

# MONITORING THE INNOVATION ECOSYSTEM AND THE OF EFFECTIVENESS SMART SPECIALISATION STRATEGIES

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## ABSTRACT

*Smart specialisation policy aims at enhancing innovation and economic growth of the regions. The core mechanism for developing smart specialisation strategies is the entrepreneurial discovery process. The regions are to discover their innovation priorities in a bottom-up process involving all regional quadruple helix actors – university, industry, government and civil society and to focus their innovation efforts in the priority areas in order to be able to develop competitive advantage globally in these areas. While the concept of smart specialisation has been widely adopted in European regions since 2013, few studies have so far investigated the actual mechanisms to monitor smart specialisation implementation. This paper explores the mechanisms to monitor smart specialisation strategies and the innovation ecosystem development as the whole in Finnish regions. We adopt a grounded theory approach with multiple case design. Our semi-structured interviews with the facilitators of smart specialisation strategy process cover all 18 Finnish mainland regions. Based on 28 interviews conducted with altogether 36 facilitators in the subsequent interview rounds of 2016 and 2017, we can conclude that the regions have adopted a variety of monitoring tools that utilize both quantitative and qualitative data collection mechanisms. We describe three innovative tools - “Situational picture of innovation”, “Partnership barometer” and “Connectivity tool” – that succeed to both drive policy learning and implementation. Our paper contributes to current debate on smart specialisation regarding how to engage the stakeholders to the monitoring process and how to identify the causality between policy measures and the overall regional innovation ecosystem development.*

**Keywords:** *Monitoring, policy learning, regional innovation system, research and innovation strategies for smart specialisation, smart specialisation*

## 1. INTRODUCTION

Smart specialisation concept was introduced by the high-level expert group “Knowledge for Growth” within the European Commission (Foray et al., 2009), which became the major industrial and innovation policy within European Union in a short time period (Foray, 2014). The core idea is the regional specialisation that supports regions to develop competitive advantage globally in the areas where they have the strengths and competences. The prioritisation process involves a bottom-up collaborative effort involving all quadruple helix actors of the research. The overall objectives for monitoring smart specialisation strategies (S3) are to learning about actual transformation processes and informing policy actions accordingly, building and reinforcing trust and cooperation with and among stakeholders and citizens, guarantee accountability of policymaking (Gianelle and Kleibrink, 2015). The monitoring and evaluation forms the last step of the S3 process. While monitoring encompasses all activities that have to do with the collection and processing of information about the expected results and the degree of implementation of policy measures, the evaluation is to assess how and why policies, programmes and projects have actually had the desired effects (Gianelle and Kleibrink,

2015). Thus, monitoring complements the evaluation, and does not substitute it. According to the recent European wide survey, national and regional policymakers see the importance of stakeholder engagement in monitoring, but face difficulties in implementation (Kleibrink et al., 2016). Another challenge is to enable true causality between output and result indicators in S3 monitoring (Kleibrink et al., 2016). In other words, the dilemma is how to measure the impact of S3 alone apart from other innovation measures and actions that influence the overall development of regional innovation and economic growth. This concerns especially the regions where the funding from European structural and investment funds (ESIF) constitute only a small share of the total regional research and development funding, as in the case of Finnish regions. The aim of our paper is to explore how regions can overcome the challenges identified above and to develop such monitoring tools that both engage regional stakeholders and facilitate policy learning and policy implementation. Our paper investigates the mechanisms to monitor S3 based on a multiple case study in Finnish regions. Our semi-structured interviews with the facilitators of S3 process cover all 18 Finnish mainland regions. Based on 28 interviews conducted with altogether 36 facilitators in the subsequent interview rounds of 2016 and 2017, we can conclude that the key mechanisms for the regions to monitor S3 and the innovation ecosystem development are data collection from statistics and reports, stakeholder surveys and interviews as well as stakeholder discussions. We present three innovative tools to monitor S3 and the regional innovation ecosystem that truly engage a wide group of regional stakeholders and that facilitate policy learning and implementation. Our paper contributes to current debate on monitoring S3 through providing insight into how to engage the stakeholders to the monitoring process and how to develop causality between S3 measures and the overall regional development. This paper is organized as follows. We first present the logic of intervention in smart specialisation and discuss current key challenges in implementation. Then, we describe our research methods and data to investigate the monitoring mechanisms. Third, we highlight our key findings from Finnish regions. At the end, we conclude with the discussion on the contribution of our paper, its limitation and our suggestions for future research.

