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SHORT ARTICLE



Regional state innovation in peripheral regions: enabling Lapland's green policies

Diana Morales ^a and Laura Sariego-Kluge ^b

ABSTRACT

How do sparsely populated regions innovate in green policies? What enables or limits such innovation? The green policy literature often focuses on core regions, while territorial innovation models have long ignored regional state innovation. In this article we examine the drivers of public sector innovation in green policies in peripheral regions, often considered unequipped. The data come from the case study of Finnish Lapland's Smart Specialisation Strategy in relation to promoting a forest-based bioeconomy. In a context where climate change has become a major global challenge, and sustainable development an additional responsibility for local and regional governments, this article contributes to understanding the rationales for innovation in green policies from a regional perspective. Drawing from institutional economic geography, we argue that top-down approaches (Smart Specialisation) combined with scale and place-specificity (personal connections, environmental fragility, political will and natural resources endowments) play an important role in driving the governments of sparsely populated regions to innovate when translating and implementing green policies.

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INTRODUCTION

The accelerating pace of socio-technical changes and the climate crisis are making public sector innovation (PSI) particularly relevant, because it is part of the toolset for public bodies to be more prepared to achieve technological diversification. Regional governments are increasingly taking upon greater responsibilities to deliver local, regional and sustainable development, and their role in promoting green growth is often highlighted (e.g., Martin, 2020). However, some research demonstrates the uneven capacities of regional governments to perform flexibly and innovatively and to address the challenges of sustainability and governance (e.g., Healy &

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Morgan, 2012). In this article, we look at the institutional drivers and place specificities influencing PSI to deliver green policies in sparsely populated regions, offering empirical evidence of a research area that is often overlooked (Sotarauta & Mustikkamäki, 2015; Sotarauta & Suvinen, 2019).

Through a case study that delves into Finnish Lapland's Smart Specialisation Strategy, which includes the forest-based bioeconomy as a key priority area (also one of the most relevant green policies in the region), this article addresses the question of what enables and limits PSI for green policies in sparsely populated regions. Using qualitative data that include interviews, participant observation and the analysis of secondary data, and drawing from the theoretical contributions of institutional economic geography, we argue that regional innovation policies (Smart Specialisation), combined with place-specificity (existing culture of collaboration, political will, environmental fragility, established industrial development and power imbalances), play an important role in driving regions' governments to innovate when translating and implementing green policies. This article proposes a novel approach by combining green policies and PSI; brings an empirical contribution that highlights factors found in previous research, such as institutional capacity and institutional thickness; and adds particular factors related to the local and regional context.

The remainder of the paper is structured as follows. The next section begins by explaining PSI and its relation to Smart Specialisation, institutional capacity and institutional thickness. The following section outlines the methodology and case study, and the subsequent section explains the drivers of PSI analysed through the lenses of institutional thickness and place specificities. Conclusions are given in the final section.

PUBLIC SECTOR INNOVATION IN SMART SPECIALISATION FOR THE BIOECONOMY

PSI is regularly defined as 'an idea, practice, or object [emerging from a public organization] that is perceived as new by an individual or other unit of adoption' (De Vries et al., 2016, p. 152). Hence, it can refer to a result of such idea, practice or object, but also to an aspect of institutional capacity or processes of policy design and learning. We understand PSI as the capacity and flexibility of the public sector to experiment and fail, to learn and change course, and to receive and act on feedback (Morgan, 2016). In relation to green policies, it is expected that the regional governments find new forms of collaboration and action, making place leadership crucial to integrate and coordinate incumbent actors (Sotarauta & Suvinen, 2019). In this sense, PSI plays a significant role in designing and delivering regional development and green policies, and certainly regional innovation policies such as Smart Specialisation Strategy (S3), which dominates regional economic development and innovation policies in Europe (Pugh, 2018). Often, S3 strategies are used to promote green growth and bio-economies (Gianelle et al., 2020; Grundel & Dahlström, 2016), that is, combining regional innovation policies with the technological modernization of regional industries to replace fossil fuels with renewable biomass.

