-Uusimaa Regional Council Publications E 230 - 2019
ISBN 978-952-448-535-7 ISSN 2341-8885 (pdf)

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Helsinki 2019

Uudenmaan liitto // Nylands förbund
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SUMMARY

The implementation of the research and innovation strategy for smart specialisation in Helsinki-Uusimaa Region (RIS3) has been evaluated via the projects funded by the Helsinki-Uusimaa Regional Council. The evaluation shows how the principles of smart specialisation have been implemented in projects, and if they have been successful in implementing the chosen spearheads. The evaluation aimed at offering elements for a renewal of the research and innovations strategy, and it was made of 29 regional funding projects, regional innovations and experimentations, as well as ERDF projects.

Results

Creating new business has been quite small-scale in the projects, it has been more common to create opportunities and conditions for new businesses. Agile piloting – a concept implemented by the Six City strategy projects – has been a good opportunity for companies to test their business ideas with a light process.

The projects have put a lot of effort into increasing networking and collaboration of stakeholders from different fields. The projects have been successful in involving also residents and service users in co-creation processes, i.e. the triple-helix model has been developed into the level of quadruple and pentahelix models.

Multidisciplinarity is a strength in the smart specialisation strategy. The priorities of the strategy combine several disciplines. Thus, it is natural for the projects to be multidisciplinary as they are implementing the strategy.

International cooperation has been small-scale in the projects, although some of the projects make an exception, particularly those ERDF funded projects that have an international focus.

In the best cases, the project partners have continued the work done in the projects as a part of their daily activities, or sometimes in larger-scale projects. A few projects have managed to make a significant impact. The projects cover implementation of the research and innovation strategy for smart specialisation (RIS3) quite well, no spearhead or main theme of the strategy was left unimplemented.

Development suggestions

Wider participation

The R&D and educational organisations in Helsinki-Uusimaa Region are already well involved in the strategy implementation, but wider participation of companies is desirable. By using methods of co-creation when renewing the RIS3 strategy in the Helsinki-Uusimaa Region, a wider group of stakeholders could be involved already in creating the strategy itself. Participation in the strategy development process could also make the stakeholders more committed to the implementation, and thus, could help to make smart specialisation better known.

More internationality

International cooperation has not been highlighted in the regional funding and regional innovations and experimentations projects' funding criteria. Instead, the projects have been small-scale and locally implemented. However, even smaller projects can aim at a wider impact by networking internationally, or by seeking EU project consortia for continuing the work after the project. To increase internationality, the project partners should be guided towards international cooperation by the funding authorities. One possibility is to utilize the thematic networks under the S3 Platform. One of them is the network for smart mobility (Safe & Sustainable Mobility), where the Helsinki-Uusimaa Region is a partner.

Clearly defined strategy spearheads

Clearly defined spearheads of the strategy could make the strategy more focused and more understandable. A clearer strategy would be easier to adapt and implement, and it could also increase the strategy's impact in steering regional development. At the same time, the versatile industry structure of Helsinki-Uusimaa needs to be considered, and the most important strengths of the region must not be left out.

1. BACKGROUND AND AIMS

The evaluation of the RIS3 implementation has been done by evaluating projects funded by the Helsinki-Uusimaa Regional Council. The evaluation examines if the principles of smart specialisation have been implemented in projects and if they have been successful in implementing the spearheads of smart specialisation. As indicated by its chosen name, smart specialisation is about making choices; allocating resources to chosen themes, instead of trying to develop everything on a scale as wide as possible. This report tells what the implementation of the strategy looks like in Helsinki-Uusimaa early in 2019 when the strategy has been in use for about four years. Have the choices been successful and what should be done differently in the future? The evaluation aims at offering development suggestions for a renewal of the RIS3 strategy in the Helsinki-Uusimaa Region for the next programme period (2021–2027). The activities have also aimed at giving information about what should be changed when it comes to the funding of spearheads and projects, and which elements and policies are good to keep for the period to come. Firstly, the report presents the concept of smart specialisation and its most important idea, as well as the spearheads for specialisation in the Helsinki-Uusimaa Region. Chapter 2 shows the industrial structure of the Helsinki-Uusimaa Region with its absolute and relative specialisation, which means the operating environment where the projects have been implemented. Chapter 2 also presents the material and criteria of the evaluation, and the assessment as such. Chapter 3 gives you the conclusions of the evaluation and recommendations for the future.

Starting points for Smart specialisation in Helsinki-Uusimaa Region

The research and innovation strategy for smart specialisation is a concept for regional innovation policies, including regional development funding to be targeted for defined competence and strength. In 2011 the European Commission has stated that national and regional authorities all over Europe should create a strategy for smart specialisation for the time period of 2014–2020. The reason was Europe's lagging behind the USA in innovation activities. Also, a coordination of innovation systems was lacking. (Virkkala 2015)[1]

The purpose of smart specialisation is to target the structural funds of the EU towards identified strategical strengths. The aim has also been to increase the impact of public funding by focusing on certain regional, original strengths by directing the funding to them, instead of dividing the structural fund resources into projects with different themes. This is a way to strengthen the competence and to speed up economic growth in the area. Earlier the regional development funding was distributed in a fragmented way in Europe, and a critical mass has been lacking as to the allocation of the funding.

Smart specialisation as such forms no basis to research and innovation funding as such, and especially not for the funding of basic research, but for the funding intended for growth and regional development instead. Differing from the general innovation policy, the smart specialisation focuses on regional development. It is important to get stakeholders to participate in the furthering of innovations and experiments, which means the cooperation of the public sector, research institutions, companies, non-governmental organisations and citizens (quadruple-/pentahelix).

1 Virkkala, Seija (2015): Älykäs erikoistuminen ja alueelliset innovatiojärjestelmät talouskasvun lähteen. . (Smart specialisation and regional innovation systems the basis of financial growth, in Finnish). Talous ja yhteiskunta 3/2015. www.labour.fi/tv/tvlehti/ty/ty32015/pdf/ty32015Virkkala-pdf

Instead of top-down governance, the aim is to get different actors especially companies and higher education institutions to take part in the process as widely as possible. The creation of the research and implementation strategy of smart specialisation has to be an inclusive process with important regional actors from different sectors as participants (Virkkala 2015). One of the most important theorists, Mr Dominique Foray has described different actors and their roles in smart specialisation. A so called sleeping giant is an enterprise representing a traditional industry that has left behind in the changing world. Excited goblins are innovative high-tech companies that usually creae good development projects, but all development funding should not be allocated to them. A greater advantage can be reached when many different actors are participating, both sleeping giants and hungry dwarfs: low tech SMEs (for instance industrial subcontractors), according to Foray. It is important to allocate funding and development, modernisation and new-directing of the structural development of the activities of giants and dwarfs. Cooperation is needed between these very different actors.

The thought behind smart specialisation is not only the reinforcement of the regional strengths, but the identification of rising and potential areas of growth and the advantage that can be gained by combining them. The spearheads must be based on the regional strengths instead of choosing hype businesses or sectors that one wishes to develop but are lacking enough competence or development potential. Such fields of activities that every region wishes to focus upon, are usually ICT, nano and bio technology. The aim is not to define separate fields of clusters as spearheads of smart specialisation, but rather the activities, for instance the use of nano technology in forest industry (Virkkala 2015). Directing the regional development funding to certain spearheads can also promote profiling the universities of applied sciences and universities. The renewal of industries is vital in the process of smart specialisation. Key enabling technologies, KET play an important role in

this process. The European Commission has defined six important KETs, which comprise 1) micro and nanoelectronics, 2) advanced materials, 3) industrial biotechnology, 4) photonics, 5) nanotechnology and 6) advanced manufacturing technologies. These technologies are used in the different fields of industry and they form the starting point of innovations and speed up the economic growth.

Another of the basic concepts of smart specialisation is the entrepreneurial discovery process, EDP. The EDP is an innovation bottom-up process, where representatives of various fields (companies, research, education, politics) strive to identify openings, activities and innovations that can be potential for financial growth. Public development funding is allocated to the recognized openings, and thus conditions for their implementation into practice are created. On the other hand, the EDP strives to bring together the entrepreneurial competence and knowledge that is fragmented in companies, research institutions and users by creating networks and partnerships The entire region should act "in an entrepreneurial way" meaning that the regional innovation politics are based on a cooperation crossing different borders. On a national level, the innovation politics is steered by the Ministry of Employment and the Economy. The regional councils, however, have created their own strategies independently, without any guidance from the Ministry of Employment and the Economy.

Smart specialisation in Helsinki-Uusimaa Region

The research and innovation strategy for the Helsinki-Uusimaa Region was published for the first time in 2015. The strategy was created by using earlier results from foresight and scenario processes and by considering municipal strategies and the views of research and innovation actors, and in cooperation with Aalto University. Urban cleantech, human health tech, welfare city, digitalising industry, smart citizen were chosen as spearhead themes. According to Finnish standards, Helsinki-Uusimaa is a large area, with many actors in regional development, research, development & innovations and entrepreneurial support. The Helsinki-Uusimaa Regional Council is responsible for implementing the research and innovation strategy for the Helsinki-Uusimaa Region. However, there is a lot of regional development taking place in the region, of which some activities are on a more general level and some differently directed, and do not therefore fit under the concept of smart specialisation. More about the actors in the Helsinki-Uusimaa Region is found under Operating Environment in this report.

Smart specialisation is an ongoing process, which cannot be done just once, but requires consistent renewals and reactions on the changes in the operating environment. The implementation of the RIS3 brought up the need of a clearer strategy. Two spearheads, Welfare City and Smart Citizen was seen so close to each other that they were combined into one theme; Citizen City. The definitions of cleantech and human health tech were also modified. The updated version currently in use is the strategy published in November 2017.

The spearheads of the current strategy are:

- Urban Cleantech
- Health & Wellness
- Digitalising Industry
- Citizen City

Urban Cleantech

Cleantech stands for technologies and solutions diminishing emissions and carbon footprints. According to the strategy different environmental technologies, energy solutions, biomass X and services, along with service models can be tested, developed and commercialised.

