

MØAMAS (University of Stavanger) – Master Thesis

THE ENTREPRENEURIAL DISCOVERY PROCESS OUTSIDE THE EU

A CASE STUDY APPROACH USING 3 NORWEGIAN REGIONS

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Abstract

Smart specialisation has attracted increasing attention from policy makers in Europe after its conception in 2014, while having also been made an ex-ante conditionality for EU funding through the European Regional Development Fund. Norway, a non-EU country has however been lagging behind in terms of getting involved with smart specialization as an approach to regional innovation policy. The paper compares three Norwegian regions observed and planned efforts to the theoretical framework of entrepreneurial discovery process (EDP), a key element considered the heart of smart specialization. The comparative study makes use of the principles and fundamental components accompanying the process, specifically engagement from triple and four helix stakeholders and their roles, governance and bottom-up characteristics, and instruments and activities used to carry out an EDP. All regions are found to adhere to the guidelines and principles of an entrepreneurial discovery process, set by the European Commission, while differences are displaying in terms of their conceptualization of the process, level of engagement by stakeholders and concrete activities used to accomplish it.

Foreword

This thesis would not have been possible without the insights and support of many people around us. Jason Deegan, who guided us past numerous challenges and showed admirable patience in reading through numerous revisions and helping us make sense of it all. Your encouraging word and great feedback have been incredibly important to us. We would like you to know that we highly appreciate it.

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1. Introduction

In recent years, Smart Specialisation has risen to considerable prominence in discussions related to the role of regional innovation policy, and indeed, given its centrality in Europe, it's also taken on a considerable role related to cohesion policy. It's been widely incorporated in the European Union's policy toolkit to address both of these areas, and since 2014 has been the central way in which the EU seeks to structure and effectively utilize resources across Europe while seeking to avoid wasteful overlapping of activities in different European regions, and the poor identification and selection of domains in which these resources will be deployed (European Commission, 2017).

As the goal of creating and implementing a smart specialisation strategy is to increase a region's competitiveness and growth prospects, considerable resources are available to regions in the EU. The creation and provision of a smart specialisation strategy was made an ex-ante conditionality for access to EU structural and cohesion funds, which serves to underline both the weight placed on this approach to regional innovation policy at the EU level, and also the importance of involvement to regional authorities (Foray et al., 2012). The European push, which seeks to leverage smart specialisation in order to address long-standing regional imbalances, as well as to stimulate innovation in strategy generation from the more traditional *never change a winning team* mentality (European Commission, 2017), presents an interesting opportunity to evaluate how exactly regions in a non-EU state, such as Norway have opted to engage with a central component of smart specialisation, namely that of the entrepreneurial discovery process. While monetary incentives do allow for minimum effort contributions or recycled strategies made up simply to receive funding, Norwegian regions substitute this with an internal motivation for sustainable economic growth and to explore areas of opportunity to engage with a widely used approach to regional innovation policy. This is perhaps no more apparent than in the entrepreneurial discovery process (EDP). The attractiveness of an investigation into non-EU regions and its contribution to existing case studies on regions in EU member states is believed to be apparent, introducing the research question of whether regions in Norway indeed adhere to the theoretical approach outlined by the European Commission and corresponding literature.

The paper examines the currently understood framework and central elements promoting the regional governments attempt at engaging with EDP. As the distinct characteristics of an EDP will differ depending the region, an investigation into key elements necessary for the process to take place is conducted. The article addresses the concept of multi-stakeholder engagement from triple or quadruple helixes, how governance structure and instruments for engagement allow for bottom-up decision making and co-creation of knowledge, as well as which activities are utilized by policy makers at what stages of the RIS3 to facilitate for an EDP.

The three case study regions in Norway selected were Nordland, Rogaland and Vestland. The regions were studied based on the above measures using a comparative case study design to generate an image of the overall understanding and adherence of the concept and its required conditions to manifest.

The subsequent section clarifies and reviews the emergence of place-based and regional innovation policy, leading into the concept of the entrepreneurial discovery process and central and unique characteristics surrounding it. Section four incorporates the papers method of investigating the case study regions and the rationale upholding the selection of regions, with the fifth section describing and analysing each regions approach to EDP. Finally, the papers sixth section discusses the findings in light of existing literature and compare practice with the theoretical framework, with the seventh section drawing conclusions on the three case study regions fit with the literature.

2. Theory section

2.1. Regional innovation in context

2.1.1. Regional innovation policy

Innovation policy is an ever-evolving topic and can be seen as a result, both of our aggregate understanding of economic development, and the role that innovation in particular plays in sustaining and boosting economic development and stimulating growth. In recent years, there has been a considerable spike in interest in the relationship which exists between innovation and aspects of geography. This has spurred a spawning literature on evolutionary economic geography,

and provided the basis for a deeper investigation into the region as the unit of analysis. In many of the models stemming from the endogenous growth literature of the 1980s (Romer, 1986), innovation did not have an explicit role in growth models, which usually included and focused more on R&D, education and technology on a national level, and built on the neo-classical understanding of economic development to explain the provision of new products and services. Nelson and Winter (1982) also argued that innovation was not just an outcome of micro-level interactions and learning within the firms, but that the meso-level interactions between the firms and various stakeholders and institutions played an important part. This early rethinking of innovation from a systemic approach has later evolved from concentrating on the national level (national innovation systems) to being extended to the regional level (regional innovation systems) (B. T. Asheim & Isaksen, 2003).

Though the arguments for implementing policies specific to individual regions are numerous, the local relationships between firms and institutions (Morgan, 1997), relatedness of emerging technologies (Boschma & Iammarino, 2009) and the nature of the knowledge being generated or acquired can all differ depending on the region (Doloreux & Shearmur, 2012). Existing industrial structures, technological paths, as well as its economic and institutional context have made it evident to policy makers that the appropriate level at which to target ones policy should be at the regional level (Iammarino & McCann, 2006). This focus on the regional level, as the unit through which innovation policies should be targeted is largely to ensure an increased fit and probability of success. The reasoning behind this change in policy approach towards a more regional focus was rooted in the notion that system failures were present at a regional level (as opposed to solely at the national level for example). The identification of system failures, within what was termed a regional innovation system (RIS) provided a new paradigm through which it was considered that policy at the regional level could focus on. It was seen that attention should focus more on identifying and solving issues within the RIS (B. T. Asheim & Isaksen, 2003).

