Independent expert report

Report on the implementation of smart specialisation in Sweden

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1. Introduction

This report will take stock and review the implementation of smart specialisation strategies in Sweden. *Smart specialisation* has at the time of writing formed the basis for research and innovation investments under the European Regional Development Fund for almost a full programming period (2014-2020). On the one hand, the time period passed should present an opportunity to draw some well-founded conclusions about the implementation to date. On the other hand, these conclusions would need to be reviewed with some margin before the next programming period, in order to influence decision-making on European, national and regional level. This report seeks to provide a foundation for such a review.

The report have been commissioned by the European Commission and the main purpose is that it should present *a detailed report mapping the implementation of smart specialisation in Sweden, with special focus on challenges, obstacles and best practices and including recommendations on how these challenges and obstacles can be overcome, considering regional, national and EU funds and initiatives.*

The purpose is further elaborated in four main objectives, as the report should include:

1. A stocktaking exercise of the implementation of RIS3 in Sweden, regionally and nationally, with special focus on challenges, obstacles and best practices
2. Recommendations on how these challenges and obstacles can be overcome, considering regional, national and EU funds and initiatives.
3. Access the capability of Sweden to comply with the Enabling condition on Smart specialisation set out in the draft CPR.[1]
4. Discuss how well the coordination of the smart specialisation strategies between regional and national level as well as the cross-regional coordination works and prepare advice for optimisation.

The report will be structured in four main parts. First, a short introduction will provide some basic information on, and relating to, smart specialisation in Sweden in chapter 2. This chapter is based on reports as well as databases. Second, the actual stocktaking will be presented in chapter 3. This chapter is mainly based on interviews with all regional authorities and supported by a review of regional strategy documents. Third, the stocktaking will form the basis for an analysis of capacity for compliance with the enabling condition, as well as the multilevel coordination in Sweden in chapters 4 and 5 respectively. Fourth and lastly, a set of recommendations will be presented in chapter 6. The recommendations will focus on the national and interregional level. To cover specific challenges identified in single regions or to formulate recommendations to specific regions is beyond the scope of this report. However, challenges that are shared by several regions will be addressed. The different chapters are quite well integrated in each other, whereby selective reading of different sections might entail some difficulties. However, there are cross-references in the text so that readers should be able to navigate the report from different starting points.

[1] It has been pointed out during the development of this report that the enabling condition and related criteria have been modified, for instance in the Council position on the proposal for the Common Provisions Regulation. In correspondence with the terms of reference for this assignment however, it will be the formulations of the criteria for Enabling condition set out in the draft CPR that will serve as the basis for this analysis.

2. Smart specialisation in Sweden – an introduction

This chapter will provide some background on smart specialisation in Sweden through some general research and innovation facts and figures as well as a short chronicle on smart specialisation policy implementation.

2.1. The Swedish innovation context in brief

Sweden is an innovation leader in the European innovation scoreboard and the leading nation according to the 2019 edition (Hollanders, Es-Sadki, & Merkelbach, 2019). As of 2016, Sweden had the highest gross expenditure on research and innovation (GERD) in the EU. Sweden also performs well in similar rankings (c.f. Cornell University, INSEAD and WIPO, 2019) consequently placing near or at the top of different measurements of innovation. Sweden also generally performs well in index measuring institutions and framework conditions for business (c.f. The World Bank, 2019 and Schwab, 2018).) In terms of entrepreneurship, Sweden's measured performance is more mixed however, with moderate levels of entrepreneurship across various dimensions (Bosma & Kelley, 2018).

The Swedish innovation system is relatively concentrated on the university sector (Hallonsten & Slavcheva, 2018). Most of the public funding is directed at universities and universities also have some of the same tasks that research institutes have in other countries (OECD, 2016). Universities are technically governmental agencies and therefore they all have national mandates and missions. However, while universities are the biggest public research actors, there are also research institutes and the institute sector have undergone a reform during the past decades, where, in a simplified sense, four separate institutes were merged in the national umbrella organisation RISE. It is also important to note that an important driver of Sweden's high investment in research and innovation is business investments, which traditionally have been centred around a few major R&D-intensive companies. This is still largely the situation although the economy has diversified in recent decades, mainly in the knowledge-intensive service sector (Hallonsten & Slavcheva, 2018).

There are some tendencies that Sweden's development in the research and innovation is lagging. Expenditure on R&D is decreasing in Sweden, mainly because of declining business expenditure. Furthermore, OECD has identified challenges in the Swedish innovation system, in strengthening the university research base, creating links between research and innovation, integrating societal challenges in innovation policy, as well as weak governance in prioritisation and strategy development (OECD, 2016). Some of these challenges are echoed by the JRC in the RIO Country Report on Sweden (Hallonsten & Slavcheva, 2018). Furthermore, for several decades there has been an observation based on statistical data about the existence of a "Swedish paradox" (Bitard & Edquist, 2008). The idea stipulates that Sweden is a leading nation mostly based on input in R&D, such as funding, but lacking in output, such as new-to-market products and services. The phenomena is however quite debated, both the observation itself as well as possible conclusions (Ejermo & Andersson, 2013).

The most important public funders of research and innovation are The Swedish Research Council (Vetenskapsrådet) and Vinnova, the Swedish Innovation agency. As the names suggest, the former focus on research while Vinnova focus on innovation and commercialisation. Vinnova has an annual budget of about 3 billion SEK (ESV). The Swedish Agency for Economic and Regional Growth (Tillväxtverket) is the managing authority for the European Regional Development Fund (ERDF) which has a total budget of slightly over 8 billion SEK and about 2,6 billion SEK in thematic objective 1 (TO1) for the programming period. The ERDF is managing through 8 regional programmes at NUTS2-level and 1 national programme, as well as a programme on Local Led Development, combining funds from ERDF and European Social Fund (ESF)[2].

[2] The Ministry of Enterprise and Innovation in Sweden raised a question during the interview for this report about how the LLD-programme would be affected by smart specialisation and the new enabling condition.

2.2. The regional context in Sweden

There are 21 regions in Sweden at NUTS3-level. This level of government has for some time been somewhat weak in relation to both the national and local levels of government. Swedish multilevel government have been likened to an hourglass where the regional level represents the narrow neck between the bulbs (SOU, 1998, pp. 94-95). The responsibility for regional development was until the late 1990s' allocated to the county administrative board (Länsstyrelse), which is a state level body operating at the regional level. However, during a 20-year period from the late 1990s' to 2019, Swedish regions underwent a reform, where the regional development responsibilities were gradually transferred away from the state to regional organisations. These regional organisations, formally known as county councils (Landsting), are the only directly elected regional decision-making bodies. The most important responsibility area of the organisations has traditionally been healthcare, as well as regional public transport. The transfer of the regional development responsibility has been accompanied by a name-change, were the organisations changed names from "landsting" to "regions". Regions have their own tax base through a regional tax. In legal terms, regions are not above municipalities in the multi-level government structure and the municipalities and regions have the same legal status, separated by division of tasks.

In some regions, the responsibility was transferred directly from the county administrative boards but in many regions, the regional development responsibility was first transferred to associations of local authorities, and only then to the current regional organisations. Therefore, at some points during the past decade, the regional development responsibility was divided among three different types of organisations in different regions. Today following the transfers, the regional development responsibility is homogenously situated in directly elected regional assemblies. However, while this institutional set-up has been in place in some regions for 20 years, other regions have still not had a full year of experience.

The regional development responsibility is grounded in the Swedish regulation on regional growth (SFS 2017:583). The basic responsibility is to develop a regional development strategy (commonly referred to as RUS), to manage and distribute nationally allocated development funds (commonly referred to as 1.1.-funds) and to monitor and report implementation and progress to the national government. There is nothing in the regulation that specifies a responsibility for research and innovation or smart specialisation. However, the law states that regions shall contribute to EU cohesion policy and the national strategy on regional growth and attractiveness. The current national strategy runs from 2015-2020 and one of four priorities is innovation and entrepreneurship (Näringsdepartementet, 2015). Hence, regional research and innovation policy is a regional responsibility indirectly by reference to cohesion policy and the national strategy. The regional development funds or 1.1.-funds that are allocated to the regions totals about 1 billion SEK per year, and innovation and entrepreneurship is the main area of expenditure; the priority constituted about two thirds of allocated funds for the years 2014-2017. These funds are allocated based on needs and the allocation is compensatory, rather than competitive.[3]

The institutional set-up of the ERDF combines decision-making of several governmental levels. The funds are allocated to NUTS2-regions. The only administrative function of the NUTS2-regions in Sweden is in relation to European structural and investment (ESI) funds and the only policy document that the NUTS2-region develops is the Operational programme (OP). As mentioned in the previous section, the programmes are managed by Tillväxtverket through regional offices. Decisions on projects are then made by partnerships

However, this question is mostly outside the subject treated here, and the LLD-programme will not be treated in the rest of the report.

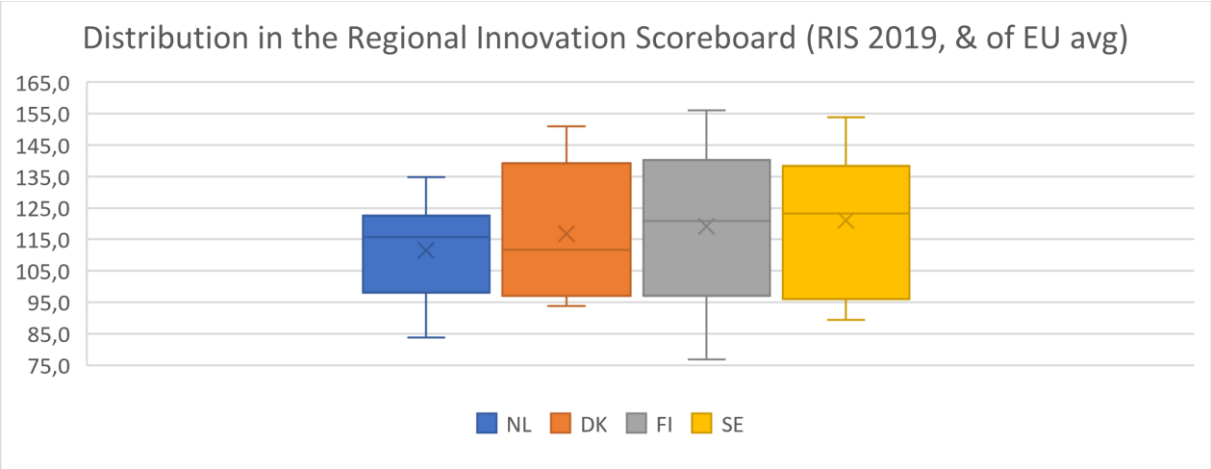
[3] For a good overview of regional development funds, see the report "Regionalt utvecklingskapital" by Swedish association of municipalities and regions from 2017, where funds are categorised into national compensatory funds (i.e. 1.1.-funds), competitive funds (i.e. Vinnova, Horizon 2020), ESI-funds and own resources (taxes, fees or other). It displays a very uneven distribution of development resources, where both the sum in totals and per capita varies greatly, as well as the mix between compensatory and competitive funds.

of politicians from the regional authorities in the NUTS2-area and other stakeholders from the concerned NUTS3-regions. However, the "regional level" in all aspects but ESI-funds, concerns NUTS3-regions[4], where authorities responsible for regional development are based.

In the Regional innovation scoreboard, 4 of 8 NUTS2-regions are innovation leaders, 3 are strong innovators and one is a moderate innovator. Like the European innovation scoreboard, the regional innovation scoreboard is a composite index 18 different measures of innovation, covering both inputs such as funding and human resources and outputs such as patents and sales. The composite scores of Swedish regions span from 89 % of EU average to 154 % of EU avg. Among Innovation leaders in Europe, the distribution mirrors Denmark and Finland quite well, but is considerably more uneven than the Netherlands.[5] (see Table 1). The regional differences are echoed in the 2019 Country Report for Sweden where regional differences are highlighted, and a growing divide is observed with regards to skills, investment and productivity (Commission, 2019).