Development targets and themes:

- Renewable and decentralized energy production
- Construction and industry furthering energy efficiency
- Heat distribution and storage
- Infrastructure and services in smart mobility
- Increased resource efficiency in material cycle solutions
- The furthering of recycling and reuse
- Clean environment and natural resources

Especially the Smart & Clean foundation has been implementing the spearhead Urban Cleantech, aiming to make the Metropolitan Region and the city of Lahti the best testing environment for smart and clean solutions. The foundation is financing projects generating new business, growth and workplaces based on clean and smart solutions. Municipalities, companies, research institutions and higher education institutes participate in the projects.

The Helsinki-Uusimaa Regional Council is in the foundation and a part of the AIKO funding (regional innovations and pilots) has been directed to smart & clean projects, i.e. to develop smart and ecologically modern solutions and services in public administration, business and for the citizens. Businesses to be developed are among other modes of travel and mobility, construction, energy and water supply and sewerage systems, and circular economy, as well.

Human Health Tech

The aim of the spearhead Human Health Tech is to strengthen predictive health care and to improve the welfare of the citizens with the help of medicine, technology, care and new operating models. Digital solutions, human health and welfare services are vital in this spearhead theme.

Development targets and themes:

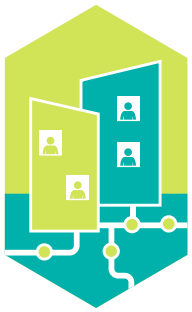
- New technologies and devices for health care and diagnoses
- Need and customer based service for hospitals and care institutions
- Selfcare and health care at home
- Solutions for an ageing population at home
- Sports and a physical environment as an element of wellbeing

Digitalising Industry

The aim of the spearhead Digitalising industry is to improve the competitiveness of the companies in the Helsinki-Uusimaa Region by using different digital solutions. Digitalisation can be used to renew company procedures, internal processes and services. The Internet of Things IoT, big data, automation and robotics are used as instruments for renewal.

This can for instance mean:

- Piloting different digital solutions
- Supporting the exchange of intercompany competence and experience
- Informing even small companies about the possibilities of digitalisation
- Using sensor technology in solutions like IoT
- Using the development of robotics in the renewal of production technology and ervices
- Cooperating internationally with the forerunners of digitalisation



Citizen City

The spearhead of Citizen City is a combination of two themes in the original strategy, Welfare City and Smart Citizen. The operating environment of the theme is an urban society. According to the original idea, the spearhead of the Welfare City focuses on urban development, and the spearhead of the Smart Citizen on user based solutions. Both spearheads share the aim of making the everyday life easier for the citizens and improving the life quality with different solutions, applications and information based on open data. When implementing the strategy, it was noticed that the spearheads lie so close to each other that they overlap each other, and the division into two felt unnatural and unnecessary. The combination of them both into one theme felt reasonable.

Open data and digitalisation offer possibilities to develop services and new forms of business. As a country with a high level of technology and education, Finland has excellent prerequisites for digitalisation. The Helsinki-Uusimaa Region strives to be a forerunner in implementing digitalisation; digital services are developed in the higher education institutions, start-ups and various projects. The aim is to offer the immense quantity of open data and different digital services for all citizens, all the way from children to the aged ones. There is a wish to inspire citizens to become not only service users, but also to produce data themselves.

The wider use of artificial intelligence and digitalisation requires lifelong learning from its users. The most important thing is to prevent digital exclusion and to make sure the services are available for everyone, in order to make sure no group is falling out of these services. The solutions to be developed within this theme are user based, they support the active role of citizens in the digital society and strengthen participation in the creation of a common welfare. The human touch does not exclude the development of competence and competitiveness, which is the common message in all the strategic spearheads.

The entity supports any regional, national and international projects developing service systems on data and customer orientation, and also the public administration in the fields of urban planning, traffic, infrastructure, customer data, environment data, learning, research and decision making. New technologies and open data are used to support urban development and to create user based services and solutions. These themes can be implemented by municipalities, other actors in the public administration, research institutions and companies. The municipalities can be creating solutions themselves, take part in a network of services or become platforms for the producers of different service solutions.

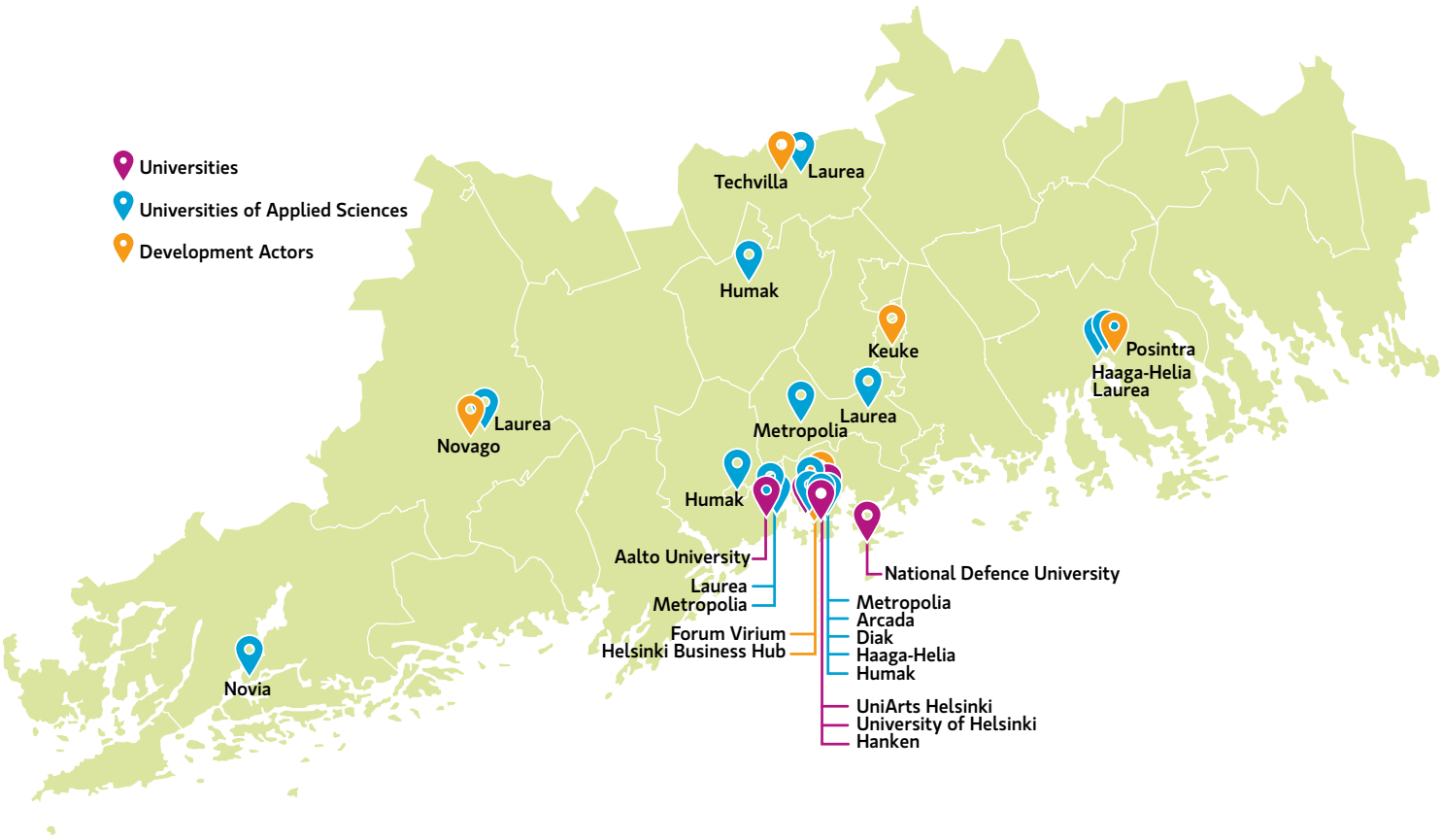
2. EVALUATION

This chapter is a presentation of the operating environment where the RIS 3 has been created and where projects have been implemented or are being implemented. A presentation of the funding instruments follows, along with the criteria for the evaluation of the implementation of smart specialisation and also the results of this assessment.

Altogether, 29 randomly selected projects financed by the structural funds and with other funding by the Helsinki-Uusimaa Regional Council have been assessed. The total amount of projects financed by the Helsinki-Uusimaa Regional Council is 95 (24 regional innovations and experimentations (AIKO) and regional funding projects, 28 Six City strategy and 43 ERDF projects) when taking into account the projects taking place in the Helsinki-Uusimaa Region that has been funded since 2015 when the RIS 3 strategy was published. About one third of the projects have been evaluated. Instead of a traditional project assessment, the projects have been evaluated according to smart specialisation criteria, along with its strategic choices and priorities. The attachment 1 of the report includes short descriptions of the evaluated projects.

Operating environment

Higher education, science and research are strongly represented in the Helsinki-Uusimaa Region. Four of the 13 universities in Finland are in Helsinki-Uusimaa: Aalto University, Hanken School of Economics, Helsinki University, Uniarts Helsinki, and National Defence University (part of the Finnish Defence Forces). Seven of 23 Finnish universities of applied sciences are found in the region: Diaconia University of Applied Sciences (Diak), Haaga-Helia University of Applied Sciences, Humak University of Applied Sciences, Laurea University of Applied Sciences, Arcada University of Applied Sciences and Novia University of Applied Sciences.



Map 1. Universities, Universities of Applied Sciences and development actors in Helsinki-Uusimaa.

Regional development enterprises in the region are Novago in Western Uusimaa, Keuke in Central Uusimaa and Posintra in Eastern Uusimaa. Other development actors are Forum Virium Helsinki - the City of Helsinki Innovation Company, Helsinki Business Hub - attracting foreign companies and investments to the capital region and Technology Center TechVilla Ltd - helping technology enterprises to grow in Hyvinkää.