System failures became a popular term as policy makers adapted the related regional innovation systems (RIS) term for describing how a region was made up of a number of stakeholders (e.g. education, industry, finance, knowledge networks and public institutions) (Tödting & Trippel, 2005). The innovativeness of firms and regions could then be seen as a result of the economic, institutional and social factors that would derive from the entire innovation system. In Europe a

growing literature was beginning to form which provided examples of system failures. As argued by Tödting and Tripl (2005), they could better explain the heterogeneity and divergences in innovation performance and productivity growth between EU member states. Tödting and Tripl (2005) divide these system failures into three main types; organizational thinness, lock in and fragmentation. Organizational thinness is seen in innovation systems lacking key organizations, clusters, institutions or other parts that are crucial for a well-functioning RIS. Lock-in refers to over-specialisation and investments in mature industries and technology, leading to reduced adaptability in innovation and diversification. Finally, fragmentation is the absence of interactions and flow of knowledge between organizations in the RIS, often related to too much industrial diversity with few commonalities. While fragmentation is typically found in metropolitan regions with peripheral regions more often experiencing organizational thinness (Tödting & Tripl, 2005).

As highlighted above, these issues can reduce the capacity of a RIS to function at a high standard, and the regional characteristics that allow them to manifest strengthen the notion that a lower-level analysis with targeted regional innovation policies is more appropriate to overcome them, thus improving the functioning of a regions' innovation output. Findings by Wagner and Jonkers (2017) supports the European Commission's recent efforts to improve national and regional innovation systems by pinpointing inappropriate governance, and lack of openness between stakeholders as well as fragmentation in general as the leading causes for system failures in regions within the EU.

This focus on identifying and addressing system failures leads to a reliance to a certain extent on an understanding of a regions existing strengths and knowledge and conforms to the understanding that specialisation in this context, doesn't imply a focus on clusters in line with a Porterian understanding of clusters (B. Asheim, Grillitsch, & Tripl, 2017) but that instead the focus should be more towards a notion of diversified specialization (Hassink & Gong, 2019). Indeed, much recent work on the development of smart specialisation, as an expression of regional innovation policy has focused on building upon this notion of relatedness of activities (Balland, Boschma, Crespo, & Rigby, 2019) and recent empirical work has shown that the relatedness of activities does in fact appear to factor into the prioritization decisions of regions in their smart specialisation process (Deegan, Broekel, & Fitjar, 2021).

2.2. Smart specialisation

Smart Specialisation as a concept and approach for place-based innovation-driven growth builds on previous knowledge from regional innovation systems, and was brought forth by Dominic Foray and the Knowledge for Growth 'Expert Group (K4G). It was a result of an exploration into why Europe, was lagging behind the United States in regard to competitiveness and intensity of R&D (Balland et al., 2019; Foray, 2009; Ranga, 2018). Smart specialisation emerged as solution to this imbalance, by attempting to enable the emergence of new activities, diversification, and alternative paths for investments by identifying and prioritizing the various strengths, resources and the potential each region exhibited, and as such constituted a key component in the EU's regional innovation policy response to this imbalance. A key aspect stemming from the work of the K4G argued that previous strategies for regional innovation did not include necessary engagement from stakeholders such as entrepreneurs, in the process of priority setting and implementation of strategies (Foray, 2009; Foray et al., 2012). A signature of the RIS3 approach is therefore this bottom-up characteristic, which implies that priority settings and the development of subsequent policy are not dictated by governments and policy makers with perceived innate wisdom or ex-ante knowledge surrounding strengths of a region or future priorities. Instead, smart specialisation is grounded in the rationale that policy makers need to consult and work together with external stakeholders to identify priorities through the entrepreneurial discovery process and gain an insight during the development and implementation of the strategy.

The importance of smart specialisation to address these issues was expressed when smart specialisation was added as a part of the reformed Cohesion Policy by the European Commission as an ex ante conditionality for access to funding, an issue which some have later highlighted as perhaps being a 'perfect case of policy running ahead of theory'. It's important to note that, even though Norwegian regions often collaborate with other European region when it comes to economic development projects, they do not receive funding through EUs cohesion policy programs, such as the European regional development fund (ERDF), or the European social fund (ESF) (European Commission, 2021). As such, Norwegian regions are not subject to the criteria set by the European Union for how the Smart specialisation strategies should be designed.

However, the European Commission supplied policy makers with guidelines on how to engage with the RIS3 framework (Foray et al., 2012). The European Commission divided the RIS3 design into six steps for policy makers to emulate. The steps are as follows:

- *Analysis of regional and national context*
- *Governance: Ensuring participation and ownership*
- *Shared vision*
- *Priority setting*
- *Definition of coherent policy mix, roadmaps and action plans*
- *Monitoring and evaluation*

The steps should be seen as somewhat fluid, with each one being likely to extend into the next steps due to new stakeholders entering the process, ongoing projects bearing fruit, unrealized potential being discovered or new knowledge coming to light, thereby modifying the fundamental context originally used as the basis for the smart specialisation process in the region (Foray et al., 2012). As such the steps provided should serve as an indication of a process to follow, with the actual practice being much less linear in nature.

In this sense, we can understand the process for developing and implementing Smart specialisation has made considerable improvements with regards to its codification, as expressed in the six steps above, however, it still faces considerable challenges in terms of the organisation of a key component of smart specialisation, namely that of entrepreneurial discovery. The entrepreneurial discovery process is a phase of RIS reconfiguration that support the systems reorientation and renewal (Foray, 2014b). The literature on smart specialization generally accepts the process as the largest differentiator when comparing smart specialisation strategies to other policy frameworks, and it is today considered the most defining feature of smart specialisation (Capello, 2014; Foray, 2014a).

