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Local smart specialisation:

An approach to increasing preparedness in rural communities with resource-based industries in the Northern Periphery

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Abstract

A common challenge for Northern communities is how to retain local benefit from resource-based industries. This study assesses the process of developing a local smart specialisation strategy in two municipalities, Storuman and Sodankylä, both located in the Northern Periphery. The assessment framework applied is based on the concept of 'strategic dimensions' (Healey, 2009), along with a qualitative set of process and outcome criteria (Innes and Booher, 1999).

Our assessment of the strategic process indicates that all dimensions required for strategic planning were represented within it, but that they were mostly responsive rather than transformative in character. When comparing results from process criteria and outcome criteria, the process criteria score significantly higher. The strategic process engaged social networks and involved local stakeholders in discussion and joint prioritisation.

According to the participating stakeholders, the local smart specialisation strategies in Storuman and Sodankylä enhanced local preparedness. However, a significant limitation was a lack of long-term human and financial resources to address challenges in relation both to resource-based industries and local territorial development.

Keywords: *smart specialisation, local development, northern periphery, territorial challenges*

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1. Introduction

It is the abundance of natural resources in the Northern Periphery which attracts multinational companies engaged in resource extraction. Local economies are often dominated by large-scale industries extracting natural resources, which in turn influences opportunities for local territorial development (European Commission, 2016). Besides the lack of economic diversification, communities in sparsely populated areas of the Northern Periphery also face declining populations, land-use challenges, and a lack of adequate access to public services (Jungsberg et al., 2018; Knoblock and Pettersson, 2010).

The challenges of economic diversification, demographic change and conflicting interests around land-use have not been properly addressed before in the context of local smart specialisation (LS3). LS3s are concerned with smart specialisation as a bottom-up approach to regional innovation, and they are a cornerstone of the European Union's endeavour to guarantee territorial development opportunities for all regions (Garcilazo et al., 2010; Gill, 2010; Rönkkö and Aarrevaara, 2017). Developing smart specialisation strategies (S3) is also a core part of the European Union's policy with regard to regional growth and prosperity (European Commission, 2018).

A local smart specialisation strategy differs from a regional one by working closely with the local authority (i.e. the municipality) in order to engage community stakeholders in building preparedness to deal with, for example, resource-based industries that benefit from the abundance of natural resources in their area (Copus et al., 2016; Teräs et al., 2018). Preparedness is highlighted as a priority in the European Union's Northern Periphery and Arctic Programme (European Commission 2016). In this context, preparedness is defined as the ability to plan for local development in a way that addresses territorial challenges and adopts a strategic approach to retaining benefits from resource-based industries operating in the area (ibid). Regions in the Northern Periphery are vast in size, with municipalities encompassing both coastal and inland settlements, as well as mountainous settlements near to mining activities. Some municipalities even cover the size of a whole European country, which makes the 'local' aspect even more important. Within a regional perspective, it is harder to reach the same level of in-depth territorial analysis and collaborative engagement as it is when the focus is on a local setting.

However, there is insufficient research that concentrates on examining the theoretical application of smart specialisation in a local context. There have been some studies focussing on local strategies for tourism development (Olsen et al., 2016; Sisneros-Kidd et al., 2019), as well as reviews and recommendations regarding benefit-sharing agreements in relation to natural resource extraction (Suutarinen, 2015; Tysiachniouk et al., 2018), environmental and legal perspectives (Tolvanen et al., 2019), and social licenses for mining, including impact assessments of resource-based industries (Arruda Gisele M., 2017; Stammer and Ivanova, 2016; Tarras-Wahlberg, 2014). However, this has not included research focusing specifically on local strategic responses to territorial

challenges. The objective of this paper is to fill that gap by examining how Storuman Municipality (in Northern Sweden) and Sodankylä Municipality (in Northern Finland) worked on their local smart specialisation strategies (LS3s). Strategic plans for resource-based industries exist on a national and regional level in both Sweden and Finland (Jokelainen et al., 2013; Nurmi, 2011; Österberg et al., 2016; Regeringskansliet, 2015), but not on a local or community-based level.

The LS3 process in each area, which lasted for three years, was funded by the EU Interreg Northern Periphery and Arctic Programme. However, when external funding ended, Storuman and Sodankylä ceased their activities. One critical question concerns whether this process created any real local preparedness in a long-term perspective. Studies indicate there has been an increase in the number of strategies produced (Albrechts, 2001; Gunder et al., 2018, p. 15; Healey, 2009). However, it is unclear whether any of these strategies has resulted in a substantial impact – other than in ensuring formal compliance from EU and national government funding bodies in order to attract more finance, or to meet regulatory requirements (Healey, 2009). The risk of strategic plans becoming merely a matter of complying with a set of regulations to attract funds, rather than producing any real impact, has provided a key motivation for studying the outcome of the three-year strategic planning processes carried out in Storuman and Sodankylä. The objective is to assess both the development process and outcome of a local smart specialisation strategy (LS3). In particular, it is about understanding how, and to what extent, the LS3 can:

- strengthen local preparedness to manage resource-based industries.
- meet core challenges related to demographic change, land use and local economic development in the Northern Periphery.

2. Territorial challenges and strategic planning in the Northern Periphery

Since the 1980s, strategic planning in rural and peripheral areas has been used to protect and utilise natural resources, to balance conflicting land-use demands, and to improve conditions for individuals and companies engaged in local economic development activities. The wide range of issues involved, along with the scarcity of resources, demands a strategic approach (Cigler et al., 1993). One challenge for many rural and peripheral localities is the separation that exists between what is called ‘the space of flows’ and ‘the space of place’ (Castells, 2007). ‘The space of flows’ links people, companies and authorities in different places through interactive web-based and mobile economic networks. In the ‘space of place’, local activities and human interaction are central. Along with globalisation, the space of place has, in several instances, become disconnected from the space of flows. This can lead to manifest tensions, for example when a large-scale resource-based industry extracts value from a place without any recognisable economic gain returning to the local community.