Examples of other hubs operating in the capital region are Espoo Innovation Garden maintained by the City of Espoo, linking companies, science and research institutions in the areas of Otaniemi, Keilaniemi and Tapiola.
In Otaniemi one can also find Smart Energy Platform, a test platform for smart energy funded by Business Finland. Business Finland is also the subordinated loan provider of business ecosystems aiming at generating new businesses worth more than one billion, called Growth Engines. The Maria 01 startup campus in Helsinki (starting its operations within the project Corporate Start-up Co-Creation) is developing into a significant area of growing companies. Health Capital Helsinki is developing an ecosystem of health technology and a Health Innovation Village; a campus of growth companies in health technology is found in the vicinity of the GE head office. These are important, but not the only ecosystems, or development environments aiming to become ecosystems in the region.

The Helsinki-Uusimaa Regional Council founded the Helsinki Smart Region website to offer an international presentation of the regional strengths, as a part of the strategic implementation of smart specialisation. The website supports the implementation of smart specialisation, and it presents innovations and projects of the strategic spearheads. The aim of the website is to make Helsinki-Uusimaa internationally known, and also to find international cooperation partners.

www.helsinkismart.fi

Industrial structure and specialisation in the Helsinki-Uusimaa Region

According to the basic idea of smart specialisation, all regions are able to improve their competitiveness and economic growth if they manage to combine their economical, technological or knowledge-based capabilities effectively. From this point of view, regions should strive to recognise their own strengths, and also the untapped opportunities associated with those key elements of regional growth.

It is important to distinguish between smart specialisation and traditional sectoral or industrial specialisation. Smart specialisation is not just about strengthening existing dominant industries. The concept is more about the idea of diffusing existing regional key expertise extensively between different industries. This diffusion has commonly taken place most effectively when the regional economy is based on sectors linked to each other via some shared technology related knowledge.

In the context of smart specialisation, the industrial structure should be both diverse and "optimally" specialised. The advantages of these both are often explained with the arguments given in the economies of agglomeration. Especially in technology-intensive industries, the agglomeration of firms facilitates the diffusion of knowledge and innovation activity.

It is often argued that a diversified industrial structure with complementary competencies and activities promotes regional economic growth most efficiently. Industrial diversity together with localized knowledge networks between a varied set of companies creates positive innovation externalities and industrial growth. Industrial diversity is known to further regional growth, especially if industries are related by shared technology and know-how.

A diversified industrial structure also provides regions with a better resistance against external economic shocks. Regions with a very specialised industrial structure, and where economic growth and success lean on narrow set of activities and companies, have a bigger risk of a slowdown in a growth arising from external shocks specific to certain industries. This risk is more typical for small sized regions, as bigger ones usually have a more decentralized portfolio of competitive industries.

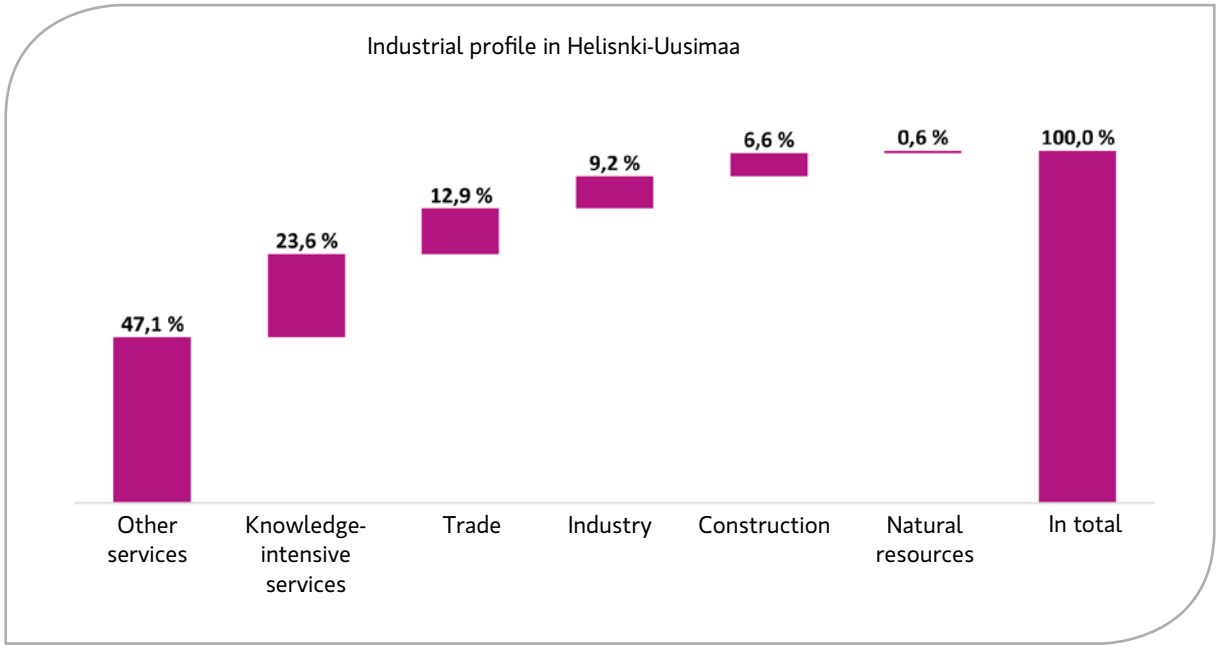


Figure 1. The industrial profile of Helsinki-Uusimaa in 2017.

The economic structure of the Helsinki-Uusimaa Region is strongly oriented toward service industries. The change into a service-based growth can clearly be seen during the past decades, but in the past few years that turn has even fastened. At the moment, the service sector accounts for 80 percent of the total employment in the region. The new generation of digital and technological services have taken over the markets and moved the focus of customers towards these new kind of services. This has not only happened in Finland, but also across the world. In Fnland, the most significant cluster of high technology service firms are found in the Helsinki-Uusimaa Region.[2]

Despite the fact that service industries are dominating in Helsinki-Uusimaa, the region's industrial structure is relatively diversified. Conventionally, the regional variety of industries is measured by the Herfindahl-Hirschman index (HHI)[3]. The HH-index does not indicate the differences in industrial structure with respect to the national economy, but expresses the internal variety of industries in that particular region. The lower the index, the more diverse regional industrial structure.

According to the HHindex, the Helsinki-Uusimaa has the most diversified industrial structure compared to other regions in Finland (Figure 2). A decentralized industrial structure has been a strength for the region for a long time. Characteristic for both the service sector and industrial sector is an employment distributed rather evenly across industries. During the last years the industrial structure of the region has become even more diverse as new growth companies and new international companies have established themselves in the region. The importance of a diverse industrial structure, especially with respect to economic growth and regional vitality, has been also considered in the research and innovation strategy of the Helsinki-Uusimaa Region.

There are arguments that regions benefit not only from a diverse industrial structure, but also from a sectoral specialisation. The most traditional view argues that the benefits of agglomeration appears most strongly from highly specialized industrial cluster, because it offers regions a better ground for knowledge transfers and innovation externalities. Especially in industries requiring high levels of competence, the diffusion of knowledge and technology take place most effectively when different industries are closely inter-linked on a local level.

The degree of sectoral specialisation can be measured by relative specialisation. The most commonly utilized indicator is the so called Location Quotient (LQ)[4]. The LQ is calculated by comparing a particular industry's share of regional employment with its share of national employment.

2 The indicators used in this part are calculations based on numbers from Statistics Finland 2016.

3 The Herfindahl-Hirschman Index (HHI), is formally the following:

$HHI_i = \sum_{j=i}^{m} (s_{ij})^2$ *where* $s_{ij} = \frac{x_{ij}}{\sum_{j=i}^{m} x_{ij}}$ *and* x_{ij} *denotes the employment in industry j in region i. The larger the number of industries, the more evenly employment is distributed across these industries, the higher the value of this measure in a particular region. The Herfindahl-Hirschman index shows values between 0 and 1. The lowest level of specialization is 1/m. (for instance: McCann, P. (2001). Urban and Regional Economics. Oxford: Oxford University Press.)*

4 The formula for computing location quotients can be written as: $LQ_{ir} = \frac{E_{ir}}{E_r} / \frac{E_{in}}{E_n}$*, where* E_{ir} *is local employment in industry* i*,* E_r *is total local employment,* E_{in} *is national employment in industry* i *and* E_n *is total national employment. (For instance McCann 2001).*