2.3. Entrepreneurial discovery process

2.3.1. Entrepreneurial discovery

The notion of entrepreneurial discovery relies heavily on the concept of entrepreneurial knowledge, which Foray (2014a) defines as the mix of the regions vision, as well as their ability to integrate multiple segments of knowledge from the individual participating stakeholders. This knowledge is not just the knowledge of technology and science, but also knowledge about the necessities needed when creating a new product or activity, emerging competition, and changing markets (Foray, 2014a). Historically, this took place spontaneously as regions shifted into new domains, potentially disturbing the current structure to make room for new opportunities, in line with a Schumpeterian understanding of creative destruction, exerting an influence on the direction and constitution of regional economies, and as such, is a dynamic process of change (Perianez Forte & Wilson, 2021).

Entrepreneurial discovery is the discovery of new knowledge from an evidence-based stakeholder inclusive activity (Perianez Forte & Wilson, 2021). It is one of the first steps when creating new innovations and is the concept which the entrepreneurial discovery process is based on. In this sense the regional government is choosing a smart specialisation strategy as a form of innovation policy and invites dynamic themes into a system which is usually run by internal logic and extensive top-down planning, which is a radical change of approach (Perianez Forte & Wilson, 2021). Entrepreneurial discovery, as a feature of smart specialisation, is not path dependent in a sense that it pursues to set priority areas, such as strategies or plans, but rather unfolds throughout the entrepreneurial discovery process (Perianez Forte & Wilson, 2021). As such, while it's hard to plan for entrepreneurial discovery, systems can be put in place to encourage it. As an example, in a region looking to pursue new priority areas, a region may be quite specialized in drilling for oil, however, in collaboration with local stakeholders they recognize that this capability can be extended to drilling for fresh-water reserves. This reallocation of resources and capabilities based on an broad engagement with local stakeholders, forms a stylized illustration as to how entrepreneurial discovery can manifest. However, this relatively straightforward example conceals a considerable degree of information into how entrepreneurial discovery can be operationalized further within a regions broader smart specialisation strategy, this is typically achieved through the use of an entrepreneurial discovery process within a region.

2.3.2. The entrepreneurial discovery process

The importance of the entrepreneurial discovery process, as described above, derives from the notion that the regional government does not possess the entirety of the knowledge needed to choose future priorities and activities by itself (Kyriakou, Martínez, Periañez-Forte, & Rainoldi, 2016). As such, through the entrepreneurial discovery process one gathers stakeholders with individual pools of knowledge, with the goal of creating a shared pool of knowledge, used to find future opportunities and stimulate regional growth through co-creation (Perianez Forte & Wilson, 2021). Using their entrepreneurial knowledge set in the framework of the regional vision and characteristics, the stakeholders participate in organized entrepreneurial discovery, and create economic knowledge for potential future regional advantage (Foray, 2014b). These new activities can further be developed through experimentation and testing, before being implemented as a functional activity, as a part of a regions smart specialisation strategy. The entrepreneurial discovery process can therefore be viewed as an engine for the diversification and incorporation of distinct pools of local knowledge into a smart specialisation strategy (Capello, 2014; Foray, 2014a).

Despite the entrepreneurial discovery process being a key component in implementing the smart specialisation methodology, both policy makers, as well as researchers, have made adaptations to when an EDP should be included in policy creation, with changes being observed in the literature in recent years (Foray, 2019). To answer this question of ‘when’, it is necessary to look at the identified steps of policy formation.

Following the creation of the six steps of RIS3 design by the European Commission (Foray et al., 2012), Foray (2019) later presents the policy steps as three rather than six.

- *selecting priority areas*
- *translating priority areas into transformational roadmaps*
- *implementing transformational activities with an action plan.*

The first; *selecting priority areas* now encompasses the same activities as the first four of the six previously mentioned, with the rationale being that fewer steps allow policy makers to manage the

process more freely and without perceived rigid processes to be followed. With the sub activities remaining the same, the proposed steps by Foray first and foremost serve to illustrate the difficulties experienced by regional government. Though the general principles and logic of implementing the original six steps in line with the 2012 guidelines is very much intact, Foray cites needless administration and increased stress as the most notable outcome of adhering to the rigid regime (Foray, 2019). Additional emphasis has however been placed on the fluidity and changing nature of the knowledge basis used for uncovering priority areas, which Foray uses to further explain the reduction in steps, as they are not to be seen as static and “finished” once completed (Foray, 2019; Foray et al., 2012). Despite these additions to the literature, most of the EU’s regions, as well as the Norwegian regions introduced in this paper, embarked upon RIS3 ahead of this alteration to the process, strengthening the case of testing the regions efforts against, and therefore relying on, the more comprehensive six steps of RIS3.

2.4. Stakeholders

Having reviewed the steps completed when undergoing the entrepreneurial discovery process, the importance of “who” will be participating becomes important. The literature states that, as smart specialisation is a bottom-up approach, the involvement of stakeholders is of the utmost importance (Guzzo, Gianelle, & Marinelli, 2018), however, the involvement of the individual stakeholder may differ depending on the region, and even the stage of the process, either through inclusion or their own interest (Aranguren, Magro, Navarro, & Wilson, 2019). Foray (2014a) also describes in his paper that the optimal amount of stakeholders ranges from somewhere between one and every relevant stakeholder in the sector, which only solidifies the statement that here is no “one size fits all” approach when it comes to regional policy. Indeed, Stakeholders as the providers of the knowledge needed for the entrepreneurial discovery, has to be viewed in the context of a very broad spectrum, as they are just as varied as the knowledge they provide (Foray et al., 2012). The most frequent stakeholders who typically are involved in an EDP, are;

List of potential stakeholders	Helix categorisation
Higher education institution	1 st helix (Research and academia)
Research organizations	
Regional government and agencies	2 nd helix (Government)
Local government	
National government	
European commission	
Regional SMEs	3 rd helix (Industry)
Regional Large firms	
Business associations/chambers of commerce	
Cluster organizations	
Incubators, accelerators and business parks	
Foreign firms	
National firms	
Civil society	
Labour unions	
User-centered communities and labs	
Independent expert	
Media	Other
Financial entities (e.g. banks)	
Risk capital	