Universities[6] are present in all NUTS2 regions and NUTS3 regions. However, the universities differ a lot. The total income for all universities that are present in the regions spans from 19 billion SEK in Stockholm to 1 billion SEK in Mellersta Norrland and the order of regions in terms of university funds corresponds almost perfectly to the positioning in the regional scoreboard.

Table 1 – Distribution in the Regional innovation scoreboard



It should however be noted that the innovation performance can differ a lot depending on the type method used. There is current research that seeks to measure different types of innovation as well as considering different combinations of resources (labour and capital) in different regional context. While Stockholm is still an innovation leader, other regions such as Jämtland and Gotland, which are regions that are in the bottom half of the Regional Innovation Scoreboard in Sweden[7], also appear at or near the innovation frontier in Sweden. One point of using this index, which is utilising Data Envelope Analysis, is to facilitate measurements of both expansion of the innovation frontier, but also diffusion or uptake of existing innovation, as well as shifts in the regional resource combination (Wincent, Ylinenpää, Anokhin, & Grauers Berggren, 2015).

[4] This is not to say that joint initiatives between regions in a NUTS2-regions are completely lacking. Just that the only *institutionalised* function of NUTS2-regions is in relation to ESI-funds.
[5] Measured as standard deviation of regional scores.
[6] Universities covers two different kinds of universities. *Universitet* which is a conventional university and *högskolor* which are smaller universities that, while similar in most respects, have some limitations in authority.
[7] There is a discrepancy between the meassurements since the Regional innovation scoreboard is based on NUTS2-areas. In a more currect formulation, Jämtland and Gotland are part of NUTS2-regions that are in bottom half in the Regional innovation scoreboard.

2.3. Timeline of smart specialisation

In order to put the Swedish implementation of smart specialisation into context, this section will start with a short timeline of smart specialisation on European level. While the history of smart specialisation as a European policy is somewhat well-established it is worth reiterating. In 2005, then Commissioner for research and innovation Janez Potočnik appointed an expert group tasked with providing advice on the role of knowledge in promoting sustainable growth, how to foster knowledge and what role should be played by different actors in its promotion. One of several outputs from the Knowledge for Growth expert group was the recommendation that smart specialisation should be adopted as a guiding concept in European policy (c.f. Foray & Van Ark, 2007 and Foray, David, & Hall, 2009). During the coming years, the concept was integrated in cohesion policy. In 2010, the communication from the Commission outlining the role of regional policy in the implementation of the Europe 2020 strategy included the recommendation that regions should develop smart specialisation strategies (COM (2010) 553). As a result, the S3-platform of the JRC was established the following year to support national and regional governments in implementation. Finally, research and innovation strategies for smart specialisation (RIS3) was included as an ex-ante conditionality for thematic objective 1 on investment in research and innovation in the regulation on the European Regional Development Fund (ERDF) (Regulation (EU) No 1303/2013). Consequently, several RIS3[8] was developed at alternately regional and national level across Europe and have continually shaped regional and cohesion policy since. Smart specialisation as a concept will therefore likely outlast the European strategy it was initiated to support.

In Sweden, the adoption of smart specialisation and implementation started late in this process. The ongoing programme evaluation of TO1 in ERDF in Sweden, which have a dedicated task to evaluate smart specialisation within the context of ERDF TO1, have pointed out that the process of developing RIS3 and the integration of smart specialisation in the OP's was a late exercise which impeded well-consulted and thorough involvement and decisions (Ramböll, 2018).

There was initially no national coordination or mechanisms to support regional work on RIS3 during the initial phases. Therefore, the development of smart specialisation at regional level largely had to be based on the individual capacities and ambitions of the regions. There were however some forums for dialogue between regions and between regional and the national level (such as the so-called RND FoU network) as well as learning- and capacity building projects, like the projects Smart regions (2012) and Smarter regions (2014) that was carried out by Reglab[9], a network organisation for regions.

A national support was established in 2016 through the appropriation directions from the national government to Tillväxtverket. The mission covers for the period 2016-2020 and states that the agency should support regions in their work on smart specialisation and disseminate knowledge and experiences from this work. This mission has so far been operationalised into information being gathered and made available on the agency homepage on smart specialisation, as well as the establishment of a network dedicated to smart specialisation in 2018. The agency launched a call for a "S3-pilot" in 2018 directed at clusters working in and with prioritised focus areas from regional RIS3's. 22 clusters have been selected for a program aimed at developing the cluster organisations.

There is some variation in the way that smart specialisation was incorporated in the formal programming texts at the NUTS2-level. Out of 8 regional ERDF-programmes, 3 have clarified S3-priorities in the OP, while the remaining programmes largely refer to other documents.

[8] It is not uncommon to use the expression RIS3-strategy. However, since the acronym is short for Research and Innovation Strategies for Smart Specialisation (R I S^3) the last, additional "strategy" is a tautology. Throughout this report "RIS3" will denote the smart specialisation strategy/ies.

[9] See http://www.reglab.se/

3. Stocktaking

The following chapter is based on interviews as well as available documentation on smart specialisation in Sweden. The wide majority of the interviews were conducted with representatives from regional authorities and in total 28 persons participated in 22 interviews. The regional authorities themselves decided who participated in the interview based on a brief but quite thorough description of the purpose and content of the report. Most of the respondents were policy advisors or development managers with responsibility for research and innovation. In some cases, the chief executive for regional development participated in the interview. In one case the respondent was a former policy advisor because of certain circumstances. All respondents are civil servants. Additionally, a group interview with representatives from the regional representation offices in Brussels was carried out.

Furthermore, interviews were carried out with Tillväxtverket at national level and the Ministry of Enterprise and Innovation, since both have important mandates related to smart specialisation. While Vinnova does not have a formal mission related to smart specialisation, an interview was carried out with a representative from the organisation since the mission of the agency is closely related to smart specialisation.

The interviews lasted between 30-80 minutes and the majority was about 60 minutes. All interviews were semi-structured interviews. For the regional authorities, the same general questions were prepared. All these interviews started out by an open question where the respondents were asked to describe the regional work on smart specialisation in their own words. Mostly depending on this answer, some questions became more emphasised while others became less accentuated during the remainder of the interview.

For the remaining interviews, more tailored interview guides were prepared, even though the general format was the same with an open starting question and a flexible approach to more specific questions later. All interviews ended with an opportunity for the respondent to either add something that they believed had been missed through the conversation, and the opportunity to underline something that had been brought up.[10]

3.1. Snapshot of smart specialisation in Swedish regions

Below is a region-by-region snapshot of smart specialisation in Swedish regions. It is sorted by NUTS2-region but is oriented around the regions at NUTS3-level. For each region there is some basic information as well as a short account of the current status of the smart specialisation process. Particularly, status seeks to clarify different stages of design and decision-making. Please note that many strategies are in some phase of design and re-design. Therefore, the basic information should not be considered alone as the status will be likely to affect the strategy and priorities in the near-term in several cases.

For each NUTS2-region the categorisation from the Regional Innovation Scoreboard 2019 as well as the total budget for the ERDF 2014-2020 is detailed. For each region, the working RIS3-documents are listed. For those regions that have strategies which are explicitly identified as smart specialisation strategies, the strategy document will be listed along with a link.[11] If the region is currently in a formal[12] process of developing a strategy, the strategy document will be categorised as being “in development”. In those regions where the basis for smart specialisation (such as priorities) are not found in an explicit smart specialisation strategy, but as an integrated part of another document (such as a regional development strategy), the document will be listed without a link.

[10] Most respondents used this opportunity to underline something that had already been mentioned, and very few brought up a dimension that had not been touched upon. This indicates that the respondents felt that the interviews were quite comprehensive.

[11] An important indicator is if the respondent(s) self-identified a strategy document as the regional RIS3 when asked openly to describe the regional work on smart specialisation in the beginning of each interview.

[12] “Formal” will here mean a process that has been initiated by a political decision and has a foreseen timeline.

SE12 – East Middle Sweden

RIS 2019	Innovation Leader +
ERDF 2014-2020	€ 70 million

Uppsala

Population	378 246	**Status of smart specialisation** In Uppsala the political leadership has decided to initiate a process to develop a RIS3 planned be finalised in 2020. The process has been started by Region Uppsala but is in the early stages. The priorities to the left have been working priorities from the Regional Development Strategy and are therefore not related to the ongoing process.
Working RIS3	Regional development strategy	
Priorities *(From the regional development strategy)*	-Life science -Energy/environment -Advanced production -Tech -Green business -Tourism	

Sörmland

Population	295 459	**Status of smart specialisation** Sörmland adopted its RIS3 about two years ago and has been working on implementation since, focusing efforts on the three priorities to the left which are detailed in the strategy.
Working RIS3	Strategi för smart specialisering i Sörmland	
Priorities	-Advanced manufacturing for harsh environments -Bio-based industries -Digital services	

Östergötland

Population	462 379	**Status of smart specialisation** Östergötland adopted its RIS3 in 2014 and has since been working with implementation based on the strategy and the priorities. The strategy process was extensive and involved a lot of prioritisation to narrow down the final priorities. There are working groups both at the levels of the priorities and the strategy level.
Working RIS3	Smart specialisation strategy for Östergötland	
Priorities	-Effective Logistics -Business models for system solutions -Smart, robust and secure connected products and systems -Visualisation and simulation -Advanced materials	

Örebro

Population	303 096	**Status of smart specialisation** Örebro adopted its RIS3 two years ago, in 2017, and has been working on implementation since. The strategy took two years to develop from a political decision in 2015. The region has been working a lot with the university and innovation support system to strengthen the selected priority areas.
Working RIS3	Innovationsstrategi Örebroregionen	
Priorities	-Autonomous, digital and intelligent production systems -Food in the intersection of culinary arts, health and sustainability	

Västmanland

Population	274 516	**Status of smart specialisation** Västmanland adopted the current strategy in 2013 and has been working on the four priorities since, in order both the strengthen the areas as well as to create cross-priority collaboration and initiatives. Some strategy work is foreseen in relation to the development of a new regional development strategy, but the current work on smart specialisation is foreseen to proceed with a great deal of continuation.
Working RIS3	Affärsplan Västmanland	
Priorities	-Automation -Energy -Rail -Welfare and health	

SE12 – South Sweden

RIS 2019	Innovation Leader
ERDF 2014-2020	€ 61 million

Blekinge		
Population	159 837	**Status of smart specialisation** Blekinge has recently started a process to develop a smart specialisation strategy and is currently producing a pilot study on smart specialisation in Blekinge, with a focus on stakeholder dialogues, that is planned to result in a defined strategy. Blekinge currently has an innovation strategy that in many respects mirrors a smart specialisation strategy but the strategy currently in development is supposed to integrate the concept at a more fundamental level.
RIS3 (approved)	In development	
Priorities *Working priorities*	-ICT -Digitalisation -Material processing	

Skåne		
Population	1 365 964	**Status of smart specialisation** Skåne has had its RIS3 in place since 2011 and parts of the strategy provided input to the RIS3-guide by the JRC. Work has been centred around the issues-driven priorities to the left and a lot of work has also gone into questions of governance, for instance the regional innovation council. There is currently a process to develop a new smart specialisation strategy which is likely to contain new or developed versions of the established priorities as well as some new areas.
Working RIS3	An International Innovation strategy for Skåne	
Priorities	-Smart and sustainable cities -Personal health -Smart materials	

SE32 – Middle Norrland

RIS 2019	Moderate + Innovator
ERDF 2014-2020	€ 154 million

Västernorrland		
Population	245 371	**Status of smart specialisation** Västernorrland has politically decided to develop a smart specialisation strategy and are current in process of designing it. While the region has not had a strategy, the region has discussed and worked on smart specialisation since before the start of the current programming period. Innovation policy has also been shaped by a focus on sector- and cluster-linked priorities. The region has also participated in several initiatives and projects linked to smart specialisation.
Working RIS3	In development	
Priorities *Working priorities, based on the regional development strategy*	-Wood -IT	