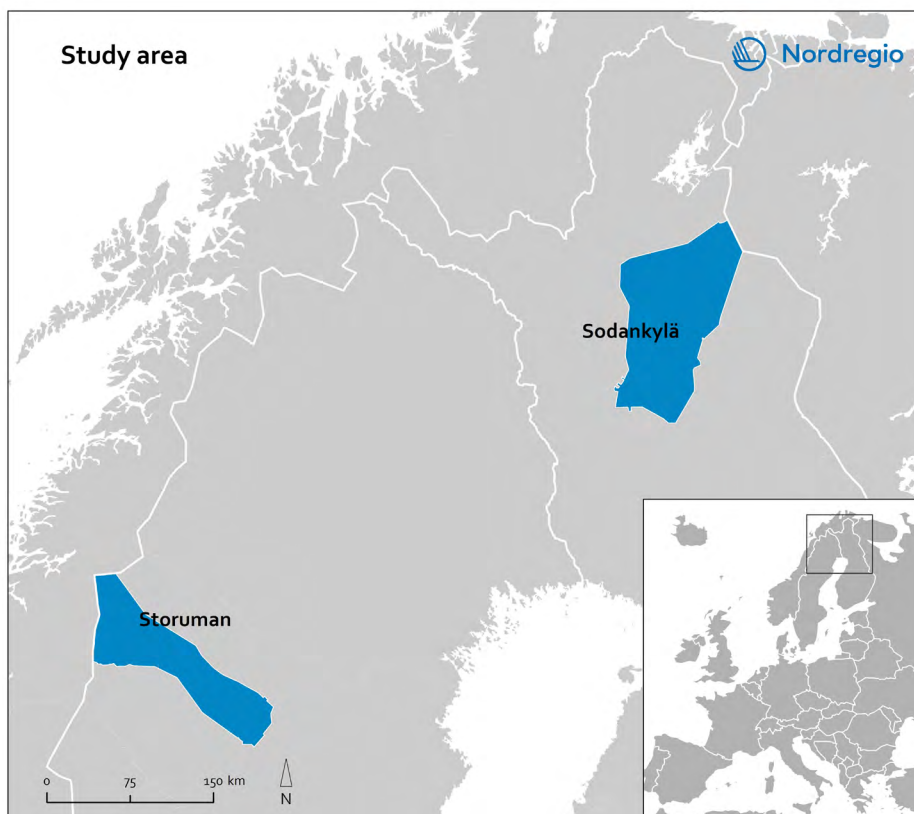
For rural and peripheral communities, development is dependent upon both endogenous (bottom-up) and exogenous (top-down) resources (Cheshire et al., 2015). This discovery has led to the development of the concept of neo-endogenous development, which combines local assets with external relationships and resources (Shucksmith and Brown, 2016). Effective external relationships with the public and private sectors can empower rural localities, decreasing the marginalisation of both rural and peripheral communities (Bock, 2016; Primdahl et al., 2018; Shucksmith and Brown, 2016).

Strategic planning must therefore deal with the ability of communities and regions to create neo-endogenous development by managing to operate within the space of flows, as well as through participating and cooperating in transnational (or even global) networks. This helps to ensure that the local community can profit from resources originating from the space of place (Castells, 2007). To manage these global changes and to include them in local planning, it has become common practice to launch a project tackling this specific issue, with the hope that prosperity can be created in rural and peripheral communities (Fred, 2018).

The word 'strategic' implies that certain decisions and actions are more important than others. A large part of 'the strategic process' involves making tough decisions. These are decisions about those actions which are most important for responding effectively to problems, challenges, aspirations, and diversity (Healey 2009). At the core of strategic planning is prioritisation, simply because it is impossible to do everything at once. In this paper, strategic planning is defined as the coordination of activities, practices and policies affecting spatial organisation in rural areas.

2.1 Study area

The study area consists of two municipalities – Storuman, in Sweden, and Sodankylä, in Finland (see Map 1). They are both located in the Northern Periphery and both face similar challenges concerning population change in recent decades – including the proportion of the population with higher educational experience, the gender ratio, and old-age dependency. This is the case in Storuman and Sodankylä, along with many of their neighbouring municipalities.



Map 1: Geographic location of Storuman Municipality in Sweden and Sodankylä Municipality in Finland.

2.2 Key indicators for Storuman and Sodankylä

Key demographic indicators for Storuman and Sodankylä (see Table 1) indicate that the two municipalities have experienced a decrease in population of 14.7 % and 14.9%, respectively, since 2001. Both municipalities are sparsely populated, with their dispersed populations living in villages or in the main town.

Employment rates are high, at 83.5% in Storuman and 74.6% in Sodankylä in 2018. Average disposable household income per annum was €28,456 in Storuman and €29,882 in Sodankylä in 2017. The gender ratio is skewed for Sodankylä, with 91 females per 100 males. For Storuman, on the other hand, it is slightly more balanced, with 94 women per 100 men.

Meanwhile, the old-age dependency ratio is 50% in Storuman and 43% in Sodankylä. This high old-age dependency ratio, along with a low proportion of the population possessing a higher education, is common among many of the municipalities in the Northern Periphery. That is a particular challenge which needs to be addressed when considering how to meet the needs of the local labour market. Future demographic development will therefore need to look at the question of how to achieve a balanced age profile, and also how to focus on becoming an attractive place to live and work – especially for young women. Both are necessary if the two municipalities are to achieve social sustainability.

Indicator	Definition	Storuman (SE)	Sodankylä (FI)
Total Population	Number of persons as of 31 st Dec 2018	5,912	8,444
Population density	Inhabitants per km ²	0.82	0.76
Population change 2001-2018	2018 as a % of 2001 (% change)	14.7% decrease	14.9% decrease
Employment	Registered employees 2018	83.5%	74.6%
Household income	(Disposable income one year, Euros, 2017)	28,456	29,882
Gender Ratio	Number of females per 100 males, 2018	94.2	90.9
Education equivalent MSc	Share of population with ISCED 5 or above, 2018	29.2%	23.8%
Old age dependency ratio 2018	Population aged 65 and more, as a proportion of the population aged 15-64 years	50%	43%

Table 1: Key socio-economic indicators for Storuman Municipality in Sweden and Sodankylä Municipality in Finland.