Table 1: “List of potential stakeholders”

For simplicity, these stakeholders are usually grouped together, but the literature here is divided when it comes to their categorization. Some categorize stakeholders based on their characteristics (Marinelli & Perianez-Forte, 2017), while others categorize them based on their contribution to the process itself (Kyriakou et al., 2016; Rodríguez-Pose & Wilkie, 2015). When dividing the stakeholders based on characteristics we usually think about the quadruple helix model. Normally we look at the “triple helix”, consisting of “government”, “industry”, and “research & academia”,

with “social stakeholders” as the often overlooked fourth (Perianez Forte & Wilson, 2021). Rodriguez-pose and Wilkie (2015) divide the stakeholders into three different “roles”, namely “entrepreneurial agents”, “policy makers”, and “the rest of the local population” based on their contribution to the process, meaning the responsibility they take on, and what knowledge they provide (Kyriakou et al., 2016). As such we may find stakeholders being mixes of these categorizations. In their paper, Aranguren, Magro, Navarro, & Wilson (2019) concludes with an interesting observation, where strong actors sometimes take on an even stronger role when other actors are lacking, presenting a potential gap in the literature. Their findings further show that in regions where regional government does not play a leading role in the RIS3 process, higher educational institutions and universities tend to fill the gap as facilitators or otherwise aid in strengthening the government capabilities that are now needed (Aranguren et al., 2019).

2.4.1. Entrepreneurial agents

The entrepreneurial agents are the ones who inhabit the entrepreneurial knowledge, and thus holds a rather important role. Stakeholders in this role usually is participants from knowledge institutions, independent innovators, firms, or public research institutions (Kyriakou et al., 2016). Entrepreneurial agents could be anyone who is in a good position to discover or share knowledge which leads to the co-creation of new knowledge. Cluster organizations are here in a particularly good position due to their connection to numerous firms (European Commission, 2016). They do emphasize that private firms have place of importance when it comes to the entrepreneurial discovery process, due to their direct connection to the market. This enables them to have critical knowledge about the viability of new activities, as well as first-hand knowledge from within the current market situation (Kyriakou et al., 2016). They also emphasize that this does not make them more valuable than other entrepreneurial stakeholders as academia may provide knowledge about technology and science, and all the knowledge gathered needs to be viewed as complementary. A study performed by Aranguren, Magro, Navarro, & Wilson (2019) found that in most of their case study regions in the EU, the early phases of RIS3 did not see sufficient degrees of involvement from firms to uphold the statement that all four helixes were well represented.

2.4.2. Policy makers

In contrast to the entrepreneurial stakeholders, who tend to be the driving force of the process, the policy makers are charged with leading the process (Kyriakou et al., 2016). Foray also adds that their role is much more active in the earlier stages of EDP, and even prior to the actual process itself, where they are charged with setting a regional priority (Foray, 2019). Once a priority has been set, their task shifts to the facilitation of stakeholders, as well as knowledge aggregation and processing, with the goal of creating a pool of knowledge greater than the individual inputs from the entrepreneurial agents (Kyriakou et al., 2016). It must be noted that it's not the policy makers task to choose who gets to be a part of the process. Their task should be reactive rather than proactive, so not to interfere with the "bottom-up" process. Mieszkowski & Kardas (2015) adds to this, stating that policy makers should, through collaborative leadership, facilitate for the possibility that entrepreneurial agents internalize the strategy, and participate in the activities. The other stakeholders needs to be empowered enough to take part in, and even lead, individual phases of the process (Mieszkowski & Kardas, 2015) .

2.4.3. Civil society

Lastly we have the general population, who are involved in order to ensure broad participation, and therefore a broader input of knowledge. Since each individual stakeholder only possess a modicum of knowledge, having a large group of inputs could be truly helpful (Kyriakou et al., 2016). Their involvement also fosters "local ownership", which could aid the implementation of policy activities for the smart specialisation strategy. The empowerment of civil society helps ensure a true bottom-up approach, as well as knowledge and acceptance of the new features once they reach the implementation stage.

Kyriakou et al (2016), states that all stakeholders must be actively participating for the entrepreneurial discovery process to function, but also states that it's not a certainty that they actually will take an active role. This is further strengthened by Guzzo et. al. (2018) stating that, even when engaged in developed regions, the influence civil society has is largely nonexistent.

2.5. The wicked problem

The entrepreneurial discovery process is itself a non-static, everchanging and complex process. Both the external environment surrounding a region, as well as the knowledge, competitive advantage and technology within any given region are continuously in motion, giving credence to Mäenpää & Lundstrøms (2018) defining EDP as a wicked problem. The term stems from Rittel and Webber dividing problems into tame and wicked, with tame problems being problems that could be separated, broken down and solved in a finalized manner without having to question if they were solved permanently (Mason & Mitroff, 1981; Rittel & Webber, 1973). Wicked problems were however more complex, with the nature of the problem being the main issue when attempting to solve them. Though wicked problems have many properties, a few key properties can still be used to illustrate the need for continuous stakeholder engagement during the EDP process. There can be no definite solution to these problems, its causes can be explained in multiple ways and the wicked problem in question will be a symptom of one or several other wicked problems. The entrepreneurial discovery process fits these descriptions, as diversification through a regions adjusted innovation policy does not guarantee the regions innate regional development goal for the future. There are no definite right or wrong answers, but rather good or bad solutions given the knowledge and situation presently identified.

2.6. Instruments used in EDP

European regions have adopted several approaches and analytical tools to be used in the entrepreneurial discovery process, with the European Commission offering two categories of tools and activities: participatory models and evidence-based practices (Foray et al., 2012).