Jämtland-Härjedalen		
Population	130 517	**Status of smart specialisation** Jämtland-Härjedalen has an innovation strategy and an innovation program that were adopted in 2013 and 2015 respectively. Both the strategy and the program were highly influence by smart specialisation and EDP in particular. The region is currently in the process of revising the strategy during 2019. The region places special emphasis on entrepreneurial drivers and activities in innovation policy.
Working RIS3	Innovative Jämtland Härjedalen 2025	
Priorities	-Entreprenurial drivers -Sports, tourism, outdoor -Manufacturing industry -Business services	

SE21 – Småland and the islands

RIS 2019	Strong + Innovator
ERDF 2014-2020	€ 66 million

Jönköping		
Population	361 759	**Status of smart specialisation** Jönköping is in the latter stages of the development of a smart specialisation strategy. The process was done in conjunction with the wider revision of the regional development strategy and both the development strategy and the RIS3 – working as a sub-strategy – are planned to be decided in the autumn of 2019. The priorities to the left are horizontal priorities from the current innovation strategy, and while this strategy will remain as a complement, the RIS3-priorities are not related to these, and will be oriented around strong regional sectors.
Working RIS3	In development	
Priorities	Attitudes to innovation	
From the current innovation strategy	-Effective processes for innovation -Collaboration for innovation	

Kronoberg		
Population	200 252	**Status of smart specialisation** Kronoberg are not in a process of developing a smart specialisation strategy. The region has an innovation strategy which highlights two focus areas (see left) but it is not identified as a RIS3 and the regional work is more centred around the regional development strategy, which provides the main methods and tools for development.
Working RIS3	Regional innovation strategy	
Priorities *From the current innovation strategy*	-Sustainable housing -Competitive production	

Kalmar		
Population	244 856	**Status of smart specialisation** Kalmar is currently in the process of developing a smart specialisation strategy, planned to be ready for consultations in the beginning of 2020. Kalmar previously had a strategy process in 2014-2015 that did not ultimately result in a strategy but included analysis and focus group. The priorities to the left were however outputs from this process and work has been oriented around these since. The current process is linked to the regional reorganisation which took place in 2019.
Working RIS3	In development	
Priorities *Working priorities*	-Housing -Food -Tourism	

Gotland		
Population	59 253	**Status of smart specialisation** Gotland has integrated smart specialisation in its regional growth program where the two priorities to the left have been formulated. The region is currently planning a revision to the program and intends to keep the current format, with smart specialisation being integrated in the research and innovation priorities in the regional growth program.
Working RIS3	In development	
Priorities *From the regional growth program*	-Tourism -Food	

SE23 – West Sweden

RIS 2019	Innovation Leader +
ERDF 2014-2020	€ 45 million

Halland		
Population	330 310	**Status of smart specialisation** Halland has not worked actively with smart specialisation during the current period and is considering developing a more explicit smart specialisation strategy. However, Halland has worked with sector-linked priorities in research, innovation and business development since about 2005, and the priorities to the left frames current policy. Therefore, similar policy to S3 has been in place for some time, currently underpinned by the regional growth strategy, but it has not been substantially influenced by smart specialisation.
Working RIS3	Regional growth strategy	
Priorities *From the business development strategy*	-Tourism -Health innovations -Green growth	

Västra Götaland		
Population	1 713 907	**Status of smart specialisation** The RIS3 of Västra Götaland is integrated in the regional development strategy, VG2020, under the priority area "Leading knowledge region". Västra Götaland has effectively been working with sector-linked priorities in R&I since 1999. For the current programming period – which is also the current period for the regional development strategy - a more comprehensive analytical work than previously was carried out to identify priorities. In total, the region has highlighted 13 areas. The 6 priorities to the left are areas of strength and development based on regional competitive advantage. Additionally, the region has 2 priorities that are cross-cutting and 5 that are necessary for the regional development (see p. 3 in folder on left). The priorities frame regional policy and the region has initiated dedicated funding programmes to support several areas. The region is also in the early stages of a revision to the current strategy.
Working RIS3	VG2020 See also folder Smart specialisation in Västra Götaland	
Priorities	-Life science -Sustainable transportation -Green chemistry -Marine environment & the maritime sector -Material sciences -Textiles	

SE11 - Stockholm

RIS 2019	Innovation Leader +
ERDF 2014-2020	€ 37 million

Stockholm		
Population	2 352 549	**Status of smart specialisation** In Stockholm, two processes have been initiated to develop a smart specialisation strategy during the current programming period but both have been halted due to changes in personnel and regional re-organisation. Stockholm is currently developing a Business and Growth strategy were smart specialisation will be integrated. Stockholm's work with the ERDF during the programming period has been done according to a special model called "Stockholmsmodellen" where stakeholders seek to identify and develop strategic calls and project around focused priorities, thereby functioning as a form of working S3 in relation to ERDF.
Working RIS3	ERDF OP	
Priorities *(Working priorities)*	-Advanced production -Health and care -Smart city	

SE31 – North Middle Sweden

RIS 2019	Strong Innovator
ERDF 2014-2020	€ 147 million

Värmland		
Population	281 646	**Status of smart specialisation** Värmland has had its smart specialisation strategy in place since 2015. It was developed using analysis and a consultative process during 2014-2015. The priorities to the left have been in place and framed policy since. The priority at the top is a horizontal priority. The remaining priorities are in turn internally prioritised, meaning Forest-based bioeconomy is the highest priority. Värmland is involved a joint work on smart specialisation at the NUTS2-level in North-Middle Sweden, currently centred around the Industrial transition pilot. Värmland is currently considering potential revisions for the next programming period, and questions such as strategy alignment or integration.
Working RIS3	Värmland's Research and Innovation Strategy for Smart Specialisation 2015-2020	
Priorities	-Value-creating services -Forest-based bioeconomy -Digitalisation of welfare services -Advanced manufacturing and complex systems -Nature, culture and place based digitalised experiences -System solutions with photovoltaics	

Dalarna[13]		
Population	287 350	**Status of smart specialisation** Dalarna has had its smart specialisation strategy in place since 2014. It was developed through a consultative process in the region, following a study visit by the regional authority, the university and a cluster to the S3-Platform in Seville. Dalarna is involved a joint work on smart specialisation at the NUTS2-level in North-Middle Sweden, currently centred around the Industrial transition pilot. Some initial steps in a revision process have been taken but it is in the early stages.
Working RIS3	Mobilize for growth – agenda for smart specialization in Dalarna	
Priorities	-Advanced industry -Innovative experience production -Energy efficient society -Health and welfare	

Gävleborg		
Population	286 774	**Status of smart specialisation** Gävleborg adopted its strategy in 2017. It was developed in a consultative process with regional stakeholders as well as analysis of strong business sectors. Gävleborg is involved a joint work on smart specialisation at the NUTS2-level in North-Middle Sweden, currently centred around the Industrial transition pilot.
Working RIS3	Regional innovationsstrategi för smart specialisering Gävleborg	
Priorities	-Digital services and processes -Material technology and sustainable production -Smart sustainable cities and societies -Sustainable and inclusive organisation of work -Bioeconomy	

[13] In Dalarna, the position of policy advisor for research and innovation or similar is currently vacant. Therefore, the person formally occupying this position (until the end of 2018) was interviewed.

SE33 – Upper Norrland		
RIS 2019	Strong + Innovator	
ERDF 2014-2020	€ 212 million	
Västerbotten		
Population	270 528	**Status of smart specialisation** Västerbotten has an innovation strategy effectively working as a RIS3 covering the period 2014-2020. The sector-linked priorities to the left are formulated in this strategy and frames the current innovation policy. The region places emphasis on cross-sectoral work, and activities that are located in the intersection of the priorities. The region is furthermore in the early stages of a revision to the current strategy.
Working RIS3	Innovationsstrategi Västerbotten	
Priorities *From the regional development strategy*	-Innovations in health care -Life science -Technology and service development in industry -Testing -Sustainable energy and cleantech Tourism -Digital services	
Norrbotten		
Population	250 533	**Status of smart specialisation** Norrbotten has adopted a new smart specialisation strategy in May 2019. The strategy has been developed over 3 years and is also based on a larger process of developing sound analysis for regional development in Norrbotten. The process has therefore been based on a lot of analysis but also involvement of all stakeholders in the region. The priorities to the left are termed smart diversifications highlighting the importance of diversification of the business and innovation structure in the region. The region is highly specialised around nature-based economy, which is a foundation of the strategy.
Working RIS3	Norrbottens innovationsstrategi 2019-2030	
Priorities	-Artic test-beds -Energy technology -Space technology -Cultural and creative industries -Tourism	

3.2. Snapshot – some observations

The region-by-region snapshot do in some respects show a diversity among Swedish regions. There is no general model for how a RIS3 looks in Sweden. The timing furthermore differs as strategies have been adopted across the entire programming period. Therefore, there is also great variety in experience as well as current phase of design or implementation.

It is however also noticeable and indeed important to note, that there are clear commonalities as well. Smart specialisation has clearly already been integrated in most regional research and innovation policy and is continuously becoming more consolidated. Over half of the regions already have an explicit RIS3, in the sense a strategy guiding research and innovation policy that has been influenced by, and/or has integrated, smart specialisation to a large extent. Out of the remaining regions, most are in a process of developing an explicit RIS3. The remaining regions have elements of smart specialisation, such as working priorities integrated in different strategy documents, like regional development strategies.

The current priorities also indeed seem to frame the implementation of the ERDF according to program evaluation of ERDF TO1. The review evaluates smart specialisation in the respective programme (the 8 regional programmes as well as the national programme). The evaluation has delivered two reports (2016-2017 and 2017-2018 respectively) and the main finding was the same for both reports. The ERDF-projects

are generally in alignment with RIS3-priorities - between 83% and 100% for all regions except Stockholm[14] in the latest report. However, it should be noted that it is very difficult to draw any conclusions based on the mapping beyond the correspondence between priority and project. The evaluators also point out that the priorities often are broad and quite numerous.

While there is a general integration of smart specialisation in Sweden, it is important to not confuse the general adoption of smart specialisation with a lack of dissimilarities in the ways that this has been done. Several differences, some of which were pointed out in the very beginning of this sections, are present. Below some important differences will be elaborated, that are important to keep in mind when turning to challenges.

Strategy: Attitudes to smart specialisation

Based on interviews, the main variance in attitude to smart specialisation is less about how positive or negative regional representatives are towards smart specialisation, but rather how comprehensively regions relate to the concept. Several regions have integrated smart specialisation comprehensively in their research and innovation policy. Some of these regions have worked quite closely to the six-step process from the original guide to S3 developed by the S3-platform, and one respondent said they literally did the process "by-the-book". On the other hand, some regions believed that the concept did not necessarily present a fundamentally new approach, as they had worked with "areas of strength" (see next section regarding the terminology) and an inclusive and consultative process prior to the launch of smart specialisation as a European initiative. Therefore, while smart specialisation does not represent a problem to these regions, it is neither perceived to represent a fundamentally new solution. The scepticism is therefore not mainly directed at the concept as such, but rather its status as a policy. Following all the interviews, there is only one region where smart specialisation is perceived negatively at a more fundamental level and in its core concept. However, even this region stated that this was largely due to the conditions in the regions, mostly the size of the region, and that smart specialisation strategy might play a role at national level.

It is not obvious what the drivers of these different views are. One respondent, who had the view that smart specialisation did not represent something fundamentally new, believed that the concept might play a bigger role and indeed prove a more profound change in regions with less capabilities in research and innovation that were more in need of capacity building in the regional innovation (support) system. This view makes sense in principle but based on the interviews, there seems to be little correspondence between attitude to smart specialisation and structural factors - such as size, geography, innovation performance, ERDF-funds, general funding for R&I or even contextual Swedish issues such as type of regional organisation and timing of reorganisation. It is of course possible to do an in-depth review of different possible explanatory factors using more sophisticated variables, but I would like to propose what could be a sensible explanation to variance in attitudes based on the available information, namely spill-overs and diffusion for regions in close collaboration. NUTS2-areas seems to be a quite good predictor for partly the integration of smart specialisation but also the attitude regarding the importance or comprehensiveness of smart specialisation. In seven out of eight NUTS2-regions, the attitudes to smart specialisation were very similar between the regions within the respective NUTS2-area. It is therefore possible and even likely that attitudes and approaches to smart specialisation have been diffused between regions involved in collaboration and same administrative structures. In the interviews many respondents refer to direct collaboration and discussion on the issue of smart specialisation in the NUTS2-area.