## **2. THE LOGIC OF INTERVENTION IN SMART SPECIALISATION**

The major effort to advance the monitoring of smart specialisation was the development of the logic of intervention by Gianelle and Kleibrink (2015). This model integrates monitoring tightly with S3 process that starts with the identification of regional challenges and needs, then the formulation of vision and strategic objectives and at the end the selection of S3 and the regional priority areas and the policy mix to implement the strategy. The result indicators are used to monitor the progress within priority areas and the output indicators in turn to follow up the policy mix implementation (Gianelle and Kleibrink, 2015). While the result indicators track the overall regional development in terms of e.g. new patents or new firms in the priority area, the output indicators follow-up the funded projects in the priority area. The challenge is to be verify the causality between the result and output indicators. In a follow-up study, Kleibrink et al. (2016) investigated how policymakers understand the logic of intervention in the smart specialisation, and how this is reflected in the monitoring mechanisms based on the responses from policymakers in 68 regions and 12 countries across Europe. The study reveals that the monitoring mechanisms are not yet defined in most of the cases (59% of respondents) and in several cases defined, but not implemented (15% of respondents). This means that over 60% of the respondents are not yet monitoring the performance of their smart specialisation strategies. The respondents see as the main functions of monitoring to be informing political decision-makers and other stakeholders about progress made in S3 implementation. Currently the most used data sources for monitoring S3 implementation include official statistics, operational program indicators, Horizon 2020 project participation and European statistic, while only about half of the respondents conduct surveys and focus groups.

Prior research has urged governments to engage to learning-by-monitoring (Sabel, 1993) with a tight collaboration between the firms and the government, both being committed to continuous performance improvement. Thus, it would be advisable for more regions to engage with their stakeholders in the monitoring effort. Kleibrink et al. (2016) urge more research to understand how policy-makers can embed such engagement in the design and daily practice of monitoring. Finally, while the result-oriented logic of intervention was in general well understood and applied by policy-makers, only a minority of respondents established a clear link between output and result indicators (Kleibrink, 2016). In fact, despite the detailed illustration of the logic of intervention, there is neither conceptual work on smart specialisation nor the European regulation providing details of what should be monitored and how (Kleibrink et al., 2016). Our paper builds on the earlier studies regarding the overall logic of intervention (Gianelle and Kleibrink, 2015) and the European-wide survey on monitoring (Kleibrink et al., 2016), with a more qualitative grounded theory approach to investigate monitoring mechanisms in Finnish regions. Our paper aims to contribute to the current debate on S3 monitoring with new insight on the key mechanisms to engage stakeholders and monitor causality between result and output indicators.

### **3. RESEARCH METHODS AND DATA**

We adopted a multiple case research design following the principles of grounded theory approach (Corbin and Strauss, 1990; Gioia et al., 2013) to explore the mechanisms through which the regions monitor the effectiveness of smart specialisation strategies. Having data from several regions allows us to develop more accurate and generalizable results, as we can extract and compare findings among regions. In addition, we use triangulation in order to enhance the validity of our findings (Yin, 2009). We use secondary research data from regional councils such as presentations and reports related to monitoring regional development and regional strategy. We gathered primary research data through semi-structured interviews with regional authorities in Finland responsible of smart specialization process. In total, we interviewed 36 persons working mainly in regional councils through 28 interviews. The interviews took place in two rounds – during September 2016 and August-October 2017. Our data covers all 18 Finnish mainland regions. The first round of interviews focused on the overall process of smart specialisation development and implementation, while the second round in more in-depth inquiry about the engagement of quadruple helix stakeholders in smart specialisation and the related challenges. The monitoring of smart specialisation strategies was part of both questionnaires. The interviews lasted approximately one hour each and were typically conducted by phone, except the face-to-face meetings with Helsinki-Uusimaa region that is our research location. Table 1 illustrates the list of interviews with information on the regions and organisations interviewed, the title of interviewees and the interview date.