Smart Specialisation is a centrally derived agenda (European Union) designed to capitalize on place specificities and avoid the one-size-fits-all approach. It emphasizes the 'design of better processes for search and self-discovery' (Kotnik & Petrin, 2017, p. 88), based on the regions' existing characteristics, actors and embedded industries (McCann & Ortega-Argilés, 2013). S3 advocates for a regional approach to the industrial policy (Kotnik & Petrin, 2017), indicating that regional policy-making is crucial for a successful implementation (Foray, 2015). Given the unevenness of institutional capacities, Foray (2015) expresses concern for sparsely populated regions, due to their 'lack of entrepreneurial capacities and the weakness of administrative capacities ... [that can] make this process uncertain and almost impossible' (Foray, 2015, cited in Morgan & Marques, 2019, p. 184). It is claimed that these regions suffer from an innovation paradox, a contradiction between their need to innovate and their lower capacity to drive

innovation processes. However, the potential lack of institutional capacities may be offset by certain characteristics of the sparsely populated region reflecting institutional thickness, such as collaboration culture and a collective agenda (Gianelle et al., 2019).

Institutional thickness emerged to explain local economic embeddedness for innovation in a global context (Amin & Thrift, 1994) through four factors: a *strong organizational presence*, which includes the number and diversity of organizations representing the range of actors and sectors with interest in the region. These can include universities, firms, unions and government bodies. A second factor is the *high levels of interactions*, which involves formal and informal cooperation and knowledge exchanges ‘often embedded in place specific rules, norms and conventions’ (Zukauskaite et al., 2017, p. 327). The third factor, *structure of domination*, refers to patterns of coalitions resulting in collective representations of sectional and individual interests, the power relations between organizations, their scales of influence, and how balanced is the distribution of power (Zukauskaite et al., 2017). The fourth factor, *common agenda*, refers to a notion of mutual awareness that the organizations and actors with interests in the region all share and get involved. A common agenda mobilizes regional actors and receives support from other actors at other levels (Amin & Thrift, 1994; Zukauskaite et al., 2017). This framework is helpful to unravel how PSI influences regional economic development in different ways. For instance, high levels of interaction may allow governments to identify and empower capable regional actors and workout the conditions needed for entrepreneurs to discover opportunities to invest and nurture (Gianelle et al., 2019; Kotnik & Petrin, 2017). Or, by analysing the structure of domination, governments can identify smaller economic actors that have potential but lower collective action capacities to influence the S3 agenda.

METHODOLOGY AND CASE STUDY OVERVIEW

This is a case study research using qualitative data from interviews, participant observation and secondary data. It includes nine semi-structured interviews with representatives of the Lapland regional council, private organizations participating in the bioeconomy and S3, research centres, universities and entrepreneurs. The interviews were conducted *in situ* during March–April 2019, and complemented with conversations and follow-up research dissemination pieces (Morales, 2020a, 2020b). The questions were directed to understand the rationale, operation, challenges and opportunities of Lapland’s current green policy within S3, such as:

- How was the process of designing and implementing S3?
- What is the meaning of a forest-based bioeconomy in Lapland?
- What were the challenges and advantages of Lapland’s demographic and contextual conditions for policy-making.
- How did the S3 strategy changed over time?

Participant observation took place during meetings and conferences with practitioners who shared knowledge about the implementation of the bioeconomy in European regions. The analysis was complemented with the study of secondary data, including websites and policy reports from different scales (EU, national policies, research organizations, national and regional public and private research centres).