[14] In Stockholm the number is 67% but it should be noted that due to particularities in Stockholm, the number of projects is very low (n=3) compared to the other regions (n=7-17). Therefore, a better way of putting it than "67%" is that one project in Stockholm did not correspond to priorities according to the codification by the evaluator.

Priority level: Types of priorities

There is quite a lot of variance at the level of priorities in Sweden along at least two dimensions.

First and most simply, there is quite a big spread in terms of what a priority is and can be. Some regions have sectoral priorities that closely correspond to a conventional sector (see for instance most regions without a current explicit strategy and Västmanland). Some have priorities that are cross-sectoral or economic domains that cuts across conventional sectors (see for instance Västra Götaland, Norrbotten and Sörmland). Others are better characterised as knowledge domains (see for instance Värmland, Örebro and Östergötland). Some priorities are furthermore issue-driven in that they to a large degree are defined by a societal challenge (often some but not all priorities, see Skåne and Dalarna). The point is not that some regions have better priorities, but that there is a lot of variance which impacts the work on smart specialisation, and which could become important when looking at the interregional level.

One possibly important semantic issue here is the Swedish phrase "styrkeområde" which directly translates to "area of strength" or "strength area". Despite differences, most regions use this phrase in relation to smart specialisation priorities. Area of strength may refer to all the different types of priorities above – and it can refer both to the priority that is codified in a strategy, as well as the sectors/domain/field that the priority refers to and that exist independently of a priority. While it therefore is possible that the phrase facilitates a mutual exchange based on different approaches, it is also possible that the phrase is disguising possibly important differences.

Second, there are several perspectives on what "specialisation" is supposed to be. One way to conceptualise the responses could be by separating those that see S3 as input to specialisation and those that see it as output from specialisation. In the former approach, smart specialisation is about strengthening an existing or novel area with the aim of developing a (further) specialisation and excellence within it. In the latter approach, it is about utilising regional specialisation to develop other areas through related variety. The perhaps clearest example of the latter approach is Norrbotten, where the priorities represents existing and potential possibilities to diversify the regional economy, which is highly specialised in nature-based economy, such as mining. The priorities are even referred to as smart diversification. While no other region currently has an approach that is this explicit in using specialisation as the start instead of the end, most regions have somewhat of a mixture between the two conceptual approaches. All priorities that are knowledge domains or issues-driven (see above) has an inherent logic to utilise specialisation both in existing fields of economic activity, but also in new applications. However, this logic is not limited to regions with a certain type of priority – for instance Västmanland that uses sectoral priorities, works a lot with finding connections and cross-fertilisation among the sectors. Then there are several (perhaps most) regions which has priorities which are mostly about developing excellence within a selected specialisation but where these are often supported by horizontal tools, such as digital services, and has new applications as a secondary goal. The only region that expressed a view that smart specialisation was solely about delivering input to specialisation and clear specialisation being the goal of the process, was the one region that expressed heavy scepticism towards the concept.

3.3. Challenges

Below are challenges that have been identified through interviews with the regions. All challenges have been identified by more than one region, although sometimes in different ways. The challenges are structured in 6 sections that collects several challenges that touch on the same topic. The 6 sections have been ordered loosely based on their characteristics. Section 1 and 2 deal with structural factors, where challenges likely need to be managed rather than solved. Sections 3 and 4 deal with institutional factors where challenges can be solved mainly through institutional and organisational development, as opposed to operational activities, such as projects. Sections 5 and 6 deal with a variety of challenges that (to some extent and in some cases) can be addressed within the current structural and institutional framework through operational work.

3.3.1. Structural challenge I: The regional size and critical mass

Several regions highlight the limited size of the region as a challenge in implementing smart specialisation, particularly regarding critical mass. Swedish regions are quite small which can be seen in the snapshot on the previous pages. 18 of 21 regions have less than 500 000 inhabitants and the median population is 286 000. Limited size in terms of business and knowledge structure can mean slightly different things. In some regions it is translated to hindrances to specialisation and in others overspecialisation which also relates to the differences in perception of specialisation outlined above. However, the main point is quite similar – that it is difficult to identify areas (plural) where there is a regional competitive advantage in the business and knowledge base, that can be supported in the regional context and innovation support system, and that links with overall objectives of regional policy, all at the same time. One respondent illustrated this quite well with an example; The region is home to a global research hub of a major multinational corporation which is in some ways are attached to the regional context through dependence on skills supply from the regional university. Therefore, this should be a good foundation for an area of strength in smart specialisation. However, to develop the area – it would be necessary to connect more cutting-edge start-ups to the regional ecosystem in the same field. This is however difficult and would only be possible by linking up with national and European initiatives. Links outside the regions is of course inherent in the idea of developing smart specialisation in order to achieve added-value and upscaling place-based strengths. The point here is however that these links may be necessary in smaller regions in order to establish a place-based strength in the first place. In other regions, particularly research was highlighted as an area where the university and research in the region is insufficient to support development in all, or in some cases any, of the priorities.

These conditions can impact regional attitudes to smart specialisation. Only one region explicitly thought that this should be a national exercise in order to achieve critical mass, but several regions were questioning or were somewhat sceptical that the region was the appropriate scale. Furthermore, both respondents from Tillväxtverket and Vinnova believed that the lack of critical mass at the regional level does make the work on smart specialisation difficult to scale up. Both respondents pointed out that the capacity to work qualitatively with the priorities is limited since there in total are over 80 priorities in Sweden and therefore a lot of fragmentation. For Tillväxtverket, the volume of priorities, combined with the variation in types of priorities noted above, complicates coordination and the search for common themes. The multitude of priorities also provides communicative challenges at the national level. For Vinnova, which do not have a mission to work on smart specialisation but have made attempts to utilise regional work on smart specialisation in some initiatives, such as the Vinnväxt-programme, also finds that the landscape in Sweden is too fragmented to base activities around smart specialisation.

At the same time, there were also regions who did not identify the scale or regional level as a fundamental or inherent problem and stressed that complementary actions could facilitate the regional process. One general conclusion, almost regardless of attitude seems to be that more interregional collaboration is a solution, both nationally and internationally.

3.3.2. Structural challenge II: The role of the regional authority

The role of the regional authority, and possible limitations in regional resources, was highlighted as a challenge by some regions. The perhaps clearest explanation of this challenge was provided by a respondent who is now working with the regional S3-process in Skåne, but who had previously worked in the S3-platform in Seville. When asked what the main difference in perspectives was between his role at the platform and in the region, the respondent explained that regions in general in Europe are bigger in size (see 3.3.1.) and that they have a larger budget. A larger budget, both in own resources and in ERDF-funding, in turn means that bigger regions can concentrate on a more limited set of core funding instruments and funding streams, which can then be complemented by additional, but secondary, instruments, such as national and centralised European instruments.

In contrast, funding of regional development in Sweden is quite fragmented and the ability to impact the different funding streams is varying. The budget or funding under direct control of the regional authority is also limited in relation to other actors in the innovation system[15], such as universities and business, but also for instance municipalities (echoing the hourglass analogy from p. 2 in this report). ERDF resources are in turn also smaller and shared between several regions.

Perhaps interestingly, while this issue was raised from different perspectives by several regions when discussing the size of the region, the problematised role of the regional authority within the region was most pronounced by the biggest regions. Stockholm identified lack of financing as one of the main reasons why previous S3-processes had stalled in Stockholm. Västra Götaland did not particularly identify available regional funds as a main challenge (the region has relatively large own funds) but did still express caution regarding over-belief in the ability of regional authorities to design and create change. The region perceived a risk that as smart specialisation has grown both in intensity (larger role in regional policy) and extension (expansion to new policy areas), the clarity of the concept has been slightly compromised. The lack of conceptual clarity has in turn made it harder to critically evaluate the potential limitations of the policy and what can be expectedly achieved in different contexts. The region summarised the view with a quote from a business representative in the region who stated that the regional authority should "dig where you stand, and water where it grows", which in some ways is a contrasting perspective to that of analytical and detailed policy design and planning.

Taken together, the remarks point to limitations in regional ability to implement, and therefore to design, strategic initiatives. This is linked but not limited to the availability of funding. This challenge may in turn be accentuated if the smart specialisation framework is not adapted to regional conditions.

3.3.3. Institutional challenge I: Lack of mandate or mission

Most regions, independently of what role smart specialisation has played in regional policy during the past programming period, brings up the lack of a clear mandate or mission regarding smart specialisation strategies as a major challenge. This is particularly pronounced in relation to the national level. In short, the negotiations prior to the last programming period left the regions without a clearly defined mandate regarding S3, since an explicit RIS3 in all regions was not in practice a conditionality going into the current period. Since the start of the programming period, regions have been free to develop strategies and the development has been supported by the national level (through the mission of Tillväxtverket running 2016-2020). However, there has not been any explicit decision or definition about what roles the regional strategies will play, for instance if regions will need these strategies to fulfil the conditionality in relation to the ERDF, or if these regional strategies are voluntary exercises and the RIS3 that fulfils the conditionality should be designed at a different level (national or NUTS2).

The respondents from the Ministry of Enterprise and Innovation saw the issue from a slightly different perspective. The ministry voiced two main points regarding smart specialisation. First, the ministry believed that is was important that the discussion about smart specialisation should be one about content and not about form. Primarily, the issue should not be the strategy documents themselves or the related naming or terminology, but about whether ongoing work is aligned to the process and objectives of smart specialisation regardless of shape or form. Second, the ministry favours a bottom-up approach to smart specialisation, where regions have the initiative to decide on and create a contextualised approach to the issue. Taken together, these perspectives have led to government to not opt for a form of hard or hierarchical governing model. Instead, it has sought to facilitate smart specialisation and to be involved in the work through the mission to Tillväxtverket to support smart specialisation in Swedish regions and to allow for observation and feedback through this set-up. The ministry also noted that the approach had

[15] Västra Götaland could be said to be an exception as the region makes comparably big use of own resources. See SKL report on regional development capital for overview.

allowed for an organic process with quite good results during the programming period. In general, the ministry also believed that it was important to build on existing work, forums and strategies.

There are a lot of findings in this report to support this perspective. It is apparent from the overview in the snapshot above that regions have opted for different forms to work with smart specialisation. Several regions also stated that they did not believe that it would be good or suitable to demand separate smart specialisation strategies or requirements regarding form. Regarding the bottom-up approach, the widespread adoption and integration of smart specialisation in Sweden during the current programming period also lends support to the notion that the policy have facilitated a botton-up adoption of smart specialisation.

Still, most regions stated that they would welcome more activity from the national level and there are several challenges that were associated with the lack of mission or mandate from the national level. To begin with, the lack of a clear mandate or mission has left the support by the Tillväxtverket in a slightly ambiguous middle ground. In many ways the support presupposes smart specialisation strategies, both in practice but also in the description of the task from the Ministry of Enterprise and Innovation. The mission states that the agency should "support actors with regional development responsibility in their work on smart specialisation and diffuse knowledge and lessons from this work" [my translation]. The "work on smart specialisation" is therefore taken for granted. One respondent formulates the problem succinctly; "They haven't demanded a smart specialisation strategy but then assumed that we have one".

The views on the support itself (may) reflect this situation to some extent. The views on the support offered by Tillväxtverket are mixed but mostly good. Several regions believe that the support by Tillväxtverket provides an important service that benefits the regional processes. Some stated that the support had developed a lot since 2016 and several believed that the persons responsible for the support at the agency did very well under the conditions. These views mirror the perception of Tillväxtverket who believed that the most successful features of the support had been the bottom-up operational and collaborative activities with the regions.