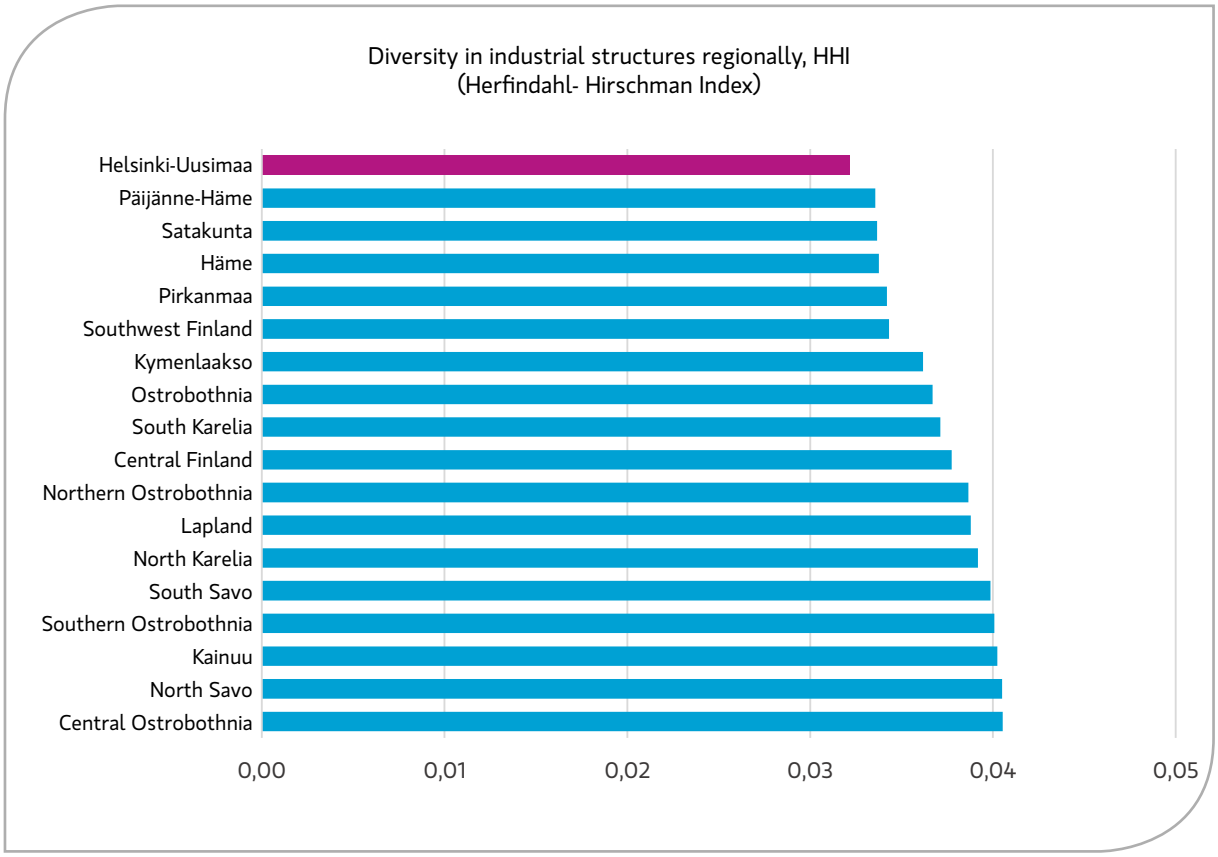


Figure 2. The diversity of industrial structure of Helsinki-Uusimaa measured with the Herfindahl-Hirschman index.

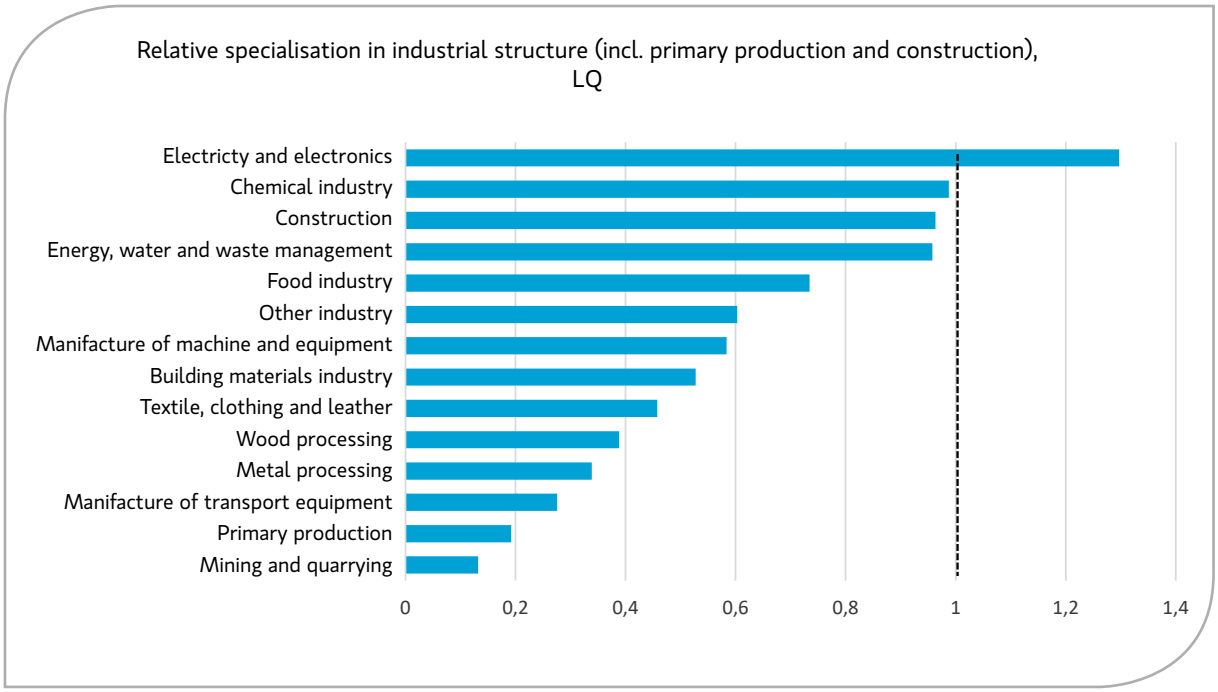


Figure 3. Relative specialisation in the industrial structure of Helsinki-Uusimaa measured by the location quotient (LQ)

The level of relative specialization of the manufacturing sector of Helsinki-Uusimaa has been scrutinized in figure 3[5]. It shows that the manifacture of electrical and electronic products is the only industry with an average of more employees than anywhere else in the country. The value of LQ almost reaches the national levels in chemical industry, construction and energy, water and waste management. In turn, the LQ for renewable natural resources and for the traditional heavy industries like the metal industry and the wood processing are clearly lower than the average level in Finland.

When scrutinizing the industrial structure of the Helsinki-Uusimaa Region, the significance of service industries can clearly be seen from figure 4. According to the LQ, almost every industry in the service sector have a higher regional share of employment in comparison with the national average. Only the household services, health and social services and education lie below the average in Finland.

The figure also shows the regional specialisation in knowledge-intensive services (KIS[6]). KIS industries are usually providing knowledge-intensive support for the business processes of other industries or for the public sector. In KIS industries the employment structure is strongly emphasizing scientists, engineers and other professions that require a deep expertise. During the recent years the KIS services have played an important role in creating economic growth. The companies belonging to KIS industries are characterised by international networking, innovation and knowledge spreading via sectoral and organizational linkages. Additionally, the KIS industries are strongly connected with a technological progress, with new forms of economic activities, and the change of work contents.

5 To be able to make easy comparisons, the industries have been aggregated.

6 The definition of knowledge-intensive business services (KIS) vary depending on the context utilized. In this paper, the KIS sector is defined by Eurostat, including SIC 2008 industries 61-66; 69-74; 82).