2.3 Storuman municipality

Storuman Municipality is located in Västerbotten county and covers an area of 8,234 km². This makes it one of the ten largest municipalities in Sweden. It is also among those with the lowest population density. There are eight hydroelectric power stations in Västerbotten, along with one windfarm, one working mine, and several other mining projects in the prospecting and remediation phase. In addition to large-scale, resource-based extractive industries, the main land use activities are agriculture, forestry, reindeer herding and fishing. The Sámi people also have a right to pasture, hunting and fishing in certain areas. While the western part of the municipality consists of mountainous landscape and mostly comprises small enterprises relying on tourism, the eastern part consists more of forests and agricultural landscape. Here companies are primarily involved in energy production, small scale engineering and the service sector. Forestry and the processing of forest products, as well as public services, is also important for the municipality.

2.4 Sodankylä Municipality

Sodankylä municipality is located in Finnish Lapland and covers a territory of 12,417 km², of which approximately 800 km² is water. The municipality has a population density of only 0.7 inhabitants per km². However, of the total municipal population of 8,000, approximately 5,000 live in the town Sodankylä. There are several mining projects in Sodankylä. Kevitsa Mine (nickel and copper) is operated by Boliden. It provides 400 jobs and is located 40 km north of the town. Pahtavaara Gold Mine is on standby at the moment. Finally, there is Sakatti, which has a copper-nickel-platinum deposit located under a Natura 2000 (a protected area within the EU). Approximately 35 employees work at Sakatti, and the mine is located 15 km north of Sodankylä. There are plans to expand this mine further, and to increase the number of

workers there. The military, science and research, the bio-economy (including agribusiness), tourism and reindeer herding all provide jobs in Sodankylä. The northern parts of the municipality belong to the Sámi homeland, and there are approximately 23,000 reindeer in this area.

2.5 Indigenous people in Sodankylä and Storuman

Sámi people live across the northern parts of Norway, Sweden and Finland, as well as the Kola Peninsula within the Murmansk Oblast, Russia. In the northern part of Sodankylä Municipality, the reindeer herding area is protected under section two of the Reindeer Husbandry Act. This act states that “land in this area may not be used in a manner which may significantly hinder reindeer herding” (Sodankylä Municipality, 2018). The official position of Sodankylä Municipality is that it takes note of what the law says about the Sámi homeland, and evaluates mining projects individually, utilising the corresponding perspectives of social, economic and environmental sustainability.

In the municipality of Storuman, the Sámi people’s right to land for reindeer herding is influenced by a system of parallel land use rights, through which forestry, mining activities and reindeer herding all occupy, and compete for, land allocation. However, it is difficult for either party to receive compensation in cases where there is a lack of access to land, and there are historically rooted tensions between using land for industrial activities and the needs of Sámi people for reindeer herding in the area (Storuman Municipality, 2018).

3. Framework: How to assess a strategic plan?

A strategic plan can be assessed by examining its different dimensions (see Figure 1). The strategic dimensions involved are interactive, rather than following a specific sequence. Each dimension represents important steps for implementing the strategic plan (Healey, 2009). Skilled practitioners know that strategic planning requires sensitivity to contingencies, rather than being a routine production that responds to external demands (Albrechts, 2006, 2001; Healey, 2009). Healey (2009) conceptualises the key difference as a responsive plan vis-à-vis a transformative strategic plan. While responsive strategy-making

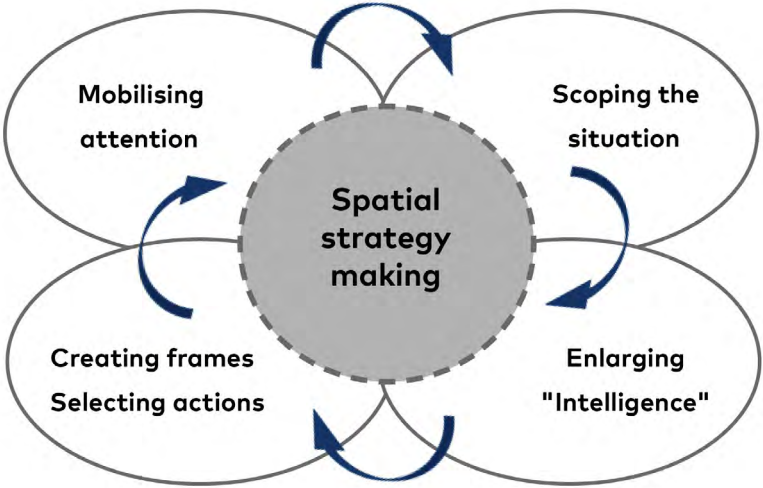


Figure 1: Dimensions of spatial strategy-making (Healey, 2009:442).

involves drawing on generalised approaches or accepted methodological protocols, a transformative strategy will build upon the specifics of local momentum (Healey, 2009). Each dimension of the plan can therefore have a transformative capacity, or else can be primarily responsive in character, or can combine the two features to some degree.

Mobilising attention is the dimension which focusses on communication about why and how strategic work should take place. It is important to raise motivation among different actors in order to get them involved. In responsive strategy-making, the focus is on aims, values, and directions; whereas transformative strategy-making requires flexibility in order to re-orientate attention towards those issues which could otherwise have been neglected.

The dimension known as scoping the situation focuses on the background to the strategy, namely what is at stake, and for whom. It is also focused on setting purposeful goals for the local area. In responsive strategy-making, this dimension identifies what goals the agency can achieve, whereas the transformative approach focusses on where the energy for change is, and the corresponding possibilities of building further coalitions to expand and develop this energy.

The next dimension, enlarging intelligence, brings fresh knowledge into the picture, in order to enrich strategy work and the resources available for it. In responsive strategy-making, this dimension summarises what is already known, while in transformative strategy-making it explores multiple knowledge sources, recasting agendas for particular problems, as well as potential actions and the stakeholders involved.

A final and key dimension is creating frames and selecting actions which are focused on making active priorities, with the purpose of generating the power needed to shape future direction. In responsive strategy-making, this part of the work involves finding a way to provide an expression of coherence for the benefit of other dimensions. For the purposes of transformative strategy-making, it articulates ideas on the basis of which specific issues can be prioritised for action.

All these dimensions are relevant when assessing the LS3s in Storuman and Sodankylä. However, to complement an assessment of strategic dimensions, this paper also brings in criteria for addressing both the process and outcome components of a strategic plan. What is involved in the process and outcome components is developed by Innes and Booher (1999), building on research in consensus-building, complexity science, and communicative rationality. There are, in total, seven process criteria and eight outcome criteria (Innes and Booher, 1999).