*Table following on the next page*

*Table 1: Regional interviews*

Region	Organisation	Title of respondent and the date of interview	
Central Finland	Regional Council of Central Finland	Development Manager	2016-09-28, 2017-08-29
Central Ostrobothnia	Regional Council of Central Ostrobothnia	Manager of International Affairs	2016-09-20, 2017-09-08
Helsinki-Uusimaa	Helsinki-Uusimaa Regional Council	Innovation Adviser	2016-09-20, 2017-08-24
Häme	Regional Council of Häme	Senior Adviser	2017-09-14
Kainuu	Regional Council of Kainuu	Regional Development Specialist	2017-09-11
Kymenlaakso	Cursor Oy, Kymenlaakso University of Applied Sciences	Project Manager, RDI Director and RDI Expert	2016-09-14
Lapland	Regional Council of Lapland	Project manager	2017-08-31
Ostrobothnia	Regional Council of Ostrobothnia	International Coordinator	2016-09-19, 2017-09-04
Oulu Region	Council of Oulu Region	Development Manager	2016-09-14, 2017-10-04
Tampere region	Council of Tampere Region	Senior Officer	2017-09-23
Pohjois-Karjala	Regional Council of Pohjois-Karjala	Regional Development Manager, Regional Development Advisor	2017-08-25
Pohjois-Savo	Regional Council of Pohjois-Savo	Manager, Regional Development	2017-09-22
Päijät-Häme	Regional Council of Päijät-Häme	Senior Advisor, International Affairs	2017-09-12
Satakunta	Regional Council of Satakunta	Regional Advisor	2016-09-26, 2017-11-10
South Carelia	Regional Council of South Carelia	Development Director, Manager, Regional Development	2017-09-18
South Savo	South Savo Regional Council	Manager, Regional Business Development and Innovation, Development Manager	2016-09-20, 2017-08-29
South Ostrobothnia	Regional Council of South Ostrobothnia	Manager of International Affairs, Director of International Affairs and Culture, Regional Development Planning Officer, Project Coordinator	2016-09-19, 2017-11-01
South Ostrobothnia	University of Tampere	Research Manager	2017-10-03
Southwest Finland	Regional Council of Southwest Finland	Senior Planning officer, Senior Planning officer	2016-09-14, 2017-09-06

We recorded all interviews, transcribed and analysed them in Atlas.ti. We first identified all activities related to the monitoring of smart specialisation strategies from our interview transcriptions and labelled them as 1st order terms. We then grouped similar mechanisms together and labelled them as 2nd order themes. Finally, we compared the different 2nd order themes with each other and divided them two categories of quantitative data collection and qualitative data collection. In addition, we provide examples from Finnish regions regarding three specific monitoring tools to describe how to implement different mechanisms in practice. Finally, we compare our findings to existing literature on the monitoring of smart specialisation strategies.