The focus is Finnish Lapland’s regional council innovation experiences in implementing a forest-based bioeconomy through its Smart Specialisation strategy (Arctic Smartness). Lapland is the northernmost region in Finland, with approximately 180,000 inhabitants and 9.1 million ha (Figure 1). It is the least densely populated region in Europe (1.8 inhabitants/km²). Lapland is predominantly a rural region that faces challenges of depopulation and, especially in the north-east, low accessibility by road and train, high unemployment and low productivity

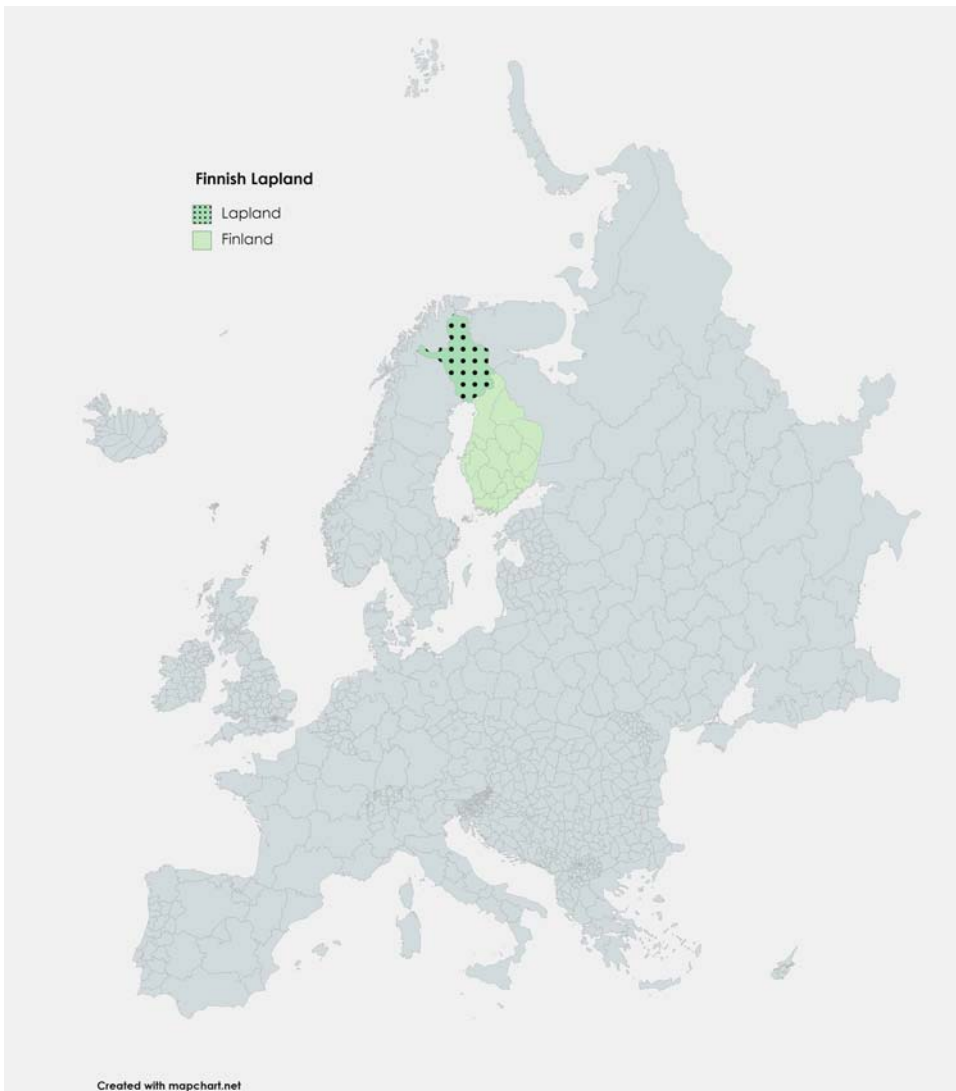


Figure 1. Case study location in Lapland, Finland.

when compared with the rest of the country (European Commission, 2019). Lapland is a sparsely populated region highly dependent on the steel, forestry and tourism industries, has strong industrial path dependencies, and a regional council keen to promote sustainable rural development by combining green policies with innovation and economic growth.