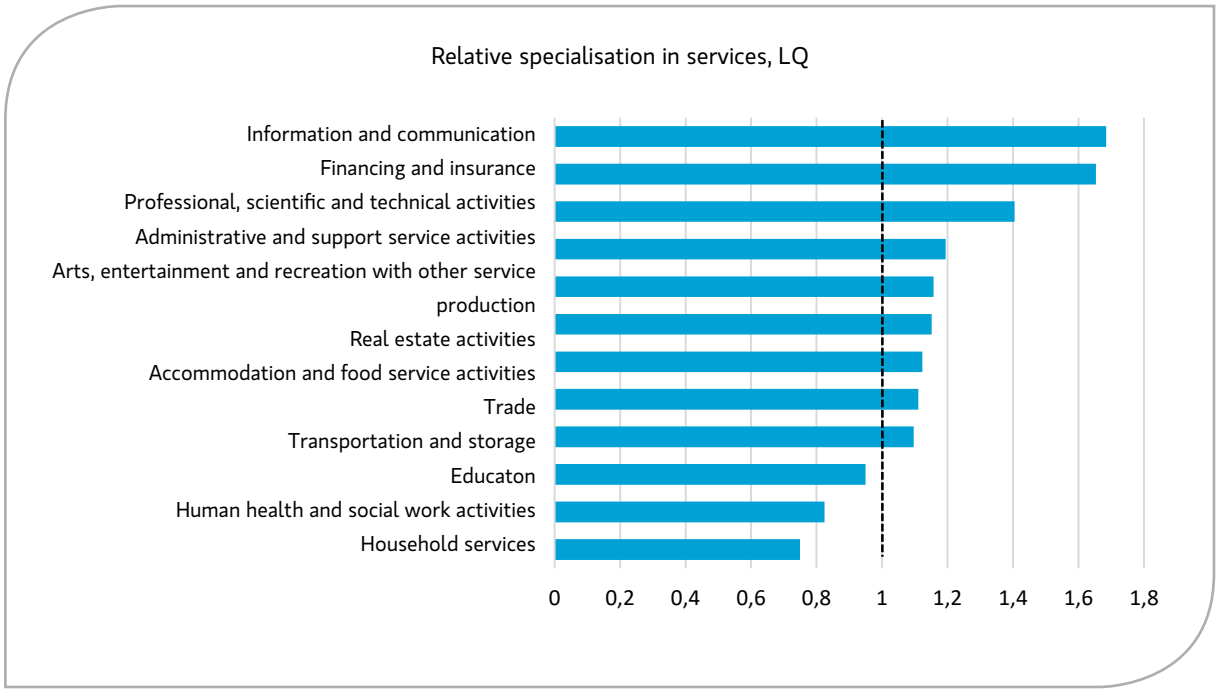


Figure 4. Relative specialisation in services of Helsinki-Uusimaa, LQ

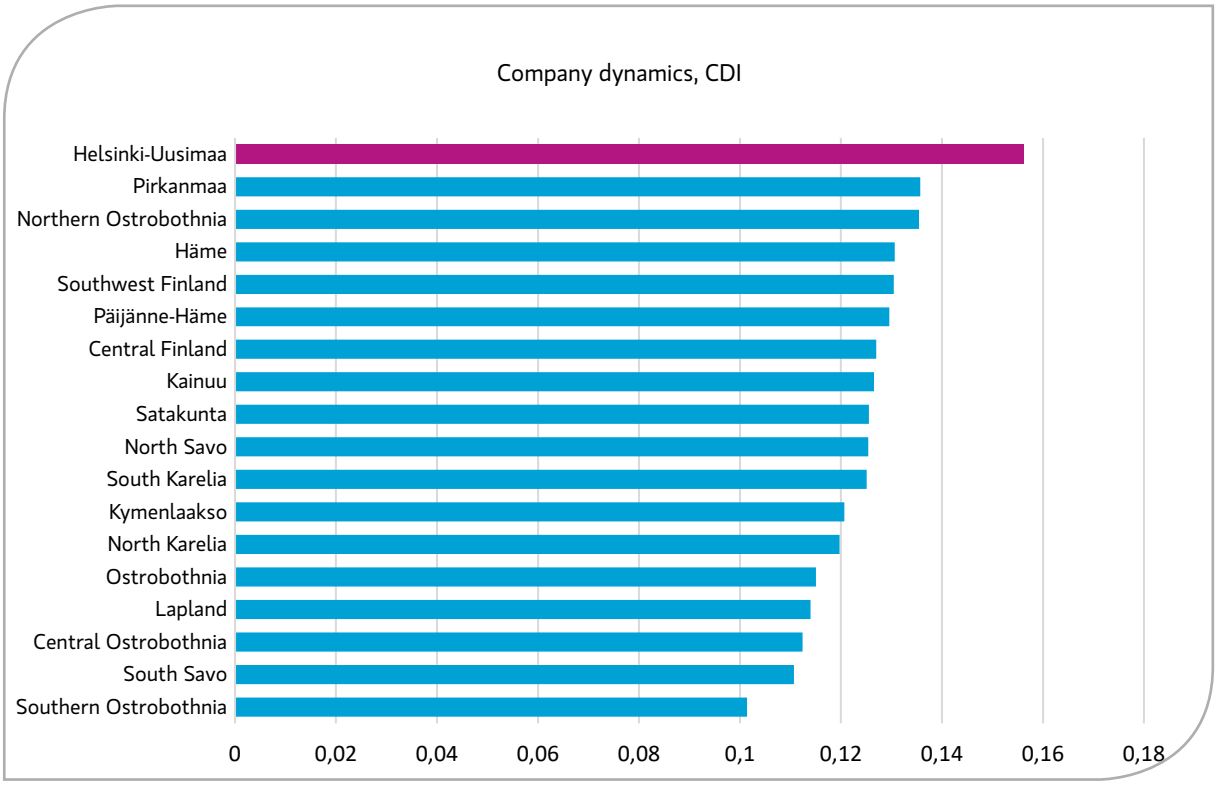


Figure 5. Creative Destruction Index for companies regionally.

The principles of smart specialisation state that development activities should not be targeted too much at maintaining existing structures, but at looking for potential new fields of growth. This is tightly connected with the process of "creative destruction", where obsolete and non-productive structures and activities are replaced by new fields of technology and knowledge. This structural reform is also connected with the concept of "entrepreneurial searching", which is an essential concept in smart specialization. According to it, various regional actors should cooperate to find new innovations and potential growth opportunities.

The renewal of a business and industrial structure can be indicated by the Creative Destruction Index, CDI. The higher the value of the CDI, the better the regional capability of renewal.

The regional business structure in Helsinki-Uusimaa is constantly affected by changes resulted from the global economy. Supporting a business renewal and localised knowledge networks play an important role when reacting to changes in the global economic and technological environment. These are also the essential targets in the research and innovation strategy (RIS3) of the Helsinki-Uusimaa Region.

Comparing with other counties, the renewal of business structures seems to be clearly faster in Helsinki-Uusimaa than in the other Finnish regions (Figure 5). Sectorally, the renewal is significantly larger in the service sector than in the manufacturing sector. Also, in knowledge-intensive services the pace of renewal lies clearly above the average values.

Scrutinizing the industrial structure of Helsinki-Uusimaa, and in the light of measures given earlier, it seems that the region has a fruitful

basis for implementing the principles of smart specialisation. The diverse industrial structure of the region creates positive innovation and knowledge externalities, as well as offers a strong resistance against external economic shocks. What is more, the ability to renew business structures and activities indicates a great capacity to adapt to changes caused by external economic fractures. Based on the relative specialisation (LQ index), the regional key competence seems to be found first and foremost in knowledge-intensive services. It is essential to recognize this characteristic, as knowledge-intensive services have a distinct ability to combine different industries and sectors "smartly" based on the fundamental principles of smart specialisation.

Financial instruments in assessment

On the national level, the Ministry of Employment and the Economy is in charge of the preparation of the European Regional Development Fund (ERDF) and the European Social Fund (ESF). The Ministry of Employment and the Economy is also directing the regional development resources, and the funding for regional innovations and experimentations to the regional councils.

From the Structural Funds Programme this report has evaluated the regional projects of the ERDF and as belonging to it, the Six City Strategy projects (a joint strategy of the six largest cities in Finland) focusing on Helsinki-Uusimaa. The other financial instruments to be used by the Helsinki-Uusimaa Regional Council are the regional development funding and the funding for regional innovations and pilots.

The aim of the **European Regional Development Fund (ERDF)** is to improve regional employment and competitiveness and vitality. Innovations and networking are furthened via these programmes, as well as the development of new environmental technologies and the growth and competitiveness of small and medium-sized companies. This report includes assessments of projects of the programme period Sustainable growth and employment 2014–2020.

The ERDF programme in Helsinki-Uusimaa has the following priority axes and specific objectives:

1. Competitiveness of SMEs Specific objectives:

- Generating new business
- Promoting growth and internationalisation of enterprises
- Promoting energy efficiency in SMEs

2. Producing and using the latest information and knowledge

Specific objectives:

- Development of the centres of research, expertise and innovation on the basis of regional strengths
- Strengthening innovation in enterprises
- Developing solutions based on renewable energy and energy-efficient solutions

The expectations of ERDF projects are new competence, networking and material to be delivered as supporting the creation of wider EU projects. The ERDF aims at supporting the competence and skills to participate in innovative actions and networks on a large scale. Read more: www.rakennerahastot.fi/web/en/what-are-structural-funds-

The Six City Strategy – Open and smart services 2014–2020 is a part of the Sustainable growth and employment 2014–2020 programme. The Six City Strategy projects have been assessed separately from other ERDF projects, as their focus has been a bit different. The Six City Strategy is a strategy for sustainable urban development carried out by the six largest cities in Finland: Helsinki, Espoo, Vantaa, Tampere, Turku and Oulu. The most important aim of the strategy is to use the country's largest urban regions as development environments for new innovations, strengthening Finland's competitiveness.

The Six City Strategy has three priority axes:

- Open innovation platforms: cities facilitate the creation and testing of new products and services in real-world urban environments and innovation platforms. Innovation platforms are functional structures, in which the city and community works together.
- Open data and interfaces: cities open their data stores for companies and other users, also harmonising their interfaces.
- Open participation: cities make it possible for citizens to participate in decision-making and the development of open and easy-to-use multichannel and multi-operator service.

Read more: **https://6aika.fi/en/frontpage/**

The funding of Regional innovations and experimentations (AIKO) is one of the regional development activities started by the Prime Minister Sipilä for 2016–2018. The aim was to ensure Finland's competitiveness, promote growth and use resources and expertise available in different parts of the country. Regional business structures were strengthened by improving operating environments and the ability of the regions to adopt new operating models.

Launching regional innovations and experimentations (AIKO) involved three tools:

1. measures for anticipated structural change (ERM),
2. growth agreements between the state and selected cities, and
3. establishing nationally important growth zones.

AIKO funding has been used for Smart & Clean activities, implementing the smart specialisation theme Urban Cleantech. The ERM projects mentioned earlier have been assessed in this report. Managing a predicted structural change means an active reformation of industries . Regions are encouraged to specialize in and implement experimentations according to their own strengths. The renewal of industry and industrial activities plays an important role, as well as growth and internationalisation and pilots furthering employment and business activities.

Read more: **https://tem.fi/en/regional-innovations-and-experimentations**

Regional development funding was granted in Finland until 2017. The Ministry of Employment and the Economy decided on the annual allocation of it. As the regional development authority, every Regional Council made the decisions upon the distribution of it in its own region. Funding has been granted for the preparation of regionally important EU projects, for projects implementing the RIS3 strategy as well as projects implementing the Helsinki-Uusimaa Regional Programme (a regional development programme) according to the strategic Helsinki-Uusimaa Regional Programme.

Material, criteria and results

The assessment has been made based on the data of ERDF projects, regional development funding projects, regional innovations and experimentations. 29 of these were chosen for a closer study. A more detailed presentation of these projects is found in enclosure 1.

Material and methods

Indicators have been used to assess the implementation of smart specialisation. They show for instance the number of workplaces , new businesses and development processes that have been established. Regional development projects have been assessed via forms used by the Helsinki-Uusimaa Regional Council for the final assessment of projects, and they show the implementation of projects on a general level. Indicators as such are too stiff to describe projects from the perspective of smart specialisation. Project documents with more information: project applications, plans, reports, funding phase assessments and material on project websites have been used, as well as data for the evaluation.

In addition, a mail enquiry was sent for the so-called smart specialisation coordination projects in the autumn of 2017, and the Webropol enquiry for this purpose was made in December 2018. The mail enquiry was sent for seven projects and answers were received from four of them. The Webropol enquiry was sent for 37 projects, of which 9 gave an answer. These enquiries do not cover all projects being assessed and therefore their answers cannot be used as the primary data source for the assessment, but they complete other information gained from projects.

Criteria

The European Commission has published the so called ex-ante criteria, that have to be fulfilled for the smart specialisation projects or principles to be assessed (Foray & Rainoldi 2013[7]):

1. Proximity to market: the centre of gravity of S3 is business and the development of commercial applications; avoiding projects that would only emphasize fundamental research and/or research infrastructure.
2. Does the activity open a new domain potentially rich in innovation and spillovers; opening a new domain in which several innovations will occur and will be spread widely.
3. What is the degree of collaboration, the number of partners involved; the project needs to involve a sufficiently large number of actors, and each new activity set as a priority is a collective experiment.
4. Is public funding really needed; projects that are so promising (in terms of expected private profitability) that they will be undertaken in any case, should they be rejected.
5. What is the significance of the activity for the regional economy; some excellent projects might be too narrow in terms of their significance for the regional economy (in terms of job, number of firms, etc.).
6. What is the capacity of the region to keep the successful activity local; as to avoid the syndrome of innovation here benefitting somewhere else. In general, new successful activities which are related to (and built on) the local innovation ecosystem should be preferred.
7. Can this activity realistically drive the region towards a leadership position in the selected niche?
8. What is the degree of connectedness of the activity vis-à-vis the rest of the regional economy? R&D domains with a greater degree of connectedness create more opportunities for structural transformations and evolution than a more isolated domain.