On the other hand, the regions that voice scepticism fall in two general streams. First, there are regions that point to a lack of direction, for instance that there has been a lot of exchanges but little utilisation of this knowledge base in the way of new initiatives or next steps. Second, some regions find that the support does not have a clear target group as Swedish regions are very different, both in terms of experience, but perhaps most importantly in preconditions and dynamics in the innovation systems. Meanwhile, Tillväxtverket stated that one key challenge in the support had been a lack of resources, particularly to scale up work on for instance analysis and monitoring and evaluation.

In general, the support seems to have been effective in stimulating knowledge exchanges and mutual learning between regions. The support could however ostensibly be improved by a clearer direction that would allow for a progression of activities, as well as activities that can be more tailored to regional needs. In a simplified sense, this situation is coherent with the bottom-up approach to smart specialisation in Sweden. The issues that are essentially bottom-up – primarily knowledge exchange – works well, while activities that require some degree of centralised or top-down decisions – such as staking out a direction or identifying a specific target group – have room for potential.

The lack of a mission might furthermore be a challenge within the regional organisations and their work on regional development. Several respondents contrasted the role of RIS3 to that of the regional development strategy (commonly referred to as RUS), as the development of the latter is mandated in law. The status of RIS3 is more uncertain and varies between regions. Today, the most common approach is that the smart specialisation strategies are adapted as sub-strategies to the RUS within the field of business and innovation policy. However, in some regions the smart specialisation concept is integrated in the RUS, and in others the two strategies do not have a clear relationship. A similar challenge that some respondents raised was challenges in getting the whole organisation and other policy areas involved in smart specialisation.

It is important to note that these issues – internal anchorage and the relationship between RIS3 and RUS - might still be issues that exist and persist regardless of the mandate or mission that is given to regions. The point is that several regions raised the challenges in relation to the lack of a mandate, and that a clearer mandate to work on RIS3 might make the issues easier to address.

In general, regions request more clarity from the Government Offices regarding smart specialisation. If strategies are voluntary, then what will be the alternative RIS3 which will fulfil the conditionality in ERDF and how will the work already done by regions be utilised in this process? Are strategies voluntary in principle but still necessary to fulfil the conditionality, effectively making strategies necessary for regions in accessing the ERDF? Or are the strategies mandatory also in the Swedish context? All these options would in theory be possible but would lead to very different organisational considerations and possibilities. Extending this perspective, it is also possible that a more coherent policy would facilitate increased coordination and enable more joint work on different aspects of smart specialisation, where such work is warranted.

3.3.4. Institutional challenge II: ERDF Implementation

There are some challenges that are identified in relation to the ERDF. The perspectives are mixed however in at least two important respects.

First, some regions find the NUTS2-level to be a largely challenging level of decision-making. The geography can be slightly arbitrary in terms of functionality and strategy. The level also forms an additional administrative level which works according to its own programme logic that does not necessarily harmonise with regional strategies as well as national and European programs. However, a lot of regions do see the NUTS2-level as providing a lot of potentials and see the level as a net-benefit. This group of regions see the level as a good level for stimulated exchange and collaboration. Exchange can lead to diffusion of certain lessons and experiences, as well as generating cross-regional collaboration.

Second, another aspect which was viewed differently was the “structural funds partnership” which is the decision-making body for the ERDF. Views on the partnership differed between very positive and critical, while some regions expressed views that were somewhere in-between. Some regions said the system with the partnerships worked very well for anchoring and deciding on projects. Others pointed out that there were challenges in the decision-making around ERDF, where it could be difficult to align the decision-making to regional strategies. Often however, these regions did not identify the partnership model specifically as a bottleneck, but rather the shared decision-making between regions, where regional distribution of funds often becomes a consideration, independently of strategic value of projects. Meanwhile, one region believed that the partnerships have fulfilled a role during the current programming period that were no longer needed, and that the decision-making could be better aligned to regional strategies without the partnership. To elaborate on the last point, the respondent suggested that the partnerships were important vehicles to include a greater scope of stakeholders in the decision-making on ERDF, which was needed at the launch of the current programming period when the majority of regions were not at that point directly elected regional assemblies. However, now that all regions are such bodies, these organisations have a greater legitimacy as well as responsibility in decision making in the ERDF, and the inclusion and anchoring could be carried out through other channels – for instance in the development of the smart specialisation strategy – and the actual decision-making in implementation could be made by the regional authorities.[16]

One common concern however, which was independent of the views on NUTS2-regions as well as the partnerships, was the concern that it was too difficult to work across different NUTS2-regions. First, it is

[16] The suggestion that the partnership model in Sweden is impeding strategic decision-making does have recent support in research. A recent doctoral dissertation from Gothenburg University comparing the implementation of equality policies in the ESF between Sweden and Spain, found that a more bureaucratic governance had helped Spain achieve more impact in equality policies in the ESF than in Sweden were the networked partnership model was used (Carlsson, 2019).

difficult to source funds from one regional programme for activities outside the geography of the respective area. Second, some regions called for a national programme that was more in line with regional ambitions to facilitate projects across regions. The current national programme had good ambitions but there were ultimately too little resources that were dedicated to interregional projects, as most of the funding had been committed to specific research infrastructure.

Another point that was raised by some respondents was a lack of harmonised or equal assessments by Tillväxtverket regarding the formal checks of projects. The points here refer to the regional offices of the agency, not the national support treated earlier in this report. While the structural funds partnerships are responsible for final decision-making on projects, the regional offices of the agency do the formal checks regarding compliance with the regulation and the OP, as well as providing recommendations to the partnerships. Some respondents claimed that the assessments of formal checks can vary between different regional offices, and that these evaluations are unpredictable and unharmonized. Please note that the preceding point does not mean that there is dissatisfaction with the regional offices of the agency as such. Most respondents that brought up the regional offices claimed that they had a good dialogue with their respective offices. In one NUTS2-area the regional office of the agency had initiated dialogues with the policy advisors responsible for smart specialisation in the regions early in the evaluation process to seek clarifications and recommendations about the submitted project's alignment to the RIS3's. Therefore, the main conclusion from the interviews is that the main problem is not the workings of the respective regional offices, but rather a lack of evenness in assessment, that may muddle expectations. At the same time, it is important that the assessments are only harmonised regarding the formal and regulatory checks. Harmonisation beyond these checks would risk moving towards a one-size-fits-all model to strategic choices and to some degree defeat the purpose of contextualised OP's.

Lastly, there were some challenges at the level of implementation that were mentioned by some regions. Some regions mentioned the scarcity of good project owners who could develop and deliver on important projects. This issue will be treated in the subsequent section (see 3.3.5.).

Several of the aforementioned points was also highlighted in the program evaluation of ERDF TO1, were an evaluation of smart specialisation is integrated. The evaluator provides recommendations on using smart specialisation more strategically in the next programming period, in particularly regarding three domains. First, mobilise a larger and more diverse set of actors in the programme, particularly to lessen the concentration of resources in universities. Second, develop more cross-regional collaboration, particularly to exploit overlapping priority areas to build more critical mass. Third, to deepen analysis of regional strengths, particularly in relation to other regions in Europe and internationally, and to more clearly define a policy-mix or set of actions relating to the priorities that can form the basis for funding. The first two points correspond very well to findings in this report and to some degree the last point as well.

3.3.5. Operational challenge I: The innovation support system

Throughout this report, the differences between Swedish regions have been pointed out from several perspectives. Considering the quite extensive differences in both size and innovation capacity and performance, the innovation support system also differs quite a lot. Some regions have quite developed innovation support systems that are "organisationally thick", with an established cluster portfolio and the presence of science parks, incubators, universities, institutes, other stakeholders, and a system that facilitates and stimulates interaction between these actors. Other regions are thinner in the innovation support system. Some regions are more dependent on quite few actors in the strategy implementation. Some regions also pointed out that the thin organisational structure is tied to the structure of the regional economy. In regions with a highly entrepreneurial economy, where the system consists mainly of small-scale actors, mainly entrepreneurs and small business, the kind of institutionalised organisations and intermediaries that are often relied on as change agents are often lacking. It might furthermore not be a suitable model to simply initiate and build capacity around institutional actors in such innovation system,

whether if it is done through capacity building around existing stakeholders such as regional universities or attempts to develop new intermediary functions. The two regions that have the most intensely entrepreneurially driven regional innovation systems both found that current national and EU funds, as well as other support, was not adapted to the needs as well as potentials of such systems.

In general, based on the interviews the regional innovation support system could be conceptualised with the matrix to the right. The x-axis refers to the number of agents in the innovation support system. The y-axis refers to the character of the innovation system – if it is based around institutionalised organisations or based around entrepreneurial individuals or small business.[17] There were several comments and challenges in relation to three of the four potential types or categories in the matrix, and these will be treated in turn below. All scenarios might also be present in the same region when it comes to different priority areas.

Figure 3.1 – Types of innovation support systems

	Organisationally thick	**Organisationally thin**
Institutional regional innovation system (IRIS)	Type 1	Type 2
Entrepreneurial regional innovation system (ERIS)	Largely absent in interviews	Type 3

In organisationally thick regions (type 1 above), some respondents raised issues regarding the existence of incumbents in the system. This can be an issue in prioritisation, where certain actors to some degree are dependent on funding from regional sources, and are therefore, sometimes correctly and sometimes exaggeratedly or incorrectly, threatened by new priorities. It can also be an issue in trying to widen the inclusion of new stakeholders in processes and forums. The main issue is thick systems should be to avoid capture by incumbents and keeping the process open. This may be addressed through formalised and transparent governance, as well as a clear definition of what a priority is, and how priorities are identified.

The situation is furthermore related to financing in the Swedish innovation and support system. The respondent from the national innovation agency pointed out that current funding is overbalanced towards initiating new initiatives and projects rather than funding the management of existing initiatives. While, this point might in some way conflict with the suggestion that there are many incumbents in the system, the points can be linked quite closely. If there are little funds for consolidation and management of existing and successful initiatives, then these initiatives will also be dependent on seeking new funding after every project cycle, thereby targeting the same funds that could be used for novel and experimental approaches. The other side of the issue is that the longevity of existing initiatives will be more uncertain. Therefore, a good approach forward could be to review possibilities for differentialized funding for initiation and then management of innovation hubs, clusters, science parks and other initiatives in the support system. A similar conclusion can be found in the evaluation of the ERDF, where the evaluators suggested differentialized program logics for different types of projects. Currently all projects, even though they can have very different objectives and internal logics, are reviewed according to the same logic.

Another side to this issue is how smart specialisation as an approach, and how the smart specialisation strategy (or equivalent), impacts the work of intermediaries and other incumbents in their operational activities. This issue ties quite directly into business involvement and practical implementation. There is currently ongoing work on this issue in Sweden through the S3-pilot (see page 5), initiated by Tillväxtverket. Tillväxtverket arranged a meeting between regions and clusters in June 2019 to discuss issues related to clusters and smart specialisation. The meeting was well-received by both clusters and regional representatives and provided a good foundation to elaborate on the new role for clusters in the context of smart specialisation. However, the way regions work with clusters differs to a large extent and there is no

[17] See for instance (Ylinenpää, 2009) for an introduction to the IRIS/ERIS typology.

common cluster policy in Sweden, neither a national one nor a policy that is shared by all or most regions. In this context, several respondents have highlighted the national Vinnväxt-programme, that is managed by Vinnova, in the interviews as a very suitable program to support smart specialisation, even though the programme pre-dates smart specialisation as a policy. However, while regions have noted that Vinnväxt is a good tool for smart specialisation, a representative from Vinnova mentioned that the experiences of utilising smart specialisation in Vinnväxt had so far been mixed, and suggested that further development in the area of smart specialisation is likely necessary before the link can be strengthened further.