Lapland's green policy and Smart Specialisation

Forestry is a strong economic sector in Lapland, representing a 12% of the regional gross domestic product (GDP). There are two pulp mills, two paper mills, four sawmills, over 100 small-sized enterprises dedicated to timber and two mega-biorefineries investment plans in process. The largest, a bio-product mill to be located in Kemi (south-west), is projected to have €1.5 billion investment and to become the largest wood-processing unit in the northern hemisphere (Lapin AMK, 2019). Lapland has 53% forestland, of which 27% are areas for

conservation and the rest for forestry (*Lapland Business*, n.d.). Almost half of the available forest is owned by Metsähallitus, a state-owned enterprise that manages protected areas and wood supplies for the country's forest industry.

Lapland's green policy promotes a circular bioeconomy based on forest biomass. The European Commission's (EC) 2012 Bioeconomy Strategy, updated in 2018, is downscaled to the national Finnish Bioeconomy strategy and the regional Arctic Smartness strategy. As defined by the EC, the bioeconomy encompasses all sectors and systems that rely on biological resources, including activities of primary production (e.g., agriculture and forestry), and the industrial sectors that use biological resources to process food, energy or that develop biotechnology (European Commission, 2018). With such a wide definition, Lapland has narrowed its bioeconomy strategy to the use of forest biomass to replace fossil fuels through innovation, entrepreneurship and its citizens' participation, to search for alternative uses for forestland, and to promote local production and consumption. It is a forest-based bioeconomy heavily supported by the region's strong economic and cultural attachment to forests, 'a type of [economic activity] we have been practicing in Lapland forever' (interview 1) (see the Appendix for interview sources). The strategy targets the forestry industry, small-scale food production, energy, and rural micro- and small and medium-sized enterprises (SMEs) linked to the tourist, forestry or steel sectors. The aim is to boost an industrial modernization that cares for the fragile arctic environment (e.g., finding alternative uses for waste and wood residuals), and to expand the economic exploitation of the forests beyond large forestry industries, hence breaking the pattern of declining economies in rural communities (Arctic Smartness, 2015). Lapland has shown an increase in research and innovation investment, mostly directed to bioeconomy and circular economy developments (Grunfelder et al., 2017).

Lapland was one of the first European regions to implement the S3, starting with preparative meetings in 2012. The inclusion of a forest-based bioeconomy as a key priority area was a rather straightforward decision based on the prevalence of the forest industry and related activities (Morales & Dahlström, 2021). Previous knowledge of regional assets and capabilities led the region to focus on 'establishing innovation environments to support the smart clusters' (Mäenpää & Teräs, 2018, p. 13). Smart clusters is the model used to organize Arctic Smartness. This model came up during the implementation phase (Mäenpää & Teräs, 2018), and was validated when the region was selected as a Cluster Model Region in the EU in 2014. '[E]xcellent timing to utilize and market Lapland's cluster cooperation internationally' (Interview 2).

Arctic Smartness is led by the regional council and, in terms of the forest-based bioeconomy, is co-managed with Proagria and Digipolis. Proagria is a national cooperative organization integrated by rural communities and entrepreneurs, it has regional branches and is concerned with rural development. Digipolis is a technological centre and a cluster organization located in the Kemi-Tornio subregion (south-west, frontier with northern Sweden). It gathers more than 50 firms related to the forestry industry. The regional council also collaborates with regional universities and research centres who are partners of Arctic Smartness and targets large forestry and steel companies, micro- and SMEs, rural entrepreneurs and the municipalities.