For the programming period 2021–2027 the European Commission has defined the national and regional smart specialisation strategy as a prerequisite enabling good administration[8]. Smart specialisation strategies shall be supported by:

1. Up-to-date analysis of bottlenecks for innovation diffusion, including digitalisation
2. Existence of competent regional / national institution or body, responsible for the management of the smart specialisation strategy
3. Monitoring and evaluation tools to measure performance towards the objectives of the strategy
4. Effective functioning of entrepreneurial discovery process
5. Actions necessary to improve national or regional research and innovation systems
6. Actions to manage industrial transition
7. Measures for international collaboration

7 Foray, Dominique & Rainoldi Alessandro (2013): Smart Specialisation programmes and implementation. S3 Policy Brief Series, No. 02/2013. European Commission, Joint Research Centre, Institute for Prospective Technological Studies. http://s3platform.jrc.ec.europa.eu/documents/20182/115084/JRC82224_S3_Programmes_%26_Implementation.pdf/6e018882-ca07-461a-8a96-e51c3f82f4ad

8 The European Parliament and the Council of Europe; proposal for a regulation 1018/0196 (COD), attachment IV. https://eur-lex.europa.eu/resource.html?uri=cellar:26b02a36-6376-11e8-ab9c-01aa75ed71a1.0022.03/DOC_2&format=PDF

This assessment is made in order to create a basis for the renewal of the strategy of smart specialisation during the following programme period and therefore the prerequisites enabling this have been taken into consideration.

Based on the so-called ex-ante criteria presented above, and the prerequisites enabling the next programme period, the following criteria have been chosen for the assessment of smart specialisation projects:

- Generating new business
- Cooperation with companies and other networks
- Multidisciplinarity
- Interregional cooperation in Finland and cooperation on international level
- Impact

Results

The most important results:

- Generating new business has been on a small scale, preconditions of business activities have been developed instead
- Entrepreneurial Discovery Process (EDP) is well implemented. Actors from various sectors have been participating on a wide scale, also businesses and inhabitants have been participating in co-development. Networking has been established successfully.
- Multidisciplinarity is a strategical strength: The spearheads are multidisciplinary , as are the projects implementing them.
- Cooperation on the international level has remained on a small scale in most projects. A small part of the projects is, however, strongly international.
- Impact: at their best, the activities created in the projects have continued as a part of the basic functions of the organisation, have become on-going projects or has continued as independent activities.

Generating novelty:

- The projects have produced new information and developed operating models. Creation of business activities and development of technology has been on a smaller scale
- Often the projects aim at creating new operating models, but creating a ready for use operating model is not always possible within the project
- Agile piloting has been a good way to test new business ideas with a light process

Generating novelty means generating business and opportunities and conditions for business, proximity to market and developing competence. This includes the utilisation of and creating processes of new technologies. The aim is to emphasize business activities, not basic research or theory-driven approach. Generalising novelty has also been emphasized in the projects funding criteria. One of the specific objectives of the ERDF funding has been Generating new business (1.1.). The other priority axe was Producing and using new information and knowledge (2). One criterium for the application rounds 2016 and 2018 for regional innovations and pilots (AIKO) was that the project creates prerequisites for the financial utilisation of new solutions and to further expansionary (international) business activities. Typically, instead of creating new products, the projects have been about creating new competence and the utilisation of new technology.

"Generating novelty" is widely defined and it can be stated that something new has been generated in every project. A project that is not generating anything new, has basically failed. Generating novelty has meant producing information, operating models, innovation platforms and networks. There are less new business activities, it is more common to

develop the opportunities and conditions for new businesses. This is also due to the fact that the main project partner is usually not a company, but some other actor that supports, but does not create new business.

Many projects had the aim of creating an operating model, the thought being to achieve more concrete results instead of producing "just" data or reports. Creating a ready to use operating model is often an ambitious task that cannot necessarily succeed within a project. The outcome can thus be guidelines for an operating model or several alternative operating models (e.g. in the project Talent Hub).

New technology has for instance been created within the project TeKiDe, textile fibre recycling. This project has also succeeded in commercializing the technologies developed in it.

The project SOHJOA Robot Bus Experiment (belonging to the Six City strategy projects) can be regarded as an exceptional forerunner project in the field of smart mobility, as it produced concrete new data and included some experience of how the automatic cars can be tested in practice.

Many projects have offered possibilities for creation of new business through quick experimentations. Agile piloting is a small, experimental procurement procedure, with maximum of 6 months duration, enabling a company to test a business solution in an actual environment and with real users. The project offers a platform for testing a prototype solution, and mentoring service. Agile piloting is a concept of the Six City strategy projects, but similar small scale pilot projects have been realized also in other projects. Agile piloting is an example of a successful mechanism of generating new business, it gives companies a possibility to test their products or services, and to collect user experience. It is also a way to get people involved in co-creation, i.e. to apply the penthahelix model.

Business cooperation and other networks

- Entrepreneurial discovery process (EDP) is being implemented well, but could include a wider participation
- The development of networks and cooperation between different sectors has been successful
- Innovation platforms and operational environments have been developed to support networks
- Companies and residents have been involved in co-creation processes

Networks, connections and interaction with other actors are truly important in smart specialisation. The aim is to create economic growth to the region and therefore the implementation calls for businesses. Innovations are created with a quadruple-helix cooperation including businesses, educational and research institutions, the public sector and non-governmental organizations, in the pentahelix model also individuals. The entrepreneurial discovery process also presupposes the participation of representatives of various sectors, as also other organisations than business have entrepreneurial competences. The business competence is based on the networks and companionships of these organisations. The EDP fits well with the ecosystem thinking, where the public sector makes everything possible, as a part of the network of those actors depending of and supporting each other.

The funding criteria also focus upon the importance of networks. The criteria for funding offered for regional innovations and pilots (AIKO) has been the project supporting the networking of actors with municipalities, universities, research institutions, educational organisations, various organisations and businesses (funding application process of 2018). In the funding process of 2016, the cooperation of small and medium-sized companies was emphasized, as well as the networking of

small and medium-sized companies with other companies or with organisations of the public sector. The company cooperation in AIKO projects have been strong, especially in Myyr York Street Art City , where one of the actions taken has been to start a coworking space and a business incubator, in the project Talent Hub , where small and medium-sized companies have tried to attract programming experts from abroad, as well as the Digital Health Growth Track accelerator project for businesses in the health services. The Myyr York Street Art City project is extraordinary, as the development of trades have been inhabitant oriented. The project has been implemented as a citizen movement called Myyrmäen kaupunkikulttuuri ry (The urban culture of Myyrmäki).

According to the indicators showing cooperation, the projects being assessed include quite a lot of company cooperation. The cooperation and networks in many projects are significant for the implementation of the project. Apart from companies, research institutions and actors of the public sector, also inhabitants participated as co-developers and workshop participants in many projects. Priority 3 in the Six City Strategy. An open participation focuses upon user orientation and participation. Some projects have aimed at the developing of the local environment (Ilmastokatu, Perille asti, KEVEIN), so the participation of inhabitants is not only offering surplus value, but they have been significant implementors of the project. Co-developing is strongly seen in the AIKO project Seniorit tekoälymentoreina, where the worker's institute teaches older citizens the basics of artificial intelligence and peer mentoring in order to spread the data about artificial intelligence.

According to the indicators planned there are companies active in cooperation or R&D&I in all Six City Strategy projects. The activities are done with companies, universities, higher education institutions, or research and development institutions and cities.

Open innovation platforms make one of the priorities of the Six City Strategy. According to the strategy, "innovation platforms are development environments, working environments enabling new products, services and market development; where the entire urban community can together create new services, solutions and business activities. Innovation platforms are tools covering the whole life cycle of a service, from the idea to testing and from testing to product." Innovation platforms are places enabling co-development of inhabitants, companies, research and education institutions and communites of the public administration and the creating of social innovations meeting the needs of social needs. (6Aika – Avoimet ja älykkäät palvelut -strategia, 2015.)

Many projects included the creation of innovation platforms, procedures or environments to support the cooperation of various actors. The innovation platform is a concept for regional economics, a network-like course of action and way of thinking of the public sector as the enabler of services instead of being an organiser and producer. The concept of an innovation platform is closely connected to the entrepreneurial discovery process EDP. Innovation platforms also act as structures offering frames for cooperation.

The following projects have created innovation platforms: SOHJOA (physical testing environment for automatic cars), TRY OUT! (the cooperation of companies and higher education institutions in circular economy), Hyvinvointiyritykset kiertoon (cooperation aiming at the change of ownership in companies and higher education institutions) and KEVEIN (operations model for the co-development of neighbourhoods). The following projects have been developing other operational or testing environments: TeKiDe (textile fibre recycling), Fiksu Assa (co-developing new business for areas around stations), cooperation project to further learning, networking in the health services, and innovations, Corporate Start-up Co-Creation (startup-community for

companies), Kasvun ekosysteemit (innovational ecosystems for companies) and Tulevaisuuden älykkäät oppimisympäristöt (frames for co-developing learning environments).

The Corporate Start-up Co-Creation project successfully founded the Maria 01 start-up community, an ecosystem bringing together starting growth companies, accelerators, supporting and other actors in the public sector. Maria01 has been a success and strategically important for the City of Helsinki. New procedures have been searched for in projects aiming at developing companies, trying to bring together actors in the public sector (BIITTI project, where development companies from three different regions are cooperating or the public sector is supporting the public sector in a completely new way (Corporate Start-up Co-Creation).