While *participatory models* revolve around broad participation by engaging in working groups, private-public committees as well as participation from citizens through websites, hearings and consultation, the *evidence-based practices* tend to use SWOT analysis, economic trends and regional competence mapping, stakeholder surveys and studies to identify domains of specialisation. The two instrument categories differ in terms of effectiveness depending on the RIS3 steps they are used in and the European Commission provides some guidelines for policy

makers and facilitators of the smart specialisation policy process. These build on the notion of EDP as having a cyclical nature where EDP not only aids in choosing investment priorities, but further acts as a tool for revealing other and new dimensions that earlier in the process were not fully “flushed out”, acknowledged, or even addressed at all (Foray et al., 2012).

Following the RIS3 designs six steps, recommended activities in compliance with the RIS3 framework and theory have been coupled with their respective design step, as can be seen in table 2 below;

RIS3 design steps	Covered dimensions	Recommended activities/instruments
1. Analysis of regional context and potential for innovation	<ul style="list-style-type: none"> (i) Regional assets (ii) Linkages to global markets and surrounding environment (iii) Entrepreneurial environment 	<ul style="list-style-type: none"> - (i) SWOT-analysis, regional profiling, targeted surveys, expert assessments - (ii) Comparative studies, interviews with other regions, interregional work groups - (iii) Interviews with firms, cluster management, mixed working groups
2. Governance: Ensuring participation and ownership		<ul style="list-style-type: none"> - Boundary spanners with interdisciplinary knowledge/experience - Broad participation from triple/quadruple helix actors - Dedicated Steering Group and Knowledge Leadership Group/Mirror Group
3. Overall vision for the future of the region	<ul style="list-style-type: none"> (i) Future of the region/main goals (ii) Why they are important 	<ul style="list-style-type: none"> - Roundtable discussions, targeted visits, workshops, conferences, meetings with local and regional politicians
4. Identification of priorities	<ul style="list-style-type: none"> (i) Relatedness (ii) Bottom-up process (iii) Limited number of priority areas (iv) In line with broad objectives from central government/EU policies (top-down) 	<ul style="list-style-type: none"> - Mix of open <i>participatory models</i> (surveys, seminars participatory leadership, crowdsourcing) and results from <i>evidence-based practices</i> (regional assets)
5. Definition of coherent policy mix, roadmaps, and action plan	<ul style="list-style-type: none"> (i) Strategic objectives, timeframes for implementation, identifying funding sources, budget allocation. (ii) Policy experimentation, evaluating feasibility of RIS3 projects 	<ul style="list-style-type: none"> - (ii) Pilot projects
6. Integration of monitoring and evaluation mechanisms		<ul style="list-style-type: none"> - Peer review (report, workshops) and Learning lessons from peer regions - Balanced Scorecard Methodology, - Innovation Assessment Methodology

Table 2: "RIS3 design steps and activities"

Out of all the tools reviewed in a survey by Hegyi, Gianelle and Guzzo, the one considered most effective for continuous stakeholder engagement was working groups and workshops (Hegyi, Guzzo, Perianez-Forte, & Gianelle, 2021).

3. Purpose and research question

There has been some effort into mapping Nordic regions, but there is a gap in the literature in terms of surveying the entrepreneurial discovery process in Norway. As the country, not being an EU member state, lacks the funding incentives to follow the established framework, we aim to give an overview of the individual regions processes. The questions then become:

- “Do regions in Norway follow the theoretical framework for an entrepreneurial discovery process in the development of their smart specialisation strategies?”
- “How varied are the Norwegian regions in their approaches to the entrepreneurial discovery process?”

4. Methodology

4.1. Research method

4.1.1. Comparative case study

In chapter 2 the reader has been presented with current literature meant to aid in understanding our research question and discuss it against the theoretical framework for how an EDP should proceed which has been provided in section 2.3 above. The cases introduced should be understood as an extension of an already established knowledge base on the subject. We will therefore employ a deductive approach to the entrepreneurial discovery process studied in each case study region. The core of the research material incorporated are strategy documents documenting the regions preparations and planned execution of the RIS3 process, depending on the regions current status and progression. Albeit a conclusion on the effectiveness of the strategy implementation can't be drawn, this paper limits its scope to whether or not the respective Norwegian regions plan to, or

so far, adhere to the theoretical framework encompassing the entrepreneurial discovery process. Underlying reports used by the regions policy makers as part of the evidence-based practices (for example SWOT, regional profiling and other analyses ordered through third party entrepreneurial actors) provided valuable sources of information to better evaluate the knowledge base, activities and stakeholders included towards the selection of priority areas.

As the goal of the paper was to establish how the case study regions in Norway conform to, or diverge from, the theoretical framework and literature on the entrepreneurial discovery process, a set of factors were focused on and extracted from the strategy documents and associated material describing the process in the respective regions. The three factors are designed to operationalize the papers research question and are grounded in both the theoretical literature, and other such evaluations undertaken of regional EDP in different locations, they are:

- Did the regions strive towards achieving broad participation from stakeholders and what were their subsequent roles during the process?
- What instruments were used to engage with stakeholders during the entrepreneurial discovery process and when?
- How did the region facilitate an entrepreneurial discovery process? (in particular, what importance was given to the role of bottom-up approaches, managing governance related issues and aligning with the guidelines provided by the European commission)

4.1.2. Case selection

The paper introduces three regions in Norway for its case study (figure 1): Nordland, Vestland and Rogaland. The regions were selected based on a number of criteria. Firstly, all of the case study regions have completed their strategy documents or are in the process of reviewing published program plans involving priority areas and future implementation of their strategies. Secondly, Vestland and Rogaland were chosen based on their urban features and similarities in population. Nordland had similar characteristics in terms of geography (coast line region and considerable natural resources), but had distinct differences making Nordland an interesting case study region,

mainly by it being the first county to have implemented the entrepreneurial discovery process as part of the RIS3 framework, as well being a less densely populated rural region.