Figure 2 illustrates an interpretation of the connection between Healey's strategic dimensions and Innes and Booher's process and outcome criteria. The arrows illustrate the similarities between a criterion and a strategic dimension in terms of its content and focus. The process criteria focusing on 'shared purpose', and 'engage participants' resonate with activities in the strategic dimension for 'mobilising attention', because they focus on creating the kind of momentum

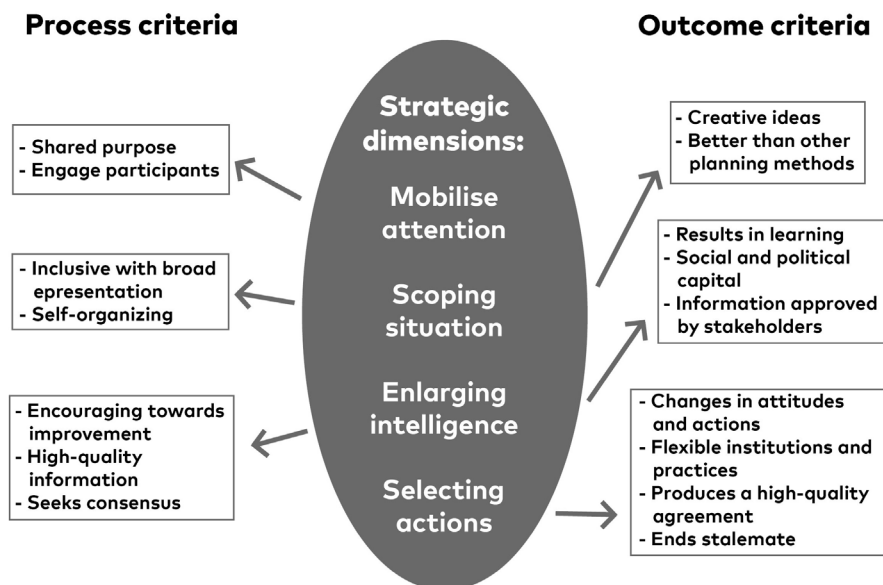


Figure 2: The author's interpretation of the connection between strategic dimensions (Healey), process criteria and outcome criteria (Innes and Booher).

which motivates people towards participation. The strategic dimension focussing on 'scoping the situation' corresponds with the process criteria for 'inclusive with broad representation' (with representatives of all relevant and significantly different interests) and 'self-organising', which allows 'participants to decide on ground rules, objectives and tasks'. This is because of the joint focus on representation and organisation (Innes and Booher, 1999). In terms of content, 'scoping the situation' is also connected to the outcome criteria for 'creative ideas' and 'better than other planning methods' – which means that the LS3 is measured according to whether it compares favourably in terms of a cost/benefit analysis.

Knowledge is a key part of strategy-making, and it is represented through the strategic dimension of 'enlarging intelligence'. There are three process criteria connected to this dimension. 'Encouraging towards improvement' means that the status quo is challenged; 'high-quality information' means incorporating good quality information of many types, and ensuring agreement over meaning. Finally, 'seeks consensus' focusses on exploring all issues and interests before finding and agreeing on the way forward (ibid).

The outcome criteria for 'enlarging intelligence' are focussed on knowledge-building. 'Results in learning' prioritises the need for learning to be happening even beyond the group. 'Social and political capital' emphasises the importance of creating a new shared understanding, and engendering trust in the process of collaboration. The criterion of 'information approved by stakeholders' brings us to the realisation that information needs to be approved, understood and accepted by stakeholders locally in order to be valid (ibid).

The final strategic dimension, 'selecting actions', is related to four outcome criteria. The first, 'changes in attitudes and actions', can be connected to new spinoff partnerships, along with new practices and/or new institutions. The second, 'flexible institutions and practices', entails understanding that institutional practices are connected to local networks, thereby permitting a joint response to change and conflict.

The third, 'produce high quality agreement', is oriented towards a way forward which actively induces change. The fourth, 'ends stalemate', is action-oriented, in terms of seeking to change a deeper-rooted conflict.

The strategic dimensions of 'scoping the situation' and 'enlarging intelligence' both relate to some process criteria and some outcome criteria. While these strategic dimensions provide a picture of both the important focus areas and the content of strategic planning, the criteria (divided into process and outcome) bring additional nuances to the two dimensions.

In this paper, both the criteria and the dimensions are used to assess the quality of LS3 activities carried out in Storuman and Sodankylä. A strategic plan is not only about producing an agreement. It is also an exercise in experimentation, learning, willingness to change, and consensus-building. Applying the process and outcome criteria together with the strategic dimensions for our assessment of LS3s in Storuman and Sodankylä also reflects and emphasises the fact that both process and outcome have value.

4. Materials and methods

'Materials' consists of those activities carried out during the LS3 process (Table 2). The table presents these activities organised as part of the six steps involved in carrying out the LS3. Different participants were involved for each activity. In the first step, 'assessing the current situation', the local project leader and research partners carried out a documentary analysis of existing strategies. Step two, 'opportunities, challenges, and a vision', engaged participants from the public, private and third sectors in bringing a variety of perspectives to bear on the most important priorities for local development. In step three, 'foresight analysis', researchers collaborated with a local project leader and community members in order to conduct an analysis of population projections and the potential impact of new mining projects. As part of step four, 'planning and monitoring', a survey was carried out so as to gather community members' perceptions about the local impact of extractive industries. For Geographic Information System (GIS) activities, it was municipal employees working with land-use planning who took part. In 'local benefit retention', it was entrepreneurs and small and medium enterprise (SME) representatives who participated in the development of priorities for the business community. For the final step, 'policy options', meetings and dialogues were organised with municipal management. In Sodankylä, the local steering committee reviewed results from those elements of the strategy process concerned with priorities and policy options.

The methods applied in relation to activities involved in the LS3 process included desktop studies, qualitative information, and quantitative data gathering. The qualitative component consisted of workshops with community members, semi-structured interviews, and informal conversations. The quantitative element involved processing population data and material from questionnaires answered by more than 400 people Storuman and Sodankylä.