From the five prioritized economic areas (smart clusters), two are related to the forest-based bioeconomy. The Arctic Industry and Circular Economy cluster, co-managed with Digipolis, and the Arctic Smart Rural Communities cluster, managed with Proagria. The first cluster targets the larger economic sectors and aims to promote circular solutions, efficient use of natural resources and industrial symbiosis. The second cluster is preoccupied with municipalities and entrepreneurs' well-being and income, promotes local food production and the decentralization of energy systems. Accordingly, the industrial cluster promotes industrial modernization, efficiency and symbiosis; the rural cluster works to create and enhance local markets for rural products. The regional council is responsible to communicate, coordinate and fund (or fundraise for) the programmes. While there is a clear division in the S3 formal structure, the constant

collaborations between the clusters (and the research centres and universities) and the overlapping of multiple roles in the same person (because of the low population) make such structural differentiations rather blurry in practice. Interviewees were not only aware but also content with this situation and have come to call it 'a convener's model', where anyone from one or another cluster can represent each other in international settings such as the EU, and certainly for the interviews that support this research.

PSI in Arctic Smartness and the forest-based bioeconomy

To answer our research question, that is, to understand the drivers of PSI in green policies in peripheral regions, this section discusses the findings by first explaining how PSI materializes in Lapland's forest-based bioeconomy policy, and second, by delving into the drivers of such innovations in relation to their institutional capacities and place specificities.

PSI in Lapland

One of the most tangible ways to assess PSI is by examining the type of strategies promoted by the regional council. Hence, this refers to *PSI through the public sector* (Morgan, 2016). Lapland's strategies are innovative or not depending on the type of actors involved and by how adapted they are to the context of the place (place-based policies). Some strategies addressing the region's main economic actors in the forest-based bioeconomy are not necessarily innovative. These include, for example, providing innovation grants, facilitating and serving as a knowledge-exchange platform for the industry, researchers and other regions, acting as a public policy communicator and coordinator. Indeed, these instruments reproduce former innovation policies focused on funding, networking and consultations, but not in improving local capacities (Moodysson et al., 2017). Nevertheless, when it comes to working with the municipalities, entrepreneurs and rural micro- and SMEs (for Lapland, most of these are micro-unipersonal or family enterprises) some of the strategies are closely grounded to the rural inhabitants' needs and contexts, which are very specific for the Arctic region, and hence, more innovative.

Understanding that most of the rural households and small firms use the largest part of their income to afford food and energy, the rural cluster focuses on these two areas. There is an extensive communication and awareness programme that includes individual visits, a newspaper, working closely with the municipalities and entrepreneurs, and producing written and graphic pieces to explain what the forest-based bioeconomy means for small-scale dairy production or berry picking, for example. There are also great efforts at creating local markets for local products by way of public procurement, restaurants, hotels, and through competitions and challenges arranged using social media. In close collaboration with local universities, research programmes at the master's level are increasingly taking forest bioeconomy investigations, and other bachelor's or technical education programmes are starting to include the forest-based bioeconomy as part of their curricula. Investing in entrepreneurship and innovation in research centres, universities, and micro- and SMEs is a key aspect of Lapland's S3.

Evidence suggests that PSI is limited when it comes to working with larger economic actors, as the strategies were built upon pre-existing agglomerations and depend on considerable private economic investments. However, PSI opportunities are enhanced when working with entrepreneurs, micro- and SMEs, where pressures for green production are often combined with scarce financial and human resources, which the regional council can partly provide.

Institutional thickness and PSI

Examining the type of strategies used by the regional council does not give the full picture, neither fully explains the role of institutional capacity in PSI. Finland frequently ranks higher in institutional capacity-related indicators, such as capacity-building, governance, corruption

control, rule of law, amongst others. Even if such capacity is not evenly distributed amongst Finnish regions, and the Finnish north often ranks behind the country average (European Commission, 2019), regional institutions have shown flexibility and learning capacity, which facilitates the implementation of S3 (Morgan, 2016). Lapland's PSI in relation to institutional capacity can be assessed by looking at the evidence of policy learning (Moodysson et al., 2017), in this case materialized through permanent adjustments to Arctic Smartness, and through the search for new forms of collaboration and strategic coordination with private actors beyond Proagria and Digipolis, public actors from other regions in and outside Finland, aiming to improve Arctic Smartness and the forest-based bioeconomy policies, and raise funds.