In regions with a thinner organisational structure, both type 2 and 3 in the matrix above, a similar form of path-dependency may form around a reliance on few actors that have the capacity to act as change agents in the support system. One respondent exemplified this perspective by stating that it would not be clear what additional activities could be enabled even if the budget for smart specialisation was doubled or more, as the amount of potential project owners is limited. If the regional economy and innovation system is still closer to the IRIS-model with institutional and larger-scale actors (type 2), the region may to identify and stimulate new possible project owners. This could be done through forums to widen the scope of stakeholders that are actively involved, as well as new types of initiatives, for instance smaller, experimental projects. Regions may also utilise the national initiatives, such as the S3-pilot, as a way of up-scaling early-stage or small-scale initiatives. Once again, utilising national and European networks can be a way to improve the capacity of new or small-scale regional support actors. One respondent explicitly stated that the region sought to introduce a regional innovation intermediary to European initiatives, with the primary intent to develop the intermediary as a regional actor.

Activities that seek to identify and stimulate new intermediaries or change agents could also be pursued if the system is more entrepreneurial (type 3). However, both the respondents that identified the region as highly entrepreneurial, found that current support, both financial and knowledge- or learning-based, did not adequately consider the contextual specificities of these regions. Therefore, it might be a more balanced approach to start by explicating these differences and seek to engage in a learning process about potential activities as well as how support functions can be developed in these kinds of systems. This would also provide important input to national agencies in the design of support programmes.

A more targeted sharing of experiences between regions in similar situations might be beneficial. There are already a good number of forums for the sharing of good practices in Sweden that works well. However, as was mentioned under 3.3.3. some regions find that the national support could be more adapted to regional differences. The matrix and types used here could provide a starting point for a differentialized approach. Of course, it is possible to use a different way of categorising regional dynamics since the matrix is a substantial simplification. However, whatever the method of differentializing, it should be based on regional dynamics as opposed to static conditionalities such as size or geography, as this report have found that many views correspond better to the former than the latter variables.

3.3.6. Operational challenge II: Research links

Some regions also identified challenges in the links to research in RIS3. As mentioned in chapter 2.1., public funding of research in Sweden is centred on universities. In some regions, the research base is simply too small or not in complete correspondence with identified place-based strengths. In these cases, regions are dependent of finding links to external universities to complement the regional knowledge base.

Challenges are not however limited to regions with a smaller research base. There may also be issued in regions where there is a university present that has a well-developed resource base that can provide a starting point or lever in developing place-based strengths. One respondent pointed out that there is very little in terms of mission for universities to participate in regional processes, despite their importance to regional research and innovation. Consequently, the prospects are linked to individuals in the universities and their priorities. Many regions named an individual at the university in the respective region when they talked about the university and elaborated on this person's attitudes to collaboration and smart

specialisation. While most of the respondents found the person, often the vice-chancellor of the university, had a positive attitude and influence, the engagement seems to be very dependent on individual attitude and approach. Therefore, dedicated calls, other resources or special missions were suggested as possible activities that could involve universities to a greater extent. Meanwhile, it should be noted that several regions stated that the collaboration with universities were working very well and that the universities played a big part in the EDP or equivalent, and identification and selection of priorities.

3.4. Meta-reflections

In this final section of the stock-taking, I will provide some reflections about the interviews. The rest of this chapter has mainly relayed material communicated by the respondents, although of course following editorial treatment and analysis by the author. In this section I will try to analyse what was *not* or *sparsely* mentioned in the interviews. Of course, this entails certain risks as the respondents was guided by the questions. Therefore, it is advisable to be cautions when drawing conclusions from this section. However, it should be noted that all interviews started by an open question to let the respondents describe the regional work on smart specialisation in their own words and it ended with an open question.

First, the **international[18] dimension** of smart specialisation could have been expected to play a bigger part in the interviews. In general, the respondents only elaborated on the international dimension of smart specialisation once a question was asked directly relating to the region's international work. When prompted however, many respondents stated that the role of smart specialisation in their international work was very important and had in general facilitated connecting with other regions and initiating collaboration. Several regions are members of the Vanguard initiative and the thematic S3-platforms. Others highlighted the role the strategy played in international projects more widely as well as export and investment promotion. Others pointed out that the international dimension also benefitted the region by increasing the engagement and capacity of the regional stakeholders. This was also echoed by respondents from the regional representation offices of the regions in Brussels. Although, they found that smart specialisation had played different roles in different region's work in European collaboration – the regions that had been involved in for instance the Vanguard initiative and S3-platforms found that smart specialisation had been a good support and facilitated communication and coordination between regions. Some of the respondents also pointed to the reciprocal dynamic where international engagement became a basis for increasing quality and capacity within the region as well.

However, few respondents from the regions mentioned the international dimension in relation to the strategy design and development. In general, the international and interregional dimension seems to be more oriented towards actions or activities, rather than an integrated dimension in the strategy, which could entail explicit objectives, priority identification, communication strategy and similar efforts. Therefore, there seems to be a good ground to build on in terms of developing the international dimension in Sweden, but a bigger integration of the international dimension in the strategy could be beneficial.

Second, perhaps most unexpectedly, there were quite few that identified **political leadership** as a main challenge. The reason it is unexpected is because this has been identified as an important challenge when Tillväxtverket conducted its first round of dialogues with the regions about smart specialisation in 2017. Few regions highlighted the issue and the ones that did often associated it with the lack of mission or mandate (see. 3.3.3.), essentially saying that this would be less of an issue in case there were firmer guidelines from the national level. I do not know if this indicates that (1) political leadership is currently at a good level regarding these issue, (2) that the leadership is still limited but is not a major obstacle, perhaps as regional processes have developed, or (3) that it is still an issue that was just missed by this study.[19]

[18] International should here be read as international from the perspective of Sweden, thereby also referring to perspectives about Europe and collaboration within Europe.

[19] While it of course is possible that this study has underestimated the lack of political leadership, there are in my perspective little to suggest it. I talked to most regions for at least 60 minutes where often about 2/3rds

4. Enabling condition

In the following chapter the experience in Sweden will form the basis for a discussion about the capacity for Swedish regions to comply with the proposed enabling condition on smart specialisation. The enabling condition consist in practice of seven criteria or components which will be treated in turn below. The assessment is based in part on the stock-taking in the previous chapter. Where necessary, new information from interviews and other sources will be introduced. Formally, the draft CPR states that the RIS3 "should be supported by" the following seven features. Each feature will be briefly discussed under the respective heading, and then a final short summary will treat the issue of compliance more directly.

4.1. Up to date analysis of bottlenecks for innovation diffusion, including digitalisation

It should be noted that analysis in general has played a big part in the present strategies and the strategies that are being prepared in Sweden. All regions referred to analysis underpinning current priorities during the interviews. Some regions also pointed out that one of the main differences in working with smart specialisation has been a more comprehensive analytical work. However, regions have very different resources for analysis, for instance through the size of the regional analytical department. The resources are in many ways linked to the size of the regional authority, which in turn is linked to the size of the region. However, as one region suggested, smaller regions often have greater contact with regional stakeholders precisely because the region is smaller. Therefore, the lack of formal analytical resources is in some way compensated by better up-to-date information sharing between stakeholders. Still, fragmentation might remain an issue.

Analysis has furthermore been put forward as a potential area to work with collectively on the national level. Partly as knowledge exchange to share different methods that are relevant to smart specialisation. There have also been suggestion that hands-on support from some kind of centralised analysis function with analysis would have the double benefit of providing better tools and data to regions that currently lack the necessary resources for analysis, while at the same time ensuring some degree of harmonisation of tools and comparability of data between regions.

A version of this coordinated approach to analysis is joint analysis in the same NUTS2-area. East Middle Sweden for instance used funds that remained at the end of the 2007-2013 programming period to produce studies for current programming period, which in turn have informed the NUTS2-regions joint work on smart specialisation since.

Sweden could therefore consider collaboration around analysis. It would provide a less fragmented analytical landscape in Sweden and facilitate interregional initiative and activity. This would also support regions with smaller analytical departments and capabilities.

4.2. Existence of competent regional/national institution or body, responsible for the management of the smart specialisation strategy

There are both regional and national bodies that have the experience and competence to manage smart specialisation strategies in Sweden. Additionally, in the next programming period as mentioned elsewhere in this report, all regional organisations will furthermore be the same kind of organisation.

Sweden would however benefit from a clearer division of responsibilities. There has been no formal division of responsibility in Sweden during this period and while almost all regions will have a strategy before the next period based on current plans, there are a couple of regions where the situation is not as clear. It is

were dedicated to the regional process and experience. All regions got questions regarding issues that are related to political leadership, such as the place for S3 in relation to the regional development responsibility, and in some cases (depending on the conversation) I prompted specifically about the political leadership in the region. While, it is entirely possible and even likely that the issue was underestimated in single regions, I do find it unlikely that the issue was systematically overlooked under these conditions.

therefore more a matter of formally explicating and dividing responsibility in Sweden to the relevant organisations, rather than an issue about the organisations themselves.

There might be one exception to the point above, however. There have been suggestions that smart specialisation strategies could be situated at the NUTS2-level, mostly as the regional ERDF-programmes are situated at that level. On this level, there is currently no organisation that could manage the smart specialisation strategy. The ERDF-programmes are managed by the regional offices of Tillväxtverket, but this agency would for a variety of reasons not be a suitable manager of the strategies (as long as the strategies are regional responsibilities).[20] Instead, to manage the strategy at NUTS2-level would entail some kind of shared responsibility as there is no single body at this level currently that could have an exclusive responsibility for the strategy. Arrangements to manage such a strategy could be made, for instance through an agreement between the regions in the NUTS2-area with a division of responsibilities, staff that are jointly funded, a formal association tasked with coordination, rotating responsibilities or a combination of these, or more, solutions. Variants of these arrangements has already been made to some degree in both East Middle Sweden and North Middle Sweden, related to smart specialisation. However, the work on these arrangements would need to be initiated soon if they are to be operational by the next programming period.

4.3. Monitoring and evaluation tools to measure performance towards the objectives of the strategy

There is a good foundation for monitoring and evaluation of smart specialisation in Sweden. Some regions do already have dedicated work on monitoring in smart specialisation which goes beyond the scope of the criteria, developing extensive systems for monitoring. There is furthermore a good system for follow-up regarding most programs and funds. Aside from monitoring and evaluation of the ERDF-programmes, regions are annually reporting performance in relation to regional 1.1.-funds. There is furthermore a quite extensive supply of datasets relating to regional development and several bodies and agencies, for instance both Tillväxtverket and Vinnova, are continually gathering and presenting fundamental data as well as work on monitoring and evaluation within regional development and research and innovation.

However, in general the different monitoring systems have yet to be integrated with smart specialisation strategies, although this differs between regions. Few strategies have explicit quantifiable or otherwise observable targets. Furthermore, as Tillväxtverket points out, a big issue is that monitoring and evaluation cannot be reduced to quantitative measurements and that there has not been a model to conduct qualitative follow-up to smart specialisation. Furthermore, the variation in capabilities that was observed regarding analytical capabilities are also present regarding monitoring and evaluation.

Therefore, the necessary foundation and experience is present, and compliance would be a matter of using existing information in a structured way in relation to smart specialisation. The most important starting point would be to ensure that monitoring of smart specialisation is integrated in the regions monitoring system, including the yearly reporting of the 1.1.-funds, as well as a coherence between monitoring and evaluation in the ERDF and the objectives of the strategies. To elaborate on the last point, in the current program evaluation of the ERDF, smart specialisation is integrated but the work on smart specialisation is not evaluated in relation to the objectives of each strategy but rather in relation to generic measurements of smart specialisation, such as the degree of funding concentration to priority areas. The point is not that the latter approach is wrong – and the evaluation does indeed cover and analyse smart specialisation in general quite meritoriously – but that follow-up should be complemented with the former approach as well.

[20] The suitability has not to do with the competency of the agency but rather the highly complex and probably fragmented governance-structure this arrangement would bring.

When monitoring and evaluation of these three central logics – the RIS3, 1.1.-funds and ERDF – have been harmonised to some degree, it might be possible to develop the wider work on monitoring and evaluation by integrating data from more sources, such as available data from Vinnova.