The Digisti fiksu project is three larger universities of applied sciences (Haaga, Laurea and Metropolia) in cooperation. Their earlier cooperation on a practical level has been happening on a small scale. An operational model 3AMK ProjektiBoosteri has been created for these universites of applied sciences; internationally called R&D Excellence, i.e. the cooperation has been going on since the project.

In the projects included in this material have implementors like municipalities, cities, and educational and research institutions in Helsinki-Uusimaa. Inhabitants have also participated in projects developing the living environment. Companies have been participating via agile pilots implemented in certain projects. Only a small part of the companies is included, so this is no comprehensive sample of the regional companies. It is however valuable that there are companies participating in the projects. Thematic cooperation networks are the result of some projects, and they have a significant role in the implementation of smart specialisation, like in the projects TUDI- and TUDI 4.0 , where a network was created focusing on the usage of digitalisation in the manufacturing industry. The network consists of small and bigger companies with connections to international networks.

The question, if the most important regional actors participate in the implementation of smart specialisation via the projects, is a hard one. The participation could be wider, as all actors in Helsinki-Uusimaa are not included, and it would not even be possible. The most active participants in implementing the projects are the public sector (municipalities and cities) and higher education institutions (a part of them, especially large Universities of Applied Sciences). Many of the projects have clusters in the metropolitan region, and not in the entire region (only Espoo, Helsinki and Vantaa can participate in the Six City projects), all research and education institutions do not carry out projects and only a few actors from the organisational sector are involved.

The participation and co-developing as workshops are used on a larger scale than before, so there is a change to earlier procedures and the group of actors is larger. Various methods of co-development in the project implementation, and more widely in the regional development have become standard procedures. Disregarding them completely happens more seldom than the usage of participation methods.

Multidisciplinarity

- the spearheads of the strategy are strongly multidisciplinary and the projects combine the competence of various areas

Apart from the networks and cooperation, smart specialisation should be based on a cooperation based on science, education or intersectoral activities. The idea is that bringing experts from various sectors together creates synergies, increases the flexibility and makes innovations possible in the interfaces of different branches. Cross-sectoral activities, a creative combination of different actions and the advantages of them are the basics

of smart specialisation. Multidisciplinarity is not about multidisciplinary sciences, but the combination of the expertise in different sectors. The spearheads of smart specialisation in Helsinki-Uusimaa are multidisciplinary and many projects implementing them are multidisciplinary. Multidisciplinary spearheads can bring different actors together and increase intersectoral cooperation in projects.

Certain projects have especially succeeded in combining the competence of various sectors, but this criterium was not focused upon in the phase when choosing projects, but certain observations about a multidisciplinary cooperation was made. Multidisciplinarity was in most cases not primary, and also not and end in itself, but more a secondary project of cooperation, or partly a product of a network. Often the implementing organisations of a project are multidisciplinary, for instance educational and research institutions, and multidisciplinary competence has been used in some of the projects. For instance, in the project Digisti fiksu, the competence of three universities of applied sciences was combined. They represented social and health care, communication and media.

In certain projects the sectors of big cities like Helsinki have succeeded in their cooperation, for instance regarding the project Tilat toimiviksi – Fiksu tilaverkko. In most cases, the companies participating were representing different sectors. Comprehensive could be a better word to describe multidisciplinarity. The competence of various sectors can work together in a project, under an umbrella (as Corporate Start-up Co-Creation), but the activities are not actually combining different areas to the same task, and therefore not multidisciplinary. The multidisciplinarity is not vital in all projects, but for instance, the circular economy is basically a topic combining sciences, various technologies and business administration, so the competence of different areas is brought together under the same theme.

Interregional and international cooperation

- Generally, the international cooperation is not happening on a large scale, even if a small part of the projects is very internationally inclined.

As with intersectoral cooperation, also the interregional cooperation is included in the principles of smart specialisation.

Especially in small areas, the potential for innovations is strengthened by a cooperation from competence gained elsewhere and innovations are often born in global networks. The advantage of the project remains quite modest, if it is aimed at a small area only, the connections elsewhere are scarce and the results and information about the project remain in a small group of companies and people. Operating in international markets is important for the financial growth and for the development of competitiveness. International cooperation can also form a basis for large international projects where at its best, synergies can be achieved on a larger scale than in small local projects. An international cooperation makes it possible to get important development funding to the region and consequently prerequisites for a local growth.

The assessed projects are national, a part of them representing a small geographical area. The AIKO funding (accordingly to its Finnish name) is intended for regional innovations and pilots, the projects have quite a small funding and are implemented during a short period of time, and they are not expected to spread widely. The Six City Strategy projects are run by at least two cities and are therefore always interregional. The Six City Strategy is a funding programme for the six biggest cities in Finland, so they reach out to a potential large crowd of people in the country.

According to the material, the criteria is at its weakest as to how international cooperation is being implemented. According to the indicators, two of the ERDF projects have international operations: Corporate Start-up Co-Creation and BIITTI (indicator: small and middle-sized projects with the important aim of company growth and international business). Many projects have no international activities at all, or they are quite modest like having single contacts or participations in international conferences. The funding programmes being observed are meant for regional and national development, cooperation crossing international borders is made in, for instance, Interreg funding programmes. A tighter international cooperation calls for a foreign project partner and when looking at the frames provided by the funding programmes being assessed, it is not possible. Instead of international activities, the internationalism of companies and supporting it, is possible in the funding programmes in this material. Looking for international companionships and joining networks would also be useful when spreading project results and enabling their continuity and wider impact.

The material still includes projects with an international aspect. International partners have been searched for international project consortia (TUDI, Digisti Fiksu or the implementor's existing international networks have been used as project support (TUDI 4.0, IoTLab). The internationalism was in the limelight in some projects promoting company growth, as in the project BIITTI, as well. This is no surprise, as the internationalism of companies is also strongly on the focus in the application criteria of the ERDF programme. The activities of the project Corporate Start-up Co-Creation is basically internationally and directed to international markets. The project Talent Hub is looking for programming experts and because of the theme, the project has had a lot of international contacts and activities, even if this is a small project funded via AIKO. The Upgraded Life Festival is an international and important health care event bringing together companies, investors and the science world within a cooperation project to further the learning, networking and innovating in health care. The following projects have got international publicity; SOHJOA and Seniorit tekoälymentoreina and naturally, it helps in creating international contacts and cooperation. The implementor of the latter project Artificial Intelligence for Elderly, Omnia Espoon Työväenopisto, is planning to create a product of it for education export.

Apart from these examples, the international orientation has been rather insignificant, and the possibilities to look for international companionships and networks have not been entirely utilized. One way of international networking are the thematic networks of the smart specialisation platform (S3 Platform). Helsinki-Uusimaa is a member of the newly founded network for Safe & Sustainable Mobility, bringing together traffic projects in the different parts of Europe. Via these thematic networks the authorities of regional development can steer projects for international cooperation.

Impacts

- It is hard to assess the impacts on a short term, but some of the activities born in the projects have continued as a part of the basic processes of the organisation, they have grown and continued as an on-going project or they have gone on as independent processes.

Thinking about the project impact, it is vital that the activities started in the project, data that has been achieved or products and processes being created also continue in one way or another after the project has finished. Smart specialisation means that separate projects must form an entity with a clear connection to the regional economy, instead of being separate, unconnected activities. Assessing project impacts can be challenging

on a short term: impacts reaching over several years are almost impossible to assess straight after the project, or especially when the project is still going on. Generally, the project should however have direct impacts or impacts reaching not far into the future if it can be held successful as to smart specialisation. The project should make a change in the way things are done; if there has been no change to the situation before the project, it cannot be considered very impactful. On the other hand, the operational environment for a project usually has more than one factor that can be causing changes, so it can be hard to pick out if the project is the background for the change.

When thinking about impacts and implanting the results, it is important that the project already starts with a strong idea and has a plan how to continue with the activities, and preferably also how to spread and widen them when the project ends. Some projects have had clear continuation plans. The activities of certain projects, or parts of them, have been continued as a part of the organisational actions, as the Turbiini business accelerator within the project Polku-. A part of the projects has been implemented with a relatively small funding and within a short period (especially regional development funding and AIKO) their work has continued as larger projects. For instance, the project Talent Hub has been creating a basis for a common operations model for attracting international competent personnel to the capital region. The model will be furtherly developed in a continuation project implemented by a large consortium led by the City of Helsinki, together with higher education institutions and including an easier entry for international students to the labour market. The project TUDI 4.0 that was implemented with regional development funding has also gone on with ERDF funding and on a wider scale after it ended.

The project SOHJOA has led to many "spinoff projects" in intelligent traffic, one of these is the project Perille asti (included in this assessment). Ever since the project CityMobil in 2009 in Vantaa, which was funded by EU FP 7, the testing of intelligent traffic and automatic cars have been taken place. The Finnish legislation makes it possible to test vehicles without chauffeurs, which has made it possible to test automatic cars as forerunners from an international point of view. It has also been possible for Finnish companies to develop their competence of automatic cars, as business activities have been made possible, which is of great importance when it comes to international competitiveness.

The project Corporate Start-up Co-creation has had a great impact; the start-up concentration Maria 01 is strategically important to its implementor, the City of Helsinki. The City of Helsinki plans to multiply the regional area and actors and to make it the largest campus of growing business in the northern Europe. Many large companies and growing businesses take part in the further developing, like Slush. The new campus is to be ready in 2023.

There are large impact differences between projects, none of them are clear-cut, and a competent generalisation cannot be made. A thorough planning about how to use the results or to take part in larger EU project applications, already at the beginning or in the early start of the project, is important. More investments in impact could be called for.

List of evaluated projects

Summaries of the evaluated ERDF and Six City Strategy projects can be found in www.eura2014.fi/rrtiepa/?lang=en by entering the project code to the Free-form text search.