LS3 step by step	Storuman		Sodankylä	
	Activities	Participants	Activities	Participants
Curent situation	Document analysis of existing strategies	Local project leader and researchers	Document analysis of existing strategies	Local project leader and researchers
Opportunities, challenges and a vision	Community workshop discussing opportunities, challenges, and a local vision	Approx. 20 participants incl. representatives from public, private and third sector, local people from associations etc.	Three community workshops discussing local impacts, and outline of mining programme	Approx. 30 participants representing, mining companies' local representatives, local people, local associations, local public sector etc.
Foresight analysis	Demographic analysis and forecast model for opening a new mine and qualitative interviews	Local project leader, community members and researchers	Demographic analysis and forecast model on impact of opening a new mine	Local project leader, local planners and researchers
Planning and monitoring	GIS analysis, Harava planning, questionnaire on social impacts	Local project leader, questionnaire with 217 community members	GIS analysis, Questionnaire on social impacts	Local project leader, 200 community members, researchers
Local benefit retention	Local Benefit Retention Analysis and stakeholder workshop	Local project leader, 16 representatives from private sector	Local Benefit Retention Analysis and stakeholder workshop	Local project leader, senior researcher and 10 entrepreneurs/ industry representatives, and 5 from municipal development projects
Policy options	Dialogue and 2 meetings on recommendations and implementation	Municipal management, local project leader	2 meetings concerning key findings and recommendations	REGINA Local Steering Committee, municipal management team, municipal board, municipal council

Table 2: Activities carried out through LS3 in Storuman and Sodankylä.

The authors participated in developing the workshop format, the questionnaires, the interview guides, and policy guidance. This guidance provided the foundation for collecting all the materials required. Participants in community workshops were carefully selected to represent the municipality in terms of age, gender and occupation. There was also an attempt to ensure that particular representative groups – such as community members, local school representatives, Non-Governmental Organisations (NGOs), indigenous people, business representatives, public employees, the unemployed and elderly people – were all included (Nordregio et al., 2017).

The information on ‘activities and participants’ in Table 2 is the primary material used to assess the LS3. In addition, two interviews were conducted with the two municipal managers, both before

and after the LS3 process. The focus of these interviews was on demographic challenges, stakeholder involvement, land-use planning, and managing the risks involved in new investments in resource-based industries. Altogether, the information from interviews and ‘activities and participants’ were used as to assess the strategic dimensions, the process and the outcome of the LS3. This approach to assessment builds on Healey’s four strategic dimensions, followed by Innes and Booher’s process and outcome criteria.

The focus of assessment is on the activities carried out and the participants joining in as part of the LS3. While the two supplementary interviews are of great value in understanding local perceptions, the activities analysis provides information about specific actions taken locally. With this combined approach, the LS3 can be assessed in terms of its local impact in increasing preparedness and can be measured by activities carried out as part of the six steps.

5. Results: LS3 in Storuman and Sodankylä

The LS3 was developed as part of a €1.2 million research project. The participants in the project were municipalities, regional authorities and research partners from Scotland, Norway, Greenland, Sweden and Finland. The researchers were specialists in the areas of regional development, land use, planning and demography.

5.1 Assessment of the strategic dimensions of LS3

Our assessment is based on the material presented in Table 2 – but in a more elaborated format, structured according to each strategic dimension.

Mobilising attention focusses on communication about why and how strategic work is carried out (Healey, 2009). In LS3, the ‘why?’ is about enhancing preparedness in dealing with local territorial challenges and resource-based industries. This ‘why?’ was established by the two municipalities deciding to participate in a project consortium and applying for funding from the Northern Periphery and Arctic Programme. The main reasons for applying set out by the two municipalities were that they had both been facing demographic challenges (with shrinking and ageing populations), as well as facing existing and potential land-use tensions between the mining industry, reindeer herding and outdoor recreation. The ‘how?’ is essentially framed by the six-step process in the LS3 (see Table 2). There has been a continuous process of sharing ‘why?’ and ‘how?’ questions as part of the municipalities’ communication to their citizens, via their websites.

In Sodankylä, communication was focussed on engaging stakeholders. They became involved through receiving an official invitation to participate in step two, ‘opportunities, challenges and a vision’, from the municipality. The project leader also followed up with personal phone calls, underlining the importance and benefits of participation to invited stakeholders. There were also articles in local newspapers, and cooperation with the municipality’s communications department. Factsheets, working papers and information about the activities in step four, the

social impact questionnaire, were shared on the municipal website.

In Storuman, their outreach activities were conducted through the local newspaper and via social media. The local questionnaire looking at the social impact of mining attracted a good deal of attention, in particular, with many comments being made about it on Facebook. A significant number of people were concerned that the municipality was using the survey to legitimise further mining projects. Many of those who expressed their views hoped that the municipality would listen to local people and recognise their concerns about opening new mines (Umander et al., 2017).

Both municipalities communicated about the aims, values and direction of their strategic work. They ran multiple outreach activities and were flexible in terms of their willingness to re-orient aspects of the process appropriately. One example comes from the period when the social impact questionnaire began gaining a considerable amount of attention in Storuman. In that context, the municipality made a real effort to reply to local concerns and to address them through their communications channels.

Despite those elements of flexibility in the interaction with the local population, and an orientation towards issues that could otherwise have been neglected, most of the activities involved in mobilising attention for Storuman and Sodankylä proved both responsive and transformative during the LS3 process. However, when the project ended, no specific resources were allocated to encouraging attention towards policy recommendations which should be a prioritised in future.

Scoping the situation focussed on the background to the strategy, and what is at stake, for whom (Healey, 2009). The activity in step one of the LS3 was to conduct a document analysis of existing strategies, in order to position their contribution in relation to the LS3 as a whole. Local project leaders collaborated with researchers in summarising local governance and planning practices, demographic situations and current trends, land-use patterns, and the structure of overall economic activity in both municipalities (Sodankylä Municipality, 2018; Storuman Municipality, 2018). The document analysis provided a thorough description of the current situation, ensuring that the LS3 process was coordinated with, and offered support to, existing strategies for both Storuman and Sodankylä.

The activity in step two was a community workshop involving approximately 20 participants from the public and private sectors, as well as from civil society. The focus of the workshop was on securing input into the LS3 strategy process by discussing opportunities, challenges, and local visions. After thorough discussion, participants voted on the three most important opportunities and challenges. The results are listed in Table 3.