## 4. KEY FINDINGS

### 4.1. Regional innovation landscape in Finland

The Finnish research and innovation system has ranked highly in international comparisons. Finland has been characterised as Innovation Leader in EU Innovation Scoreboard, having position score 131% over EU average in 2016 (European Commission, 2017a). In the regional level, Helsinki-Uusimaa region and Southern Finland as a whole and Western Finland are characterised as Innovation Leader, while the Eastern and Northern part of Finland Strong Innovators (European Commission, 2017b). The governance of Finnish research and innovation system is centralised in terms of national guidelines, strategies and funding, but a mix of national and local administration gives regions a relatively high degree of autonomy in the design and implementation of regional policies (Halme et al., 2017). The focus of smart specialisation in Finland is on the knowledge base, lead markets initiatives and ecosystems development (Halme et al., 2017). Smart specialisation approach bares many similarities in terms of the process principles and contents to the programme-based regional development strategy work that started in Finland already in 1994. The regional development strategy work features a true bottom-up process engaging a large group of regional stakeholders representing quadruple helix actors in strategy workshops as well as open consultation through possibility to comment work-in-progress documents and to answer open innovation surveys implemented in many of the Finnish regions. The regional innovation platforms with active stakeholder collaboration have a long history in Finland. The focus in recent years had been to complement the traditional science-technology-innovation (STI) mode of innovation with doing-using-interacting (DUI) mode of innovation (Kautonen et al., 2016, Uotila et al., 2012).

### 4.2. Key mechanisms to monitor the innovation ecosystem and S3 implementation

In order to identify the key mechanisms for monitoring smart specialisation in the Finnish regions, we extracted all activities from our interviews related the monitoring and the evaluation of strategy implementation. Figure 1 illustrates our key findings. Regarding similar monitoring approaches such as monitoring project activity, the allocation of funding to RIS3 priorities etc. we only raised these approaches once as 1st order terms in Figure 1.