In relation to the drivers of PSI, we find that they reflect elements of institutional thickness presented below, whereby some of these factors can be intertwined:

- Strong organizational presence: apart from having a recognized high institutional capacity, there is also a regional government willing to adapt policy agendas pushed from upper levels (S3 and the bioeconomy). This is not only convenient in terms of providing alternatives for funding, but also very closely related to Lapland's socio-economic conditions and path dependencies, hence 'easier' to translate. The bioeconomy is based on using – an abundant – forest biomass, and requires technological development, hence connected to S3. Furthermore, strategic collaborations to implement the forest-based bioeconomy strategy were made with already existing and well-established organizations, which in turn have strong pre-existing relationships with the firms and populations the public policy targets. This implies that there is a certain level of trust already established that allows creating and sustaining innovative strategies.
- High levels of interaction: Lapland's demographic conditions and existing culture of collaboration have enabled collaborations and exchanges between different actors, whether they belong to the public and/or private sector, facilitating agreements towards a common agenda. Also, international recognition through the EU cluster management became an important motivation to improve the policy and make of its practitioners a spokesperson of S3 in the EU. The internationalization of Lapland is a key element of the S3 strategy. This can be evidenced in the interviews, the international recognition given by the cluster management excellence programme and its selection as a model region for the cluster initiative in 2014, and the fact that most publications and reports are translated into English.
- Common agenda: besides the institutional presence and the high levels of interactions, there is a strong sense of ownership of the policy, which helps to set the ground to build common agendas and to implement the strategy. The way the S3 policy is designed, around the forest-based bioeconomy, appeals to some contextual conditions that are deemed crucial in Lapland's economy and everyday life, such as: the prevalent forest industry and the need to modernize it to bring economic growth, the forests as sources of income, leisure and a stronghold for Lapland's identity, and the acknowledgment of the forest-based bioeconomy as a means of production and consumption that reflects already established practices.
- Structure of domination: regional economies and transformations are tangled between national, subnational and supranational institutions and organizations that often involve large corporations looking for places for investment, creating a need for regional actors to formulate attractive strategies and incentives (MacKinnon et al., 2009). When it comes to the regional council and the powerful forestry industry, over which Lapland is largely economically dependent, the regional council is placed on the weak end of the relationship. The council does not have the financial resources, nor is its role either, to invest in modernizing and greening forestry. It is part of its role and concern, however, to ensure

Table 1. How factors of institutional thickness of the Lapland region have driven public sector innovation (PSI) in green policy.

	Factors of institutional thickness			
	Strong organizational presence	High levels of interactions	Common agenda	Structure of domination
Public policy aligned with local conditions (enabler)	×		×	
Lapland's demographic conditions (enabler)		×	×	
Strategic collaborations between existing and well-established organizations (enabler)	×	×	×	
International recognition (European Union – EU) (enabler)		×		
Strong sense of ownership of the policy (enabler)		×	×	
Power imbalances linked to path dependencies and large corporate actors (limiting) and smaller economic actors (enabler)				×

Source: Authors.

that the region is attractive for private investment in both developing forestry-related infrastructure and modernizing the existing one to make it more sustainable. The regional council shifts towards the stronger end of the relationship, however, when relating with less influential economic actors, municipalities and individuals.

In relation to the common agenda and the structure of domination, it is worth noting that these factors are deeply related to the actors' spatial conditions, signalling that these may play a greater role in peripheral regions. A spatial dimension of institutional thickness emerges as key for it considers multi-scalar interactions between organizations and institutions defined by proximity, personal connections and overlapping of roles, facilitating agreements about common agendas. The power leverage that is lost for PSI in green policies with larger, more consolidated players in the industry, is gained by the leverage gained to work with lower tier actors by identifying and supporting potential opportunities to encourage and challenges to address. [Table 1](#) summarizes Lapland's specificities in relation to institutional thickness.