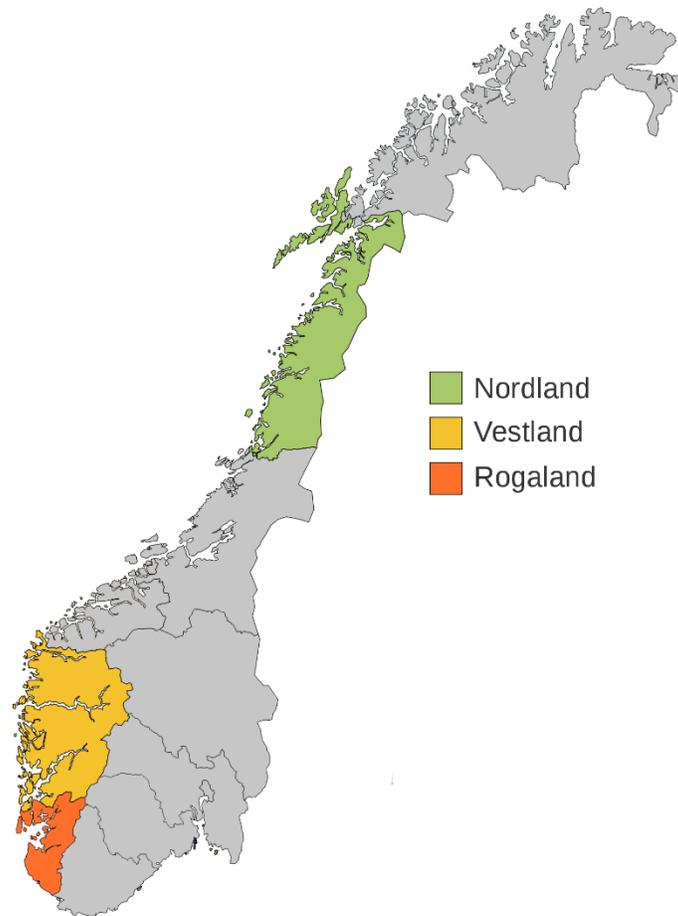


Figure 1: “Map of the chosen regions”

5. Case study

5.1. Nordland

Nordland was introduced to smart specialisation when attending a EU Smart specialisation peer-review workshop, where regions could present their smart specialisation strategies and get feedback from scientists and experts (Finne, Mariussen, & Løvland, 2020). This kickstarted the first RIS3 design step for the region, and was a catalyst for their continued international

coordination and collaboration, with regions such as Lapland in Finland (Mäenpää & Teräs, 2018). Nordland was the first Norwegian region to implement the strategic method, and has been practicing smart specialisation since 2014 (Finne et al., 2020), and while the region never states that it wants to conduct an entrepreneurial discovery process, they still laid the groundwork for the process to happen naturally.

In terms of regional stakeholder participating in the RIS3 process, the roles seem to be quite set, with the 2nd helix (governmental stakeholders) taking on the role of policy makers and facilitators (Mariussen, Knudsen, Gjertsen, Løvland, & Lindeløv, 2013). The 3rd helix (industry), is made up of a large gathering of mostly SME firms (Nordland Fylkeskommune, 2014), as well as the 1st helix stakeholders (research and education) including high schools. The 4th helix (civil society), though mentioned as a potentially beneficial resource, is not included as an engaged stakeholder in the strategy documents. A control groups was established to anchor and validate the input and decisions from stakeholders throughout the process (Nordland Fylkeskommune, 2014). The group consisted of representatives from influential public research institutions from the 1st helix.

During the first and second RIS3 design steps, when gathering knowledge for the entrepreneurial discovery process and ensuring participation from stakeholders, the region utilized questionnaires and focus group interviews with stakeholders from the first three helixes. The knowledge gathered from these activities was then used to create the smart specialisation strategy, which was further influenced and co-created in parallel with Lapland so as to generate comparable data and promote transnational learning (Nordland Fylkeskommune, 2014), leading into the fourth step of setting their regional priority settings, where they decided to focus on seafood, industry and experience-based tourism (Nordland Fylkeskommune, 2014). During the fifth design step, Nordland created a common knowledge base and a forum for innovation within the region, ensuring a high level of participation, knowledge sharing and communication between the different stakeholders, and continuous innovation (Nordland Fylkeskommune, 2014). The ecosystem consists of digital communication platforms, incubators, enterprise garden programs (næringshager) used to facilitate networking, innovation and priority oriented growth. Nordland is also using a VRI (virkemiddel for regional innovasjon) support program as a financial support system for entrepreneurs and small businesses doing innovation, rather than only focusing on entrepreneurs and start-ups coming out of the incubators. The region has already presented and verified its RIS3

strategy in the peer-reviewed meetings in relation to the RIS3 platform set up by the European Commission (Mäenpää & Teräs, 2018), which constitutes the sixth design step. During this time they've managed, through the use of the entrepreneurial discovery process, to reconfigure technology from the oil industry to fish farming. SINTEF concludes that Nordland has had an immensely successful innovation strategy, and is being internationally recognized as a success story and stands as an example for regions who still have a way to go (Finne et al., 2020).

The region has had great success when implementing and managing cluster- and network participation within the different sectors (Finne et al., 2020). Sector-specific research environments have also been established and placed in contact with SME firms, leading to a raise in competence of the employees within the sector. This was supported through government funding of new educational offers. There's also been an initiative taken to share and copy the activities that worked to other locations within the county (Finne et al., 2020).

5.2. Vestland

Vestland as a county was formed in 2020 by merging Hordaland county and Sogn og Fjordane (Vestland Fylkeskommune, 2020). While the ongoing work towards Vestlands Regional plan for innovation and business development 2020-2024 (hereinafter RPIB) is based on previously decided regional subplans and ongoing projects for the region, Smart Specialisation as tool for priority setting and implementation is now the methodology applied by the region in the RPIB 2020-2024 (Vestland Fylkeskommune, 2020).

The basic industries driving regional growth in Vestland is oil and gas, marine and maritime, tourism and financial and business related services (Flatval, Bjøru, & Røtnes, 2018). These were also the largest sectors in an export-intensive county, with exports accounting for 34% of value creation in the region (Statistisk Sentralbyrå, 2021). Identified regional strengths include a coastline strategically positioned for all industries benefiting directly or indirectly from maritime or marine activities, world leading clusters and cluster organizations, and highly competent educational institutions (EY, 2020). The currently identified priority areas included in the preliminary program plan is carbon capture and storage, hydrogen and battery driven transport,

wind- and ocean power, renewable energy, fjord and mountain (fish farming, agriculture and tourism) as well as digital infrastructure (data storage and e-health).