4.4. Effective functioning of entrepreneurial discovery process

As mentioned in the stock-taking, as well as in section 4.1. above, Swedish regions do put a lot of emphasis on close dialogue and an inclusive approach to smart specialisation. The limited size of Swedish regions does facilitate a close relationship between regional stakeholders. Bigger regions also use inclusive processes and utilise networks and joint working groups for instance. Therefore, Swedish regions are in a good position to utilise and continuously improve the EDP. Based on the interviews for this report, all regions engage in exploratory and inclusive approaches to discovery.

There might be a few concerns to look out for, however (most of which are not specific to Sweden). First, regarding the effectiveness, the regions should be cautious that the processes are not over-balanced in the favour of incumbents in the system, echoing the points under 3.3.5.. The mechanisms for the EDP should be transparent to ensure inclusiveness in the process. Second, the link between the EDP and priority-setting could also be slightly clarified.

4.5. Actions necessary to improve national or regional research and innovation systems

Sweden already has a quite well-developed research and innovation system both at the national and regional level. The involvement of the support system in different forums and dialogues around regional policy is common. There are also constantly ongoing activities and processes to improve the system. One indicator can be taken from the ERDF program evaluation, which coded projects in the ERDF and found that 33% of projects in some manner sought to develop the innovation support system. The ongoing S3-pilot from Tillväxtverket should also be mentioned as an activity that works directly with clusters and organises forums for knowledge exchange between support actors and regions.

Going forward, based on the material gathered for this report, there are some actions that could be relevant to examine. First, for the next programming period, the ability to cooperate across administrative boundaries (most prominently NUTS2-regions) should be facilitated to stimulate better connections between regional systems. This could involve both more flexibility in the use of funds from the regional programmes as well as a national ERDF-program. Second, the coordination between regional and national level could be increased regarding the innovation system. Apart from the need for coordination regarding mission and mandate as elaborated elsewhere, this coordination is particularly important because of the structural challenges in point 3.3.1. and 3.3.2., which often limits the agency of regional authorities. Regional authorities should also consider these limitations when designing actions. Third, building on the second point, smart specialisation would benefit from a more structured engagement by the university sector. The university sector is central to Swedish research and innovation policy and while links with research do work well in several regions, these links are ostensibly centred around the engagement of individuals. Some degree of institutionalisation would be desirable.

4.6. Actions to manage industrial transition

Industrial transition is quite well integrated in the strategies and the logics. There are several approaches to the issue. Some regions seek to transform strong industries in the region, while others seek to utilise the knowledge and competence in strong industries to diversify the regional economy. There are no findings suggesting that regions are either cementing traditional industries using conventional sector-support, or that regions are prioritising areas without taking the industrial texture of the region into account. These actions have been boosted nationally by the adoption of a strategy for reindustrialisation in 2016 called Smart industry (“Smart industri”), where actions have been initiated through a regional sub-program – Smart industry in the regions (“Smart industri I regionerna”). In general, this program seems to have been

integrated quite well with smart specialisation by the regions. While there is no formal connection between smart specialisation and Smart industry, the close connection between the two should mean that there are many lessons that can be utilised from the programme. North Middle Sweden is furthermore currently one of the regions that are involved in the Industrial transition pilot, organised by DG Regio.

4.7. Measures for international collaboration

Most regions have some kind of measures for international collaboration and as stated earlier, many regions see interregional collaboration as a necessary condition for their work on smart specialisation, considering regional limitations in building critical mass. However, this is a point of quite big variance. Some regions are quite heavily involved in international collaboration, for instance 5 regions are members of the Vanguard Initiative and additional regions participates in the thematic S3-platforms and other networks. Meanwhile, some regions formulate internationalisation more in terms of ambitions and possibilities but with few tangible activities.

Therefore, the general capacity is present, and most regions are already involved in actions connected to their work on smart specialisation. Some regions could however seek to design and explicate more tangible measures. As mentioned earlier as well, the international collaboration could be more integrated into the logic of the smart specialisation strategies.

4.8. Capacity for compliance

In general, the capacity to comply with the enabling condition is good in Sweden. There are suggestions for complementary actions regarding most of the criteria, but few of these would essentially be necessary to ensure compliance. The seven criteria could be grouped in three categories.

Please note that the subsequent analysis is done on the premise that the RIS3's will be evaluated at NUTS3-level, i.e. at the regional level. It would likely not change much if RIS3's are evaluated at NUTS2-level but the analysis would be completely different if it is evaluated at the national level.

First, there are criteria which should be completely unproblematic and that could be good examples in a European context. Industrial transition could highlighted be a good practice. Many regions have integrated the actions emanating from the strategy Smart industry in Sweden with smart specialisation placing industrial transition quite high on the agenda and almost all regions carried out activities within the context of the initiative Smart industry in the regions. Furthermore, while challenges with the general size of Swedish regions have been detailed in the report, the size and proximity between actors is also a strength regarding the EDP, as all regions have established networks and continuous exchanges in the regional innovation system.

Second, there are those criteria that are largely unproblematic but where some concerns should be observed. There is little suggesting issues to comply regarding analysis, actions to improve the innovation system and international collaboration. Still, even if compliance might not be the primary issue, the concerns that are detailed under the previous headings should be considered and addressed through the suggestions here or other relevant actions.

Third, the remaining criteria are responsible bodies to manage the strategy and monitoring. As mentioned above the former criteria is mainly about clarifying responsibility. Regarding the latter, a functional monitoring system would benefit from higher integration between the follow-up of the ERDF and the regional smart specialisation strategies. However, some regions have ambitious monitoring systems for smart specialisation that fulfils this role without an alignment with ERDF reporting and evaluation so there might be alternative arrangements that can address the issue as well. It does however seem unlikely that all regions could design their own monitoring systems before the next programming period. Even more importantly, even if it is possible, it should be much more efficient to seek a match between existing monitoring activities and smart specialisation than to develop individual monitoring tools and systems in all regions.

5. Multilevel coordination

As is evident throughout this report, there are several dimensions and challenges relating to the coordination between national and regional level, as well as at the cross-regional level. This section will not seek to reiterate all that has been mentioned regarding the issue (see primarily 3.3.3. and 3.3.4.) but will focus on the room for optimisation of coordination.

Before turning to the coordination, it is important to review the possible divisions of responsibilities between the levels, as coordination will be dependent on what the responsibilities and roles of the different levels are. To begin with, we will turn to the likely most relevant level for the RIS3's. Despite several potential deficiencies, it is difficult to see a viable option to the current system with RIS3 at regional level for the next programming period. There have been some suggestions, explicit and implicit that smart specialisation strategies could be designed and implemented at another level with greater critical mass, such as a NUTS2-area. However, there are several practical issues with such a change. First, most of the work on smart specialisation has so far been made at regional level. A change would likely prove disruptive to ongoing processes. Second, there is no single body at the NUTS2-level who could be responsible for the strategy. Therefore, the strategies would have to be collaborative between all the regions in the respective NUTS2-area. To develop such a strategy, which would be quite an experimental approach, is unlikely to be possible in the timeframe before the next programming period without compromising the progress that has been done on smart specialisation during the current period.

It is furthermore noteworthy that the NUTS2-regions that have seen the most progress in joint NUTS2-level work on smart specialisation – East Middle Sweden and North Middle Sweden – are also the NUTS2-regions with the highest concentration of explicit smart specialisation strategies among the individual regions. Therefore, it is likely that joint NUTS2-level work requires some foundational work at the level of the individual regions, that can then be up-scaled or complemented at NUTS2-level. For a practical discussion about the next programming period, the role of smart specialisation on NUTS2-level is likely to be better seen as a way of complementing the regional work, as opposed to replacing it.

Still, it is important to note that all these considerations are practical in nature. In general, with some exceptions, the lack of scale at the regional level makes it questionable if NUTS3 or the regional level is appropriate from a functional perspective. Some of the issues are internal, as regions encounter lack of critical mass in prioritisation and a thin structure of change agents. Other issues are external, such as the existence of over 80 priorities in Swedish regions in total, making it harder to coordinate and to some degree to find opportunities for linkages with other policies. Also, this complementary function of the NUTS2-level will in either scenario be necessary in order to ensure alignment between the RIS3's and the ERDF OP's. A first step could be for all regions to initiative the type of pre-studies that East Middle Sweden conducted prior to the present programming period, to identify joint priorities. These studies could consider analysis, priorities and possible governance models for the NUTS2-area. Particularly regarding priorities, the regions would have a choice if they would identify meta-priorities that in some way synthesise current regional priorities, or if they would seek to identify priorities for the NUTS2-area, independently of current regional strategies. There are pros and cons with both approaches and the best approach would likely be dependent on regional factors. The results of these processes can then at minimum feed into the programming of the OP, and depending on the progress or development, form the basis for a RIS3 at the NUTS2-level.

An additional observation was that in some interviews, most prominently with the respondents at the national level, a general question about the eventuality of having RIS3 at the national level was a reoccurring theme. During the writing of this report however, I have identified little reason or support for having a formal RIS3 at the national level. There are a variety of roles that stakeholders at the national level could have with regards to smart specialisation which will be elaborated on shortly. But actually designing and implementing a national RIS3 has unclear added-value for both theoretical and practical reasons, and throughout the interviews, only one regional respondent suggested it could be viable exercise, while several

respondents voiced opposition to the approach. With this perspective, the guiding question for the national level would be less about finding or formulating what smart specialisation *is* at the national level, and more about how smart specialisation *can be supported and utilised* at the national level.

The findings in this report suggest that a continuation of the current framework for the ERDF, that is 8 regional programmes at NUTS2-level and a national programme, is viable. Progress have also been made in the dialogue between both Tillväxtverket nationally and the regional offices around smart specialisation, as well as the dialogue between the regional offices and the regions about the alignment between the programmes and the RIS3's, which should provide a good foundation for the coming programming period.

However, in the coming programming period, the national programme should be scaled up in practical terms to facilitate cross-regional cooperation. While Tillväxtverket pointed out that some progress has been made, with six cross-regional projects currently decided, this report suggest that the scope for these projects should be wider and could be used even more strategically. A national programme that from the beginning of the programming period is completely dedicated to facilitating cross-regional cooperation should be highly conductive to the implementation of smart specialisation. Apart from the national programme, the regional programmes should also open up more for cross-regional collaboration. There is already a possibility of using 15% of programme funds outside of the programming area. This possibility should be promoted and used more regularly to facilitate functional and efficient collaboration within similar and complementary knowledge and economic domains. The findings in this report suggest that dialogue between regions is working well, but that operational activities often become concentrated to the NUTS2-area because of administrative boundaries. With a national programme as well as more flexible regional programmes, the currently strategy-oriented dialogue between regions could be complemented by a more operational dimension, aimed at identifying and exploiting cross-regional opportunities through joint projects. There are already good channels for these exchanges through the smart specialisation network, the RND-network, as well as the meetings within the S3-pilot. Tillväxtverket also noted that these networks are based on a high degree of trust and openness which strengthens their potential.

Lastly, the aspect of multilevel coordination with the likely most room for improvement is the coordination between national and regional level that is not immediately connected to the management of ERDF. As detailed under 3.3.3. the perhaps most important issue is the perceived lack of engagement from the Government Offices in the issue. Several regions direct criticism towards the national level, primarily the Government Offices for a lack of responsiveness and activity in the area. It should be noted that the criticism is mostly about input-factors, in the sense that the Government Offices are not perceived to be seeking input from the regions about smart specialisation and is neither providing input to the regions. Some regions also highlight that they would welcome more demands from the national level. While many regions have opinions about the output, such as activities and initiatives that are initiated at the national level, the fundamental issue seems to be about input.

One respondent from the Ministry for Enterprise and Innovation stated that the demand for national coordination in smart specialisation to some degree is understandable and that the regional need to contextualise and systematise several initiatives from national and European level, that may in themselves be uncoordinated, can entail difficulties. Meanwhile, there is still a challenge from the national level in balancing governing on one hand, with a focus on content and not form, as well as enabling bottom-up approaches in regions, on the other. One related initiative and model that in some way sought to balance these issues was the Government's Innovation Partnership Programmes (Samverkansprogrammen). These are programmes that identifies and prioritise strategic challenge-driven areas. 5 programmes ran from 2014-2019 and 4 new programmes were announced in the summer of 2019. The programmes seek to utilise existing funding in the innovation system in government, business and academia and therefore explore activities bottom-up in partnership with stakeholders within strategically defined areas.