The activities in steps one and two provided information for the strategic dimension of 'scoping the situation'. Input comprised a review of existing strategies and a community workshop to understand what is at stake, and for whom. All the opportunities and challenges agreed upon were used as input for the next steps. In Storuman, the most important

	Storuman Municipality	Sodankylä Municipality
Opportunities	<ul style="list-style-type: none"> - Use of natural resources - Training and education - Local cooperation 	<ul style="list-style-type: none"> - New jobs - More work for small businesses and service providers - Vocational education
Challenges	<ul style="list-style-type: none"> - Outmigration - Poor infrastructure - Lack of skills and competences 	<ul style="list-style-type: none"> - Environmental risks - Lack of information - Impact on reindeer herding - To attract people to move there

Table 3: Opportunities and challenges identified in Storuman and Sodankylä.

opportunities were seen to be utilising locally available natural resources better, developing local training and educational opportunities, and improving local cooperation among stakeholders across the municipality. The most important (multi-pronged) challenge identified was the fear that outmigration would lead to depopulation, poor infrastructure, and a lack of requisite skills and competences. For Sodankylä, the most important opportunities agreed upon were jobs for young people and newcomers, more work for small businesses and local service providers, and the development of vocational education services throughout the municipality. The most important challenges were various environmental risks, including the need to secure readily understandable information about the impact on significant water reserves (e.g. Kitinen River), the effect on reindeer herding and the meat produced from it, and how to attract people to the municipality. Following the community workshop, the energy for change (that is for achieving the agreed opportunities, and for mitigating the principal challenges) was mainly driven by the local project leader rather than by community members themselves. This implies that a transformational focus was not used to build the kind of coalitions which could expand and develop beyond the workshop itself.

Enlarging intelligence was about bringing in new knowledge through cooperation between the local project leaders, researchers, local people, and planners. Knowledge was generated in three focus areas. These corresponded to the three territorial challenges – demographic change, land-use planning, and local economic development.

Population decline has been a particular concern among stakeholders in both Storuman and Sodankylä (see Table 1 and Table 3). This provided the motivation for an analysis of future population projections, and the potential impact on population growth of establishing new resource-based industries in the area (Copus, 2017). That, in turn, led to a foresight analysis, focussing on demographic projections. The results indicated a decline in population towards 2040, and the potential impact on population growth of an ‘employment shock’ (in the form of a sharply increased demand for labour) if the establishment of new resource-based industries was limited in both municipalities (Jungsberg et al., 2018; Nordregio, 2018). Analysis indicated that a new mine would not, in itself, change a negative population trend. For that reason, it is therefore important to work on a variety of measures to address outmigration, too.

The **planning and monitoring** component of the LS3 focussed on approaches to resolving land-use tensions brought about by industrial development. It included a questionnaire for the public about the social impact of resource-based industries (Suopajärvi and Kantola, 2019; Weber et al., 2017). The results of this survey showed that resource-based industries are widely accepted in Sodankylä (85%), while in Storuman, fewer than one-third (30%) of residents favoured such activities (Suopajärvi et al., 2019). In Sodankylä, the majority of respondents said that resource-based industries had improved local services, as well as education, work, and career opportunities for local people (Suopajärvi and Kuisma, 2017). In Storuman, on the other hand, many local residents were concerned about environmental degradation – such as losing the opportunity to hunt, fish and pick berries. A previous environmental disaster involving a mine in Svärträsk/Blaiken might have contributed towards a greater reluctance about, or negative attitude towards, resource-based industries (Umander et al., 2017). In addition to questionnaires, local planners in Storuman and Sodankylä worked with the GIS (Geographic Information System). The planners also tested Harava¹, an online map-based survey tool allowing local residents to voice their opinions about different areas within the municipality. This tool makes it possible for planners to engage with local stakeholders earlier in the planning process, rather than through traditional public consultation at a later point. Despite an interest in testing Harava and GIS, regular procedures for land-use planning were not changed either in Storuman or in Sodankylä in the end. Since it is an institutional decision to alter such practices, it would have required municipal managers to agree upon this change in procedure.

The knowledge gathered to address territorial challenges concerned with diversification of the local economy was derived from a Local Benefit Retention Analysis. This is a set of guidelines supporting local business development and entrepreneurship (University of Highlands and Islands and Nordregio, 2018). In Storuman, representatives from small and medium-sized enterprises (SMEs), entrepreneurs and private sector employees worked with the guidelines toolbox. Through this work they identified the need for more investment in both the eastern Storuman and western Tärnaby areas. In the Storuman area, analysis indicated that the municipality's experience with large-scale projects (and increasing global demand for raw materials) meant that the recommended investment priority should be in large-scale raw material extraction. In the Tärnaby area, analysis showed that investment was needed in transport links and infrastructure, with a principal focus on the ferry-line between Vasa and Umeå and the airport in Mo I Rana (Storuman Municipality, 2018).

In Sodankylä, results from the Local Benefit Retention Analysis concentrated on the importance of developing the municipality's attractiveness as a brand, on furthering local cooperation, and on harvesting synergies between local companies and the mining industry. Private sector representatives emphasised that the strengths of the area included infrastructure, and the competence and know-how arising from local

Arctic conditions. Finally, particular emphasis was given to the importance of ensuring that the actors involved in local development are active and collaborative (Sodankylä Municipality, 2018).

For the strategic dimension of Enlarging Intelligence, responsive strategy-making mostly summarises what is already known, whereas transformative strategy-making explores multiple knowledge sources to recast agendas around particular problems. In Storuman and Sodankylä, the Enlarging Intelligence components were mostly transformative in character. The activities in steps three, four and five analysed multiple knowledge sources and brought new insights into play in order to mitigate the three territorial challenges of demographic change, land-use planning, and local economic development.

Creating frames and selecting actions was, and is, about the mobilisation and enrichment of resources which can shape future directions and actions (Healey, 2009). In Sodankylä, the Municipal Board decided to use the mining programme, which was developed as part of the LS3, to guide future direction. The mining programme is a policy instrument which sets guidelines and goals for local development in relation to specific mining projects. It is the result of a stakeholder process enacted jointly by the municipality, mining companies and other stakeholders, with the aim of establishing common objectives. The Local Steering Committee was constantly involved in helping to guide this work, and it provided immediate feedback on results from the workshops. The guidance was also supported by an ongoing dialogue between the municipal management team (department heads) and the municipal board. The mining programme now serves as a foundational instrument for negotiating future agreements on mining activities (Sodankylä Municipality, 2018).