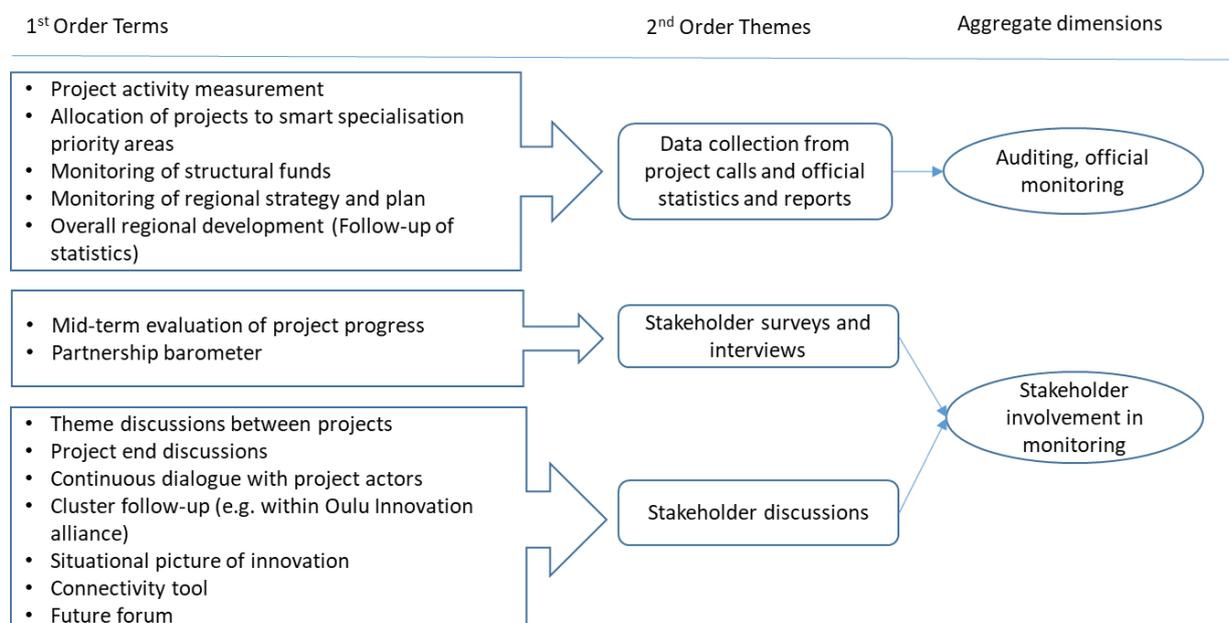


Figure 1: Key mechanisms to monitor S3 and regional innovation

As a result we can see that the key mechanism for monitoring smart specialisation strategy implementation are data collection from statistics and reports, stakeholder surveys and interviews as well as stakeholder discussions. Thus, the monitoring includes essentially both quantitative and qualitative assessment of the results. We found that the data collection is only the initial step in the process, which follows by joint reflection and interpretation of the results between stakeholders and finally the development of corrective actions. This is how the monitoring essentially contributes as a smart specialisation strategy development, which in Finland follows the regional development cycle of four years. In the next chapter, we describe three specific tools for monitoring regional development as examples of the innovative tools developed by Finnish regions.

### **4.3. Examples of regional monitoring tools**

#### *4.3.1. Situational picture of innovation*

The Situational picture of innovation was launched in 2013 and since then has been implemented yearly by the Regional Council of Tampere. It forms part of the regional information management process and serves to support regional decision-making processes. It offers for all regional stakeholders a view of the state and the development of regional innovation environment. The government of the Situational picture of innovation is for a specific management group that consists of the regional higher education institutes, municipalities and development organisations. The management group outlines the process goals and at the end discusses the observations made from Situational picture and the related topical phenomena (Regional Council of Tampere, 2017c). The key feature of the Situational picture of innovation is that it integrates the quantitative data on key indicators with the qualitative analyses and observations from the regional stakeholders. The process starts with data collection regarding the funding of research, development and innovation (RDI), value network capability, growth companies, higher education institutes, internationality, digitalisation and innovation platforms. (Regional Council of Tampere, 2017b) This is followed by a series of workshops with stakeholders from companies, universities and research institutes and public sector to refine the material, make observations, interpretations and produce additional material based on the initial data collection. There were the following five workshops organized in 2017. The first workshop - "Data crush event" - consisted of data experts from different organisations that examined the development of the Situational picture indicators with the aim to identify possible gaps in the assembled material. The second workshop - Interpretation workshop - involved the innovation and foresight team of the Council of Tampere region and contemplated the phenomena behind the development. The third workshop - Digital data - focused on discussing and mapping the indicators used for monitoring digitalisation. The fourth workshop - Bio- and circular economy - focused on examining the theme from the perspective of competitiveness. The fifth and the final workshop - Platform seminar - made observations related to the platform operations that came up in the Situational picture and discussed the aspects related to the measurement of the impact of open innovation platforms. (Regional Council of Tampere, 2017c) At the end, the Council of Tampere region organized a joint event for regional stakeholders for the presentation of the yearly results of the Situational picture of innovation work. It points out not only the strengths, but also the weaknesses and challenges in the development. The causality between S3 output indicators and the result indicators of the Situational picture of innovation is tackled mainly by tracking the evolvement of the result indicators over time. If the result indicators in S3 priority areas evolve favorable, while there has been continuously significant funding and effort in these areas, the conclusions is that the S3 efforts have been successful. In 2017 altogether 120 persons from different organizations was involved to develop the Situational picture of innovation (Regional Council of Tampere, 2017a).

Several regions in Finland have adopted similar type of the process and it was lifted as European best practice in InnoBridge project funded by Interreg Europe.

#### *4.3.2. Partnership barometer*

Partnership barometer was launched in 2014 in Southwest Finland as the key tool to follow-up the achievement of the goals presented in the regional strategy and vision. It also monitors the progress of the regional partnership forum. It is based on a survey sent to 700 key regional stakeholders in industry, university and public sector. Partnership barometer monitors both the generic regional development as well as the implementation of the key actions in the regional strategy. The respondents assess the statements regarding the generic regional development and the implementation stage of the key strategic actions. Thus, the survey monitors both result and output indicators and places stakeholders as a key source of information. All questions reflect the current stage as well as the expectations towards the future development. The partnership barometer is a way to evaluate the implementation of the regional strategy and can be used to both further strategy development and the refinement of the action plan to improve the implementation. Regarding the partnership forum – which is a key tool to enhance regional collaboration and innovation in Southwest Finland – 75% of the respondents in 2016 see it as an important tool to develop the region. More than 50% of the respondents assessed the meetings organized by the partnership forum contributed to the development of new ideas and collaborative networks for regional development. (Regional Council of Southwest Finland, 2017).