Vestland involves a large group of organizations and agencies from the 1st and 2nd helix stakeholders (research & academia and government, with 11 in total). These are grouped together to form the administrative steering group, taking on the role of policy makers, and is tasked with aiding the county councilor. The 4th helix actor (Civil society) was not able to participate until the priority settings were introduced through public hearings, with the first happening during the formulation of the program plan, being the first draft and recommendation for priority areas. The second hearing will be during the completion of the regional plan itself, which is based on the knowledge, feedback and work previously done on identifying priority areas, challenges and organization of program activities (Vestland Fylkeskommune, 2020). The 3rd helix stakeholders (industry) in Vestland are comprised of mainly SMEs and several large clusters with many of these being part of the Norwegian Innovation Clusters (NIC). Vestland explicitly states that engaging and maintaining strong collaborations with the SMEs, cluster organisations and trade organisations in the region is a key aspect in the knowledge creating activities during the planned work groups for each thematic priority area, thus having them take on the role as entrepreneurial agents (Vestland Fylkeskommune, 2020).

The county is currently in the process of finalizing the regions program plan. The program plan describes the main goals Vestland wants to achieve with the regional plan, what themes and topics should be prioritized, how to ensure collaboration and participation, as well as how to organize the work. The initial work on the program plan is done by the regional policy makers, namely the county councilor, and the other 1st and 2nd helix actors from the Steering Group (Vestland Fylkeskommune, 2020).

Used as a basis for choosing priority areas is knowledge gathered from the public research institutions, strengthened by analyses commissioned and outsourced to third party agencies and private consultancy firms (PWC, EY, Deloitte). It was stated that the policy makers had directed their attention towards a few areas of interest to make the process more targeted and impactful. The six priority areas proposed in the perspective report Vestland (EY, 2020) was used as part of that early knowledge base. Ernst & Young, the consultancy firm tasked with the creation of the

report used interviews with local SMEs and clusters but moved over to group dialogues and focus groups with educational institutions, public research institutions and investors to complete their rapport on behalf of Vestland county (EY, 2020; Vestland Fylkeskommune, 2020). International peer-reviews and work groups were not performed as part of their instruments for assessing the abovementioned elements pertaining to the first RIS3 step (analysis of regional context and potential for innovation).

Two open hearings are scheduled during the formation of the plan, the first concerning feedback on (1) overall goals for the program plan, (2) choice of priority areas and topics, (3) contents surrounding the proposed topics and on (4) organization and collaboration. The second hearing is the final forum before the plan is finalized. The county councilor is responsible for the creation of working groups with internal and external resources, freely choosing participants from all helix stakeholders as he sees fit. The working groups are created within each priority area, and will have the following tasks:

- *Construct or procure knowledge on the current situation, general direction of the sector and markets, and challenges of their individual priority areas.*
- *Put forth strategies and goals for the regional activity roadmap.*
- *Supply the policy makers with concrete activities as part of the action plan.*

Due to the situation with the coronavirus, the work groups have been instructed to try to use digital platforms for communications such as video conferences and digital meetings with stakeholders when feasible.

5.3. Rogaland

Rogaland county decided upon the implementation of the smart specialisation strategy in December 2019, starting the analysis of regional context and potential for innovation early 2020.

Rogaland bases its regional innovation strategy on the regional development plan, EUs guide to smart specialisation, as well as the UNs sustainable development goals (Rogaland

Fylkeskommune, 2020a). The region has set up four priorities for smart specialisation, namely “clean energy & maritime future”, “Food”, “tourism and experiences”, and “smart society”.

In their strategy documents they emphasize the importance of including the different regional stakeholders, and as such conducted an open planning process, available even to the public. In doing so they aimed to foster cooperation between the different stakeholders (Rogaland Fylkeskommune, 2020b). In the process they’ve managed to include stakeholders from public sector, private sector, research and educational institutions, clusters, investors, single entrepreneurs and regular citizens, thereby including stakeholders from all helixes (Rogaland Fylkeskommune, 2020b). The region is still early in the process, and as such, the roles of all the individual stakeholders aren’t fully set, and their responsibilities are still somewhat vague.

The 2nd helix stakeholder (government) aims to be a coordinator and driving force of the process (Rogaland Fylkeskommune, 2020b), but in certain areas they also plan on being an active participator, thus taking on a larger role in some subregions (Rogaland Fylkeskommune, 2020b). 3rd helix stakeholders (Industry) are quite active in the process and have been participating heavily in workshops throughout the planning process.

When setting the priorities for the region Rogaland held 9 workshops, with a total of 177 participants from all previously mentioned stakeholder (Rogaland Fylkeskommune, 2020b). These workshops were based on research done by NORCE and the University of Stavanger, giving an overview of the regional characteristics (Rogaland Fylkeskommune, 2020b). However, they saw little participation from the 1st helix stakeholders (research and academia) and specialized businesses in the workshops themselves (Rogaland Fylkeskommune, 2020b). The region will however be continuously relying on academic research throughout the remainder of the process (Rogaland Fylkeskommune, 2020b). The region also created a co-writing strategy document, open to all stakeholders, where they could share their input for the strategy. Based on the inputs gathered, they decided upon the four priorities discussed above.

Two of the open workshops were held during the co-writing period to include potential stakeholders that wanted a physical arena to share insights, knowledge and opinions. It’s also stated that this is a fluid strategy, which could be subject to change if needed. Lastly they collectively decided upon the role of the governmental stakeholders, which should primarily be

that of a policy maker. In the region's strategy document they also emphasize that the early inclusion, even as early as priority setting, is also meant as a way to communicate the priorities early, educate the stakeholders on smart specialisation, and stimulate collective ownership of the strategy, and cooperation between the helix stakeholders (Rogaland Fylkeskommune, 2020b).