In Storuman, the local project leader communicated regularly with municipal management, and facilitated several meetings as part of step six, policy options. The final recommendations guiding decisions about future direction emphasised the importance of education – both in terms of local upskilling, but also in relation to attracting qualified labour and investment in the direction of new, resource-based industrial projects. Also mentioned as being important was regular use of a participatory land-use planning tool to improve citizens' and other local actors' opportunities to influence the planning process. Work on ensuring adequate preparation can now proceed, with the focus on the municipal organisation as a means of achieving an understanding of the different interests involved in resource-based industries, and how to navigate these differences both within the organisation and among citizens living in the municipality (Storuman Municipality, 2018).

When comparing Sodankylä and Storuman, there is a clear difference between their respective approaches to shaping future direction. In Sodankylä, the municipal board decided, at an early stage in the LS3, to develop a mining programme to support local preparedness. This mining programme continued to guide cooperation between private companies, the local public sector and civil society after the LS3 process had ended. In Storuman, on the other hand, the management team

found it adequate simply to follow the step-by-step process and to create frames and priorities as part of step six, policy options. However, the recommendations developed in the LS3 were not included in Storuman Municipality's strategic plan for 2020-2023 (Storumans Kommun, 2019). The lack of coherence and transferrable actions is the result of this non-inclusion of the LS3 process in the strategic plan. It indicates a weak transformative dimension in creating frames, selecting actions for Storuman. By contrast, Sodankylä is now in a stronger position in making its LS3 transformative, because its mining programme continues to guide collaboration between the municipality, mining companies, and civil society.

5.2 Assessment of the LS3 process in Storuman and Sodankylä

This section focusses on the quality of the activities carried out as part of the LS3 process. Table 4 summarises the results for Storuman and Sodankylä in relation to each process criteria, based on Innes and Booher's framework for evaluating collaborative planning (Innes and Booher, 1999).

Process Criteria	Storuman	Sodankylä
'Includes representatives of all relevant and significantly different interests'	Yes	Yes
'Is driven by a purpose and task that is real, practical, and shared by the group'	Yes	Yes
'Is self-organising, allowing participants to decide on ground rules, objectives, tasks, working groups, and discussion topics'	Partly	Partly
'Engages participants, keeping them at the table, interested, and learning through in-depth discussion, drama, humour, and informal interaction'	Yes	Yes
'Encourages challenges to the status quo and fosters creative thinking'	Partly	Partly
'Incorporates high-quality information of many types and assures agreement on its meaning'	Yes	Yes
'Seeks consensus only after discussions have fully explored the issues and interests and significant effort has been made to find creative responses to differences'	Yes	Yes

Table 4: Achievements from the local smart specialisation strategies (LS3) process in Storuman and Sodankylä.

Storuman and Sodankylä achieved similar results for all the process criteria. Four criteria were fulfilled, and two were partially fulfilled. The criteria involving 'relevant representatives', 'engage the participants', and 'seek consensus based on fully explored issues and interests' are connected to the careful selection of, and interaction with, stakeholders joining the process. Participation was broad, and all relevant stakeholders were represented in the discussions. Together with research partners, the local project leaders carefully incorporated all perspectives within the scope of the stakeholder dialogue, as part of the second LS3 step, 'opportunities and challenges'. In this dialogue, conflicting interests expressed by representatives of the Sámi people and the mining industry were raised. In Storuman, three Sámi representatives joined the discussion, but two of them only participated for part of the day (Storuman

Municipality, 2018). In Sodankylä, the Sámi Parliament (Sámediggi), the self-governing body of indigenous Sámi people in Finland, was invited to join the process. They sent a letter saying that they were not prepared to accept mining in their area. The rights of the Sámi people were recognised, and there was a commitment from the municipality to following what the legislation in Finland and Sweden says about Sámi land. During the discussions in Storuman and Sodankylä, several comments were made about the Sámi people's special rights regarding land use (Sodankylä Municipality, 2018; Storuman Municipality, 2018).

For the criteria about 'having strategy process driven by a purpose' and to 'incorporate high-quality information of many types', the connection is with the strategic dimension of the 'why?' question, along with local territorial challenges faced by Storuman and Sodankylä. In the first LS3 step, a review of existing local and regional strategies was carried out and complemented by an overview of key indicators for the two municipalities (Sodankylä Municipality, 2018; Storuman Municipality, 2018). Material from this review was also used for presentations at community workshops. Throughout these community workshops, everyone involved was encouraged to provide input. All proposals were then discussed – before a vote took place to identify the issues that needed to be prioritised.

The two criteria of 'self-organising, allowing participants to decide on ground rules, objectives, tasks, working groups, and discussion topics' and 'encourage challenges to the status quo and fosters creative thinking' were achieved to some extent. Elements of self-organisation existed, but it was, for the most part, representatives from the local authorities and research partners who assumed leadership within the strategy process. On the topic of challenging the status quo, there have been discussions about how to change certain conditions concerning outmigration, land-use tensions, and the need for improving the matching of skills to the needs of the local labour market. There was a strong emphasis on the importance of communicating clearly that the municipality can provide an attractive community within which young families can settle. This helps to mitigate outmigration, as well as supporting processes for recruiting and retaining skilled labour.

5.3 Assessment of the outcome in Storuman and Sodankylä

Significant outcomes from the process may also include new collaborations and fresh networks (Emerson et al., 2012; Innes and Booher, 1999). In this respect, one important outcome of LS3 activities was enhanced dialogue between representatives from different sectors, including mining companies, the local authorities, and community representatives. The outcome of the LS3 is summarised in Table 5, based on the framework for collaborative planning (ibid).

Neither Storuman nor Sodankylä fulfilled the outcome criterion 'ends stalemate situation', which refers to existing land-use tensions. Both municipalities were interested in the question of how to balance economic activities for resource-based industries alongside reindeer herding activities, which implies a willingness to continue working with

a situation in stalemate. However, it needs to be recognised that this involves a long-term, historical conflict between industrial activities and reindeer herding, and it is beyond reasonable expectation that such deeply-rooted contrapositions can be resolved within a three-year strategic process.