#### *4.3.3. Connectivity tool*

Connectivity tool launched in 2013 Ostrobothnia for strengthening the regional innovation ecosystem integrates the full policy development cycle. The process involves a survey to the regional triple helix stakeholders (businesses, universities/research institutes and public sector organisations) and interviews to identify their expectations and experiences of the collaboration towards other stakeholder group. Then gap analyses is conducted to compare the differences between the expectations and experiences of different stakeholder groups. For example, the relationships between businesses and public sector might differ in terms of employment issues, environmental regulation, spatial planning, technological development or business development (Virkkala et al., 2017). The Connectivity tools provides information about the bottlenecks between different collaboration aspects. The focus seminar is organised as a joint event at the end for different stakeholder groups to plan together actions how to improve the current bases of collaboration regarding the bottleneck areas. The smart specialisation projects are implemented to reduce the bottlenecks in the regional innovation ecosystem. The process is repeated every second year, which facilitates monitoring of the results achieved and to develop further measures to improve the regional ecosystem. The causality between the output and the result indicators is tight in the connectivity tool. If the implementation of actions is successful, this would be shown as lower gaps between the expectations and the experience of the regionals stakeholders regarding their collaboration. A detailed description of the connectivity tool is available in a recent work by Virkkala et al. (2017).

## **5. CONCLUSION**

Prior research has highlighted two specific challenges related to the monitoring of smart specialisation strategies (Kleibrink et al., 2016). The first challenge is to engage stakeholders in the monitoring process, and thus to enhance trust and learning between regional stakeholders. The second challenge is to understand the causal links between the result and output indicators, in order to better allocate the policy measures to support favourable regional development.

As key results of our study, we identify multiple mechanisms to engage stakeholders in the S3 monitoring such as surveys, interviews, focus group meetings, seminars and workshops, which complement the monitoring through official statistics and S3 project activity. We briefly present three innovative tools used for monitoring S3 in Finnish regions from Tampere region, Southwest Finland and Ostrobothnia. These examples succeed to engage a large number of regional stakeholders, while the indicators used differ considerably between the regions. As Tampere region monitors the regional innovation landscape, its innovation efforts in S3 priority areas should be reflected in the Situational picture of innovation indicators over time. The region have utilized working groups in two of the priority areas – digitalisation as well as bio- and circular economy - to track the results in these priority areas in terms of competitiveness. Southwest Finland in turn monitors the achievement of regional strategic goals and the results of partnership forum through a stakeholder survey, putting the regional stakeholders in the centre in the monitoring of the progress. This is also key in the Ostrobothnian model in which the causal relationship between the policy actions and the results is tight and monitored through regional stakeholder dialogue that takes place every two years. Our research contributes to existing debate on monitoring smart specialisation with the insight from Finnish regions. It reveals that stakeholder engagement is built in the monitoring system in general in Finland and that there are trade-offs in enabling causality. As an example, the Situational picture of innovation entails more challenges to identify true causality between S3 efforts and the results than the Connectivity tool due to its wider perspective, covering the regional innovation performance as the whole. The main limitation of our study results from its focus on only Finland. The monitoring system must always reflect the conditions for stakeholder collaboration in monitoring systems. As there is long tradition of regional collaboration between the different stakeholder groups, this makes it easier to involve stakeholders in the monitoring process than in the countries without such tradition. Our results have practical implications as policymakers can use them as a benchmark how to engage stakeholders and how to address the causality between result and output indicators. We recommend future studies to develop more in-depth analyses on the monitoring system within one region and address the establishment of the causality links between result and output indicators in a further detail. This type of research has potential to contribute to the development of better and leaner monitoring of smart specialisation strategies.

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