It could be argued that the points raised here might apply to any type of policy and not only to green policies. However, place-specific conditions such as the coincidence between top-down policies and regional socio-economic context, and the rationales to engage in the bioeconomy (abundance of natural resources, strong forestry industry presence and the promotion of regional economic growth) are directly related to the need to green the regional industry. The environmental fragility of Lapland, its challenges with depopulation and the longstanding dependence of its inhabitants on the forests, including economic but more importantly cultural attachment, call for urgently addressing environmental damage and sustainability. This becomes especially relevant since the greater selling point of Lapland tourist industry is nature, ecotourism, and snow and winter-related activities. This is a specific approach to PSI for green policies, built

over regional place specificities and needs (environmental sustainability and depopulation). The regional council innovates as they include rural inhabitants and entrepreneurs as active actors of the regional entrepreneurial class based on forest related production they are trying to boost.

The results of the Arctic Smartness innovative approaches in promoting green policies, however, are not yet ready for judgement. The main limitation of this study is the impossibility to measure the sustainability of the policies applied to determine whether they have a real capacity to address issues of climate change, and not engaging with the critiques to the bioeconomy for having a narrow approach to sustainability while overlooking social factors (Grundel & Dahlström, 2016; Mustalahti, 2018), as these aspects are outside the article's scope.

CONCLUSIONS

To answer the question of what enables and limits PSI for green policies in sparsely populated regions, this case demonstrated the role played by institutional drivers and place specificities, such as institutional thickness, that is, power relations, informal institutions of trust and collaboration; and how closely related these are to PSI. This involved seeking to strengthen their capacities by promoting collaborations between different local, regional, national and supranational actors, and efforts toward collective actions for sustainable growth in the region.

The paper shows that PSI progresses institutional capacities such as receiving and acting on feedback, experimenting and learning. This last aspect is particularly important, since the case shows that PSI is reflected in the flexibility and learning capacities of institutions and public actors. In Lapland, PSI in green policies is driven by an innovation policy aligned with local conditions, strategic collaborations between existing and well-established organizations, international recognition (EU), and a strong sense of ownership of the policy. Thus, a centrally drafted policy acting as a guiding framework for local and regional efforts (the S3 strategy) allowed for new forms of multi-scalar activities, aligned collaboration and actions to emerge through the leadership of a regional public sector agent (e.g., the regional council). These findings are relevant to design and assess PSI in regional green policies, because local specificities and institutions determine how innovative the public sector can be.

Moreover, this paper highlights the drivers of PSI in green policies in sparsely populated regions, often regarded as disadvantaged, contributing to the literature on regional innovation systems and institutional economic geography. PSI is acknowledged as crucial to drive green policies directed to transform local industries in sparsely populated regions, especially since green products and services are not sufficiently backed up by market dynamics. Evidence shows that the S3 programme served to combine Lapland's political will and place specificities with tools to put in motion innovative strategies to realize a common agenda.

In sum, this case contributes to the literature (i.e., Morgan & Marques, 2019) by showing how place-based policies manifest in sparsely populated regions; and thus it offers insights for overcoming S3 challenges in regional green policy in peripheral regions. This includes acknowledging particular environmental needs and sustainability challenges, enhancing the existing collaborative culture to build common agendas, creating strategic collaborations with established organizations, and balancing out uneven power relations by creating innovative strategies for weaker yet crucial actors.

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APPENDIX A: INTERVIEWS

Interview 1: Advisors at Proagria, Rovaniemi (Finland), 2019.

Interview 2: Regional government and industrial cluster representative, Rovaniemi (Finland), 2019.