Due to differences in the sub-regional priorities, Rogaland has made plans on implementing specialized activities individual for each priority and location. These activities range from the creation of networks and involving clusters, establishing education in fields related to the priority areas, creating a mobility infrastructure such as roads and meeting places accessible by all stakeholders, and ensuring availability of financial resources (Rogaland Fylkeskommune, 2020b). In priority areas with related industries, such as food and tourism, they also aim to create synergies, establishing stronger cooperation and co-creation between the fields (Rogaland Fylkeskommune, 2020b).

6. Discussion

Since the early days of RIS3 and EDP as a tool for regional renewal and growth, the concept of broad participation from all four helix stakeholders has stood its ground as the enabling force driving a regions EDP. Contrary to this, as experienced and reported by regions in EU member states, this is rarely the case, with the civil society either missing in its entirety, or receiving marginal attention from regional government as facilitators of the process. Out of the three case study regions inspected, only Rogaland integrated this actor fully from the start, with Vestland and Nordland opting for limited interaction with civil society through two public hearings as dictated by national regulations, therefore this should not be mistaken as an active effort to increase inclusion by the regions. Interesting to note however is Vestlands, for the time being, lack of direct engagement with industry, the 3rd helix, through participatory models, with the county getting this mainly through outsourced processes by agencies and consultancy firms. While it adheres to Forays later notions that broad participation is less important before and during priority settings than previously postulated, it does introduces potential issues in terms of setting the stage for stronger stakeholder interaction, continuous engagement and co-creation when transitioning to the fifth RIS3 step of creating and planning coherent policy mixes, transformational activities and

projects. It is to be expected that early inclusion will give rise to increased ownership of future projects, continuous stakeholder engagement, and shared vision for the remaining two regions. The other side of the argument pertains to the direct effects on EDP as a consequence of this exclusion, as discussed in established literature on expected 4th helix contributions, with several sources citing minimal applicability for regions despite achieving ideal participation, or as Guzzo, Gianelle & Marinelli so elegantly put it; “*In more developed regions, civil society groups do not have any influence at all on the decision-making process*” (Guzzo et al., 2018, p.21). Being in consonance with Forays later revisions in 2019, it could be a good example of “policy running ahead of theory”. Though more of an enabling component than anything else, their choice of broad priority areas allows for a large selection of stakeholders across different sectors and moreover could prove a catalyst and means for the emergence of new domains and opportunities, combating potential lock-in from materializing in the future.

Perhaps unsurprisingly, all case study regions have, or will, embrace thematic work groups as a participatory tool when the RIS3 policy formation enters the steps of identifying transformational activities and initiating pilot projects, but intriguingly Rogaland and Nordland go further to address central elements in EDP in their engagement strategies. Rogalands co-writing document and Nordlands platform for collaboration and knowledge sharing between any interested stakeholder paints an impression of regions embracing *collaborative leadership* and *platform-based co-design* on multiple fronts, supplementing the more universal practiced participatory EDP tool, namely work groups. Both are seen as comprehensive EDP elements and instruments to bring about the bottom-up characteristics of an RIS3 process as well as the leveraging of individual intelligence towards an envisioned digital collective intelligence platform for decision makers.

Table 3: “overview of comparison”

Regions	Early stakeholder inclusion	Planned stakeholder inclusion	Broad priority settings	Follows the RIS3 design steps	EDP oriented Planned activities	Collaborative leadership
Nordland	3/4 Helix	3/4 Helix	X	X	X	X
Rogaland	4/4 Helix	4/4 Helix	X	X	X	X
Vestland	2/4 Helix	3/4 Helix	X	X	X	X ^[1]

X^[1]: (Doing collaborative leadership, but not on the same level as the other regions)

All of the chosen regions do include all the overarching components needed for an entrepreneurial discovery process, and as such follow the theoretical framework. They have different approaches to the process, which leans into the theory of wicked problems forcing regions to adjust the strategy to better fit their situation, and solidifies the concept that one size certainly doesn't fit all. Even though Vestland is currently lacking in their inclusion, we can see in their strategy that they plan for a more inclusive process later on. Nordland is maintaining international collaboration with EU member states who does receive funding, and as such is drawing inspiration from users of the established framework. On the other hand, since Norway holds no financial incentives to maintain the framework, they could have easily chosen to discard the parts that doesn't work. Rogaland, while still early in their process, is doing everything according to the theoretical framework.

7. Conclusion

The paper kicked off with an introduction into regional innovation systems and smart specialisation, establishing the relevance of the subject within today's regional development situation. This was followed by a review of the established literature on the entrepreneurial discovery process, and its overarching components. The literature review emphasized the need for priority settings, as well as broad stakeholder engagement and activities which support the co-creation of new knowledge within these prioritized areas. The paper aimed to find out if Norwegian regions who apply the smart specialisation strategies follow this established literature, even with no financial incentives to do so, and the findings in the comparable case study shows they do.

The literature on the entrepreneurial discovery process is still a work in progress, and prone to change based on regional best practice, and thus often subject to the individual regions understanding of the concept. The results in this paper, showing that even regions without the possibility of funding still subscribe to the framework, lends credibility to the applicability of the current literature. While Nordland is the frontrunner, already having done peer-reviewed smart specialisation and EDP for years, Rogalands activities could label them as a "poster boy", due to their adherence to literature. Vestland matches the theory the least when it comes to the three regions, but is still within the scopes of EDP literature, even though they seem to be a victim of "policy running ahead of theory". Even with the many differences in execution, owing to the

entrepreneurial discovery process as a wicked problem, requiring individualized solutions, the fact that the case study regions still show a desire to follow the EC guidelines and underlying principles, act as a testimony to the approach of the entrepreneurial discovery process presented in the literature.

The Norwegian regions strategies for EDP can adequately be described as a three-headed troll, with each head being different from the other, yet nonetheless finding themselves attached to the same body of principles and jointly displaying the many faces of the Norwegian entrepreneurial discovery process.

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