ERDF projects

- Establishment of operational model for demonstration platform for textile fibre recycling, project code A71957
- Circular Economy Aspects of Construction in Municipalities, project code A72361
- Smart station - Low-carbon and climate friendly services and solutions in stations, project code A74096
- Jätkäsaari Smart Mobility, project code A74033
- TUDI 4.0 - Digitalizing Industry, project code A73249
- Energy Transfer Bus, project code A72304
- Path- from idea to new business, project code A70726
- Corporate Start-up Co-Creation, project code A71928
- BEAT - Business Teams in Uusimaa Region, project code A72097

Six City Strategy projects

- Climate Street, project code A70965
- TRY OUT! Circular economy and cleantech pilots with cities and companies – disclosing efficient business models , project code A72153
- SOHJOA: Physical and virtual innovation platform of autonomous Last mile urban transportation, project code A72169
- Last mile, project code A72983
- Open Real Time Interfaces in Transport and Traffic, project code A71103
- Resilience and company vitality from robotics, project code A73847
- Well-being businesses in new hands, project code A72013
- Ecosystems of Growth: Enabling the Growth of Companies through Collaboration, project code A73976
- Smart Learning Environments for the Future, project code A73085

Regional development funding projects (Makera)

- Collaborative project to promote student learning, networking and innovations in health sector www.upgradedlifefestival.com
- TUDI
- IoT Lab
- From development networks to innovation platforms
- DigiSmart www.digistifiksu.fi/digismart-project-presentation

Regional innovations and experimentations projects (AIKO ERM)

- Social and healthcare integration in frequent users' service processes
- Digital Health Growth Track
- Myyr York Street Art City
- Talent Hub
- Smart flexi space network https://forumvirium.fi/en/smart-flexi-space-network-expanding-the-utilisation-of-underused-spaces-in-the-city/
- Senior citizens as AI mentors

3. CONCLUSIONS AND DEVELOPMENT SUGGESTIONS

Result summary

According to this assessment, projects implementing smart specialisation are very pragmatic and mostly they seek solutions for certain practical results. Creating new forms of business has been rather modest in the projects, it has been more common to develop the preconditions for business. The aim of many projects was to create an operations model, but the last result was not necessarily a model that could be straight transferred into practice, but a draft. A well-working concept as to generating new business has been the quick pilots implemented in the Six City Strategy projects, where the companies had a chance to test their business ideas with a light process. Developing technology has not been that common, even if some projects, like those in intelligent traffic, have made it successfully.

Strong inputs have been made into networks and the development of cooperation. One has also succeeded in involving both inhabitants and service users in co-developing, that is a triple-helix model has led to a quadruple and even pentahelix model. Co-development is one criterium that will be emphasized upon during the programme period 20121–2027 and there seems to be a functioning basis for its

implementation in Helsinki-Uusimaa. According to the principles of smart specialisation, the projects have widely used the Explore Business Development process and have largely involved actors from different sectors. The EDP has been implemented rather well in projects in the Helsinki-Uusimaa Region.

Diversification can be thought of as a strength of smart specialisation. The spearheads are diversified, as are the projects implementing them. If the diversification is included in the spearheads and the basis of the project, the implementation can be made easily.

Even if some of the projects have been truly international, the international cooperation has been modest on a general level.

At the best, the activities created within the projects have been a continuation of the basic activities of the organisation, or they have continued as a wider continuing project. Some impactful projects have been created with development funding, as the start-up concentration Maria 01 is strategically important to its implementor, the City of Helsinki. It will not only proceed but is meant to become the largest campus of growing business in the northern Europe. The projects developing and testing intelligent traffic and automatic cars make a rather long continuum with successful development and testing of international, pioneering technology.

Reflections

The strategy of smart specialisation has been updated and renewed by melting two of its spearheads into one, Welfare City and Smart Citizen to Citizen City. The theme Citizen City is much more undefinable than the others, and its contents will not necessarily open up just by its name. It is also wide, including urban development and human service solutions. Especially the last subarea has no clear boundaries; the user orientated solutions in health or wellness can be put both under Health and wellness, and Citizen City. The same goes for user orientated solutions in cleantech. Urban cleantech, Health & wellness are clearer thematic spearheads in comparison with Citizen city and Digitalising industry.

All spearheads of smart specialisation have been created by the projects, and none of them have been left unimplemented. Some of the projects, especially the coordination projects in smart specialisation, like TUDI, KEVEIN and Digisti Fiksu have been important tools for implementing the strategy of smart specialisation. Whereas the projects dealing with the developing of business activities and being implemented first and foremost with ERDF funding are not easily combined straight with any theme in smart specialisation , as the developing of companies is no actual theme as such in the strategy of smart specialisation.

Smart specialisation needs a new kind of agility from the regional developers and the public administration. The participation of companies, educational and research institutions, as well as of non-governmental organizations calls for networking. It is a challenge of its own to make actors participate and commit, especially in the Helsinki-Uusimaa Region, which is a large area with Finnish standards and with many actors. To make every, or even the most important actors, participate in the smart specialisation processes is a hard task. Via funding, smart specialisation has offered actors channels for a participation in regional development. It has been possible to connect smart specialisation to the selection process of projects, excluding the development of companies with no natural connection to the themes of smart specialisation. The processes have been developed and improved during the programme period, and they have been learning processes.

Connecting regional development funding to the themes of smart specialisation makes projects parts of a thematic entity and helps to create networks. Networks, although loose, have been born around the spearheads via projects, especially via strategic coordination projects. These projects form a

potential beginning and reserve for the further developing of smart specialisation. Using thematic networks, we can involve other than traditional project implementors in regional development, like inhabitants. The strength of networks based on smart specialisation is also sector-crossing multidisciplinarity.

Development suggestions

Wider participation

There is still a lot to be done and improved when it comes to the participation of companies, but R&D&I companies are already well included in the implementation. A larger and more covering group of implementors and participants could well be the aim for the future. By using participating methods when renewing the strategy of smart specialisation, a larger group of actors could be involved already when the strategy is being formed. A real participation in the process of forming the strategy could lead to the participants also taking part in implementing the strategy and making smart specialisation better known.

More internationality

The application criteria for regional development funding and AIKO projects have not exactly focused upon international cooperation, but the projects are thought to be small scaled with a small funding and local implementation. It is worth to add international contacts to even small projects, as a further development could then take place after the project and with a larger consortium in the region. Operating in a wider network and finding international partners could lead to a project that is better known and has a stronger impact. Increased internationality, by contrast, calls for more emphasis in the evaluation phase of funding application and project estimation phases. On the other hand, the internationalism of companies has already been brought up in the ERDF programme. If there is a wish for more internationality, the project implementors should be directed towards international activities and tell them what kind of international actions can be done in the frame of project funding. To utilize the thematic networks of the smart specialisation platform (S3 Platform) is one possibility. One example of this, is the network for safe and sustainable mobility, where the Helsinki-Uusimaa Region is a member. The website Helsinki Smart is also a good and existing tool for increasing the international publicity.

Cleary defined strategic spearheads

Clearly defined and easily approachable spearheads can make the strategy sharper and make it more understandable. A clearer strategy would be easier to follow, and it could also increase the steering effects in regional development. Also, a clear definition of the spearheads would most probably lead to a narrower outlining of smart specialisation. When acknowledging the diverse industrial structure of the Helsinki-Uusimaa Region, it is hard to choose and clearly define spearheads. Making choices and specialising is the purpose of smart specialisation, but at the same time we need to take care of the important regional strengths not being defined outside the development actions.

APPENDIX: INDICATORS

Indicators for Regional innovations and experimentations (AIKO)

	Information given in the application		Outcome	
Indicators	**Aim**	**Short description of aims**	**Outcome**	**Short description of outcome**
Development processes to be started	pcs		pcs	
Reference objects of international level	pcs		pcs	
Trials to be started	pcs		pcs	
New companies as project results	pcs		pcs	
New jobs as project results	pcs		pcs	
Projects furthering climate neutrality and resource efficiency	yes/no		yes/no	
Project furthering the employment and entreprenurship of immigrants	yes/no		yes/no	
Projects carried out in cooperation with several regions	yes/no		yes/no	

Indicators for ERDF and Six City Strategy (6Aika)

- CO05 New companies created with support
- CO05.1 New companies created with support and established by women
- 6 small and medium-sized companies starting a new form of business
- 7 small and medium-sized companies with a significant increase in sales or personnel
- CO08 New companies created with support
- CO08.1 New jobs created with support and for women
- 9 (1.2.) Other investments furthering entrepreneurship and created by the project
- 12 small and medium-sized companies starting to export or expand into a new export area
- 11 small and medium-sized companies with the key aim being company growth and international business
- CO04 Companies getting other support than financial
- 25 new jobs in RDI created with support
- 25.1 New jobs in RDI created with support and for women
- 16 Companies starting RDI actions or cooperation with universities, higher educational institutions or research institutions.
- 17 New innovation platforms
- 18 Products or services developed and piloted in innovation platforms
- 19 Companies cooperating with cities in innovation environments
- 15 Companies participating in project led by research and development institutions
- CO28 Companies developing a new or significantly improved product for the market (a new product on the market)
- CO29 Companies developing a new or significantly improved product for the market (a new product for the company)
- 21 Start-ups significantly ready for developing a new product, form of service or production method.
- 22 New company applications created with open data and interface.

Regional development funding, final assessment

1. Total assessment of how successful the project was

- Excellent
- Good
- Satisfactory
- Not successful
- Failed

2. Project results in relation to aims adopted in project plan and project decision

- What results have been achieved in the project?
- Which parts of the results have not been achieved and why not?

3. Project implementation and cooperation

- How has the project implementation and administration been taken care of, any problems, what kind of?
- How has the funding been realized, which big changes have been taken place?
- How has the cooperation with the Council go?
- How has the cooperation between actors go, have the contributing partners had clear roles?

4. Impact of project in regional development

- How has the project furthered the reaching of the aims in the Helsinki-Uusimaa Regional Programme, and which in particular?
- How will the functions continue, how has the implanting of the results been done after the project?
- What are the project benefits for other interest groups, what can the results be used for?
- What kind of effects/benefits has the project had (economic, employing, social, environmental)?

5. Would the project have happened without regional development funding

- Would not have happened
- Would have happened but scaled down
- Would have happened later
- Would have happened as such

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