Still, there are several discernible challenges which follows from the lack of coordination at national level. First, there is no policy and no clear understanding of expectations about the responsibility to design and manage smart specialisation strategies. Most regions have or will have strategies ready before the next programming period according to current plans, but this is mostly due to regional initiative. What role these strategies will have in the upcoming programming is still not clear.

Second, the support tasked to and managed by Tillväxtverket is put in a middle ground, where the agency is tasked with supporting regions in their work on a policy initiative where there are no national expectations or demands to start from. Partly, the regions are then practically assumed to have something they were not asked to design, which dilutes expectations. Partly, since there is no national policy, the support must be driven by demands from the regions. The regions are however very heterogeneous in their approach and progress on smart specialisation, in part precisely because of the lack of a national policy in the first place. This would make the demand-based approach particularly difficult to implement.

Third, the lack of a national coordination does diminish the coordination between regions and national agencies and stakeholders that do not have a mission regarding smart specialisation. The probably most illustrative example is Vinnova, the Swedish innovation agency, which currently lacks a mission or role regarding smart specialisation. There are some examples of initiatives and programs that may benefit from a closer link to smart specialisation. One example that was mentioned by some regions was the Strategic innovation programs (commonly referred to as SIP's), where smart specialisation could work as a valuable link both for input to programs as well as tools for execution and implementation, but which to this point has been difficult to connect to smart specialisation. Tillväxtverket also highlighted the difficulty in getting the work on smart specialisation to harmonise with the SIP's, as well as the work of other agencies and governmental strategic initiatives. Tillväxtverket also mentioned that the coordination with the Innovation Partnership Programmes mentioned above had been difficult. Since the Swedish innovation system is quite dependent on the university sector, national coordination could furthermore facilitate greater cooperation or integration of universities in smart specialisation.

As was pointed out under 3.3.3. it is very likely that the approach from the Government Offices during the current programming period – to favour bottom-up initiative from regions and to opt for not governing smart specialisation strictly may have had benefits in allowing for the work to expand in a more contextualised manner. However, to address the challenges elaborated on here, a clearer role for the national level in the governance of smart specialisation in Sweden is at least advantageous and likely necessary. In general, as processes have developed, more questions that require a wider interplay between regional and national level are being introduced. Furthermore, the situation could also be seen from a distributional perspective. If smart specialisation is a regional - and only a regional - policy in all major aspects, then the development of smart specialisation will also be dependent on the resources at disposal in the respective regions. Many of the smaller regions with limited resources will therefore be likely to experience challenges in the development of smart specialisation more intensely.

To clarify, the point is not that the government should do the opposite and opt for a harder steering of the process. Rather, the government should re-evaluate its role in the wider governance of regional smart specialisation and explore possibilities to allow for a continued development of smart specialisation in dialogue and collaboration with the regions. The bottom-up perspective and insistence on content over form are both compatible with a more integrated role in the governance. The issue of regional-national coordination should be addressed as soon as possible, most pressingly regarding the responsibility for smart specialisation strategies, since this will be an important part of the upcoming preparation, negotiation and programming for the next programming period. It is important to note as well that the respondents who were involved or at least present in the regions during the negotiations for the current programming period believed that the communication and process could have been managed in a better way and with better results. The current and upcoming process provides be a good opportunity to establish and exploit a better coordination between the levels.

6. Recommendations

Below are recommendations on how possible actions that can be taken to address the challenges in implementing smart specialisation in Sweden. The recommendations are structured in different sections depending on the resources that each recommendations is estimated to require. Resources does not necessarily equal financial resources but rather signifies how dependent the recommendations are on decision-making among various levels and institutions.

It should be noted that clarifying the responsible level for smart specialisation (treated under 6.1.I.) will impact a lot of the remaining recommendations. Therefore, several recommendations below are written under the assumption that smart specialisation will be a regional or interregional responsibility, but this is still is an assumption.

6.1. Low resource recommendations

These recommendations would be possible to implement with no or few changes in regulatory framework, mandates or funding and are therefore largely independent of other processes.

I. **The Government Offices should explicate its position or expectation regarding the responsible level for developing smart specialisation strategies in Sweden.** There are essentially three possible levels for responsibility: (1) regional authorities, (2) NUTS2-level or (3) national level. A fourth (4) possibility could be a varied approach, where a strategy is developed at NUTS2-level in some regions where possible, but where it remains on NUTS3-level in other regions. The findings in this report suggest that option 1 or 4 are the most feasible. Option 2 should be good form an optimisation standpoint but might be impractical. There is little support for option 3 based on the findings in this report. However, the primary recommendation is that a choice between these possibilities should be made - which choice is only a secondary recommendation. Either way, the Government Offices should keep its current position that smart specialisation is about content rather than form and the responsibility could be oriented around the enabling condition.

II. **Tillväxtverket should communicate the proposed enabling condition to the bodies that are responsible for the strategies.** Unless the RIS3 will be located at the national level, the enabling conditions should be communicated to the regions – in particular those regions that are developing a strategy (to ensure their possibility to adapt their strategy processes) and to regions that does not have an explicit strategy (so that they can review current strategies and plan for possible complementary actions to ensure compliance). This can be done through the website, bilateral dialogues with the regions, through the regional offices of Tillväxtverket, a thematic meeting in the smart specialisation network, or a combination of the above. While, the proposed enabling condition is not finalised, the proposal could already be communicated. Once the final enabling condition is decided, the communication can shift to structured information gathering and more qualitative dialogue.

III. **Regions should generally continue current activities on smart specialisation.** However, all regions can already start to evaluate the enabling condition and the different criteria and consider possible actions to complement or exploit opportunities related to the criteria.

IV. **Region can already start to discuss smart specialisation in the NUTS2-area.** There are potential benefits to developing joint work on smart specialisation in NUTS2-areas regardless of the level of final responsibility.

V. **Tillväxtverket could focus the continued S3-support on some of the challenges specified in this report and should consider tailoring certain areas to different types of regions.** It is possible to use a lot of the challenges that are elaborated in this report as basis for exchanges in the national S3-network. The recommendation from this report is to focus on issues that can be found in the intersection between the enabling condition and other contextual challenges such as (1) the role of the national level in improving regional innovation systems, (2) how to compare and harmonise regional analysis to facilitate joint activities and collaboration from a value-chain, or similar,

perspective, (3) how to practically facilitate monitoring and evaluation in regions, (4) how Swedish interregional initiatives can be initiated and scaled up to facilitate greater integration of European instruments in smart specialisation. All of these topics, not least 1 and 2, could benefit from being treated, at least in part, between different types of regions. Tillväxtverket can consider using the forum with representatives from clusters and regions within the S3-pilot for exchanges and work on these and other topics. All topics could benefit from trying to formulate an objective or possible progression going forward, thereby providing more direction to the forum.

VI. **In one of the relevant forums, such as the RND FoU network or the smart specialisation network: the regions, Ministry of Enterprise and Innovation, Tillväxtverket and potentially Vinnova should begin an in-depth discussion about how the regional-national coordination can improved regarding smart specialisation.** Such a discussion would likely benefit from a discussion around some quite specified challenges – for example the link between smart specialisation and national programmes such as the SIP's; the possibilities of coordinating analysis, monitoring and evaluation; and how participation and utilisation in centralised European funding programmes, primarily the proposed Horizon Europe programme, could be facilitated by coordinated activities in Sweden. The themes listed under point V. above could also work as inspiration or as an outset.

6.2. Medium resource recommendations

These recommendations would need some changes in funding and regulatory conditions but involves few interests and are possible to enact in the short-term.

I. **The Government should include a mission in the appropriation directions to the regions that they are responsible for the integration of smart specialisation in regional R&I policy.** This is an elaboration on point I. above, where this responsibility is codified and integrated in the regular governance of regional development. Of course, the recommendation will vary if a decision is made that smart specialisation will be managed at the national level. Once again, the mission should be about contents and not form. One suggestion that would be compatible with an emphasis on content would be to formulate the mission in terms of responsibility to ensure that the region is fulfilling the enabling condition on smart specialisation.

II. **The current national support task should be expanded to a shared mission between Tillväxtverket and Vinnova.** It would allow for both more coordination at the national level, as well as the possibility for a division of tasks. Tillväxtverket could continue to facilitate a knowledge exchange, learning as well as ensuring the link with the management of the ERDF. Vinnova could more directly address the challenges related to the innovation support system, expand the knowledge base for analysis and monitoring, ensure a link to other important programmes, such as the SIP's as well as the link to other European funds and programmes, as Vinnova is the primary NCP (National contact point) for innovation-oriented sub-programmes under the framework program.

III. **All NUTS2-areas, most likely driven by the regions, should initiate pre-studies or similar about joint analysis, priorities and governance of smart specialisation in the respective NUTS2-area.** In keeping with previous comments in this report, the important issue is not the form or kind of a pre-study, but that some kind of joint process and discussion is undertaken in each NUTS2-area. These should also go beyond looking at meta-priorities but also focus on governance and monitoring. Pre-studies similar to those done in East Middle Sweden towards the end of the previous programming period could be a practical model to do so, but there are other potential models which could be more tailored to different regions.

IV. **Have the pre-studies under the last point form one basis for the upcoming OP.** The pre-studies should influence the OP by clarifying priorities and framing monitoring of the programme so that the monitoring can be used to monitor the strategies.

V. **Develop a national program in the next programming period that is more aligned with smart specialisation, with the primary aim the develop cross-regional linkages and provide a linkage or interface towards European initiatives, such as the thematic platforms.** To clarify, the programme would not and likely should not be aligned to a specific strategy or certain priorities. The important point is that the programme should be aligned to smart specialisation in the sense that it has the objective of supporting projects that develop and up-scale interregional projects based on strategies at the regional level.

VI. **Initiative a national call, most likely managed by Vinnova, to increase linkages between the university sector and smart specialisation in the regions.**

VII. **Ensure a harmonisation between monitoring and evaluation of 1.1-funds, ERDF and smart specialisation.** In part, a harmonisation of programme logics and indicators would be a major facilitation of monitoring and evaluation. In part, the harmonised programme logics should also facilitate the administrative burden of projects.

VIII. **Evaluate the structural funds partnership model.** This report has not investigated the question about the partnership model in full, but currently the Swedish NAO (Riksrevisionen) has a mission to evaluate the effectiveness of the partnership model. A timeline has yet to be published for the mission but the findings could form the basis for a discussion about the partnership in relation to smart specialisation, for instance in the RND-network.

6.3. High resource recommendations

These recommendations would require changes in funding and regulatory conditions that may involve conflicting interests and would likely demand a larger process prior to being enacted.

I. **Develop smart specialisation strategies in a greater geography, such as NUTS2 or other functional regions.** In order to address the lack of critical mass at regional level and fragmentation at national level, strategies could be developed in a greater geography. For some regions, the NUTS2-region could be a feasible area, both for practical and functional reasons. However, for other regions it might be possible to review other possibilities. This process would need to be based on regional initiative but would likely not be possible without national support, both in mandate and in resources.

II. **Expand the national role in smart specialisation to more national agencies and initiatives, such as other research and innovation funders, Innovation partnership programs and the national innovation council to facilitate a systematic integration of smart specialisation in the Swedish innovation system.** This could involve support in resources, personnel and/or knowledge base to the process as well as active work to exploit regional smart specialisation as a resource in national objectives and operations.

III. **Integrate smart specialisation in a potential review of the universities role in the Swedish innovation system.** This report has not been able to review the role of the university sector in relation to smart specialisation in Sweden to the point where it can form the basis for fundamental recommendations beyond the possibility of a national call (see 6.2.VI.), especially considering the complexity involved in governance and mandates of HEI's. However, the recent public inquiry on governance and resource allocation to the university sector (SOU 2019:6) proposed a new inquiry specifically on the role of universities in the innovation system. A possibility would be to include special focus on smart specialisation as a part of such an inquiry, should it become a reality.

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