Outcome criteria	Storuman	Sodankylä
'Ends stalemate situation'	No	No
'Compares favourably with other planning methods in terms of costs and benefits'	N/A	Partly
'Produces creative ideas'	Yes	Yes
'Results in learning and change in and beyond the group'	Yes	Yes
'Creates social and political capital'	Partly	Partly
'Produces information that stakeholders understand and accept'	Yes	Yes
'Sets in motion a cascade of changes in attitudes, behaviours and actions, spinoff partnerships, and new practices or institutions'	Partly	Partly
'Results in institutions and practices that are flexible and networked, permitting the community to be more creatively responsive to change and conflict'	Yes	Yes

Table 5: Achievements from local smart specialisation strategies (LS3) outcomes in Storuman and Sodankylä.

Concerning the LS3 process being 'favourable to other planning methods in terms of cost and benefit', this was not applicable in Storuman, since there have not been any similar strategic planning methods focussed on retaining the benefits of resource-based industries with which to compare. It could be relevant to integrate some of the findings and conclusions from the LS3 process into the municipal strategic plan (Storumans Kommun, 2019). However, the 2020-2023 local strategic plan for Storuman mentions neither the LS3 nor any other ongoing projects in the municipality (Storumans Kommun, 2019). It may take some time for local planners and politicians to decide on a system for transferring knowledge from local projects into the strategic plan.

In Sodankylä, an extended series of community workshops established a collaborative process which resulted in the mining programme. Both the inclusive stakeholder approach and collaboration with the municipal board made this process favourable in comparison with other planning methods. However, it also demanded significant time and resources.

The results in both Storuman and Sodankylä certainly represent 'the production of creative ideas'. Among the creative ideas developed within the process was the notion of four typologies for those migrating into rural communities. These comprise: 1) the ideal recruit, who will stay forever; 2) the active inward migrant who also has attachments to other areas, and does not stay; 3) the inward migrant with a high level of skill, who nevertheless stays only temporarily for work; and 4) the inward migrant who stays, but prefers a life of solitude and does not engage in local development activities (Vuin et al., 2018). These typologies are

useful when considering, in detail, how to attract people to mitigate out-migration from rural communities.

For the criterion to do with ‘production of information that stakeholders understand and accept’, it was evident that new knowledge served as a key foundation. In total, 24 publications were produced during and beyond the LS3 process. These include factsheets, policy briefs, working papers, reports, and peer-reviewed academic articles. Four videos were produced to communicate strategic insights from the process on social media in a readily understandable format. At various community and project meetings, stakeholders both expressed their interest in, and affirmed the value of, the information which had been produced for them.

Regarding ‘institutions and practices that are flexible and networked, permitting the community to be more creative and responsive to change and conflict’, one outcome in both Storuman and Sodankylä was organising community meetings and other stakeholder interactions. This resulted in a strategic awareness about the need to plan for inclusive local development. In terms of ‘learning and change in and beyond the group’, what proved important was inspiration from other countries, and further networking with other (foreign) municipalities in the Northern Periphery. This criterion was also fulfilled through the interest shown by neighbouring municipalities. Several people from neighbouring areas attended the final conference, which was hosted in Sodankylä. One municipality, Jokkmokk, in northern Sweden, also organised a seminar to learn from the LS3 process, and to increase its own awareness and capacity-building capability (Jokkmokk Kommun, 2019).

The two criteria ‘creates social and political capital’ and ‘sets in motion a cascade of changes in attitudes, behaviours and actions, spinoff partnerships, and new practices or institutions’ were partly achieved. The interaction between the local project leader, municipal staff and other local stakeholders created valuable new networks. These networks enabled the creation of both social and political capital. However, because the process of building social and political capital was not continued, this can only be seen as a partial outcome. It also explains why a change in attitudes was only partly achieved. Nurturing the new contacts that have been established, and continuing to interact through new networks – both these are crucial for achieving long-term impact and for changing attitudes.

6. Discussion: Did the LS3 improve local preparedness?

Assessment of the strategic dimensions of the LS3, as well as the process and outcome criteria, demonstrated a high level of engagement from the local authorities, the mining industry and local groups, both in Storuman and in Sodankylä. However, did these activities improve local preparedness? That is a rather more involved question.

6.1 Preparedness for whom?

Despite a broad range of community members being invited, not everyone could participate – even though the meeting was announced well in advance. For example, the representation of Sámi people was limited in Storuman, and in Sodankylä representation was based on written correspondence with the Sámi Parliament. The LS3 process itself underlines the importance of broad representation, to take all interests into account properly. Although it is beyond the scope of the LS3 process to end a historic stalemate between the Sámi people and the authorities, more effort could have been made to achieve better representation and participation, in order to attempt to build greater consensus for future projects.

In Sodankylä, some local inhabitants see mining projects as opportunities for growth, jobs, tax and revenue, while others see them as a threat to other natural resource-based operations, such as fishing, tourism, reindeer herding, and so on. An important aspect of building preparedness, therefore, is to create local consensus in relation to the development of a resource industry. The mining programme developed through the LS3 addresses the issues involved by facilitating dialogue and consensus around safeguarding the recreational use of nature, reconciling mining with other livelihoods, and mitigating potentially negative environmental impacts (Suopajarvi et al., 2017).

In Storuman, the LS3 process was acknowledged by the municipal management team as helpful in weighing different industries against one another, and in supporting decision-making about priorities for business development. The aim of the municipality in this area is to be able effectively to balance activities for reindeer herding, windfarms, tourism, and resource-based industries. The LS3 was perceived as improving local preparedness by highlighting key opportunities and challenges, by providing a picture of the demographic impact of establishing new resource-based industries, and by working on improving local attractiveness. Overall, the LS3 therefore helped the municipal management and other key personnel to think pro-actively about what kind of society they wished to create, rather than just being reactive – that is, merely dealing with problems as they occurred.

While the main recommendations from the LS3 were not included in Storuman Municipality's strategic plan for 2020-2023, the mining programme in Sodankylä continues to guide collaboration between the municipality, mining companies and civil society. This indicates that the transformative effect was higher in Sodankylä than in Storuman. For both municipalities, community meetings and the production of new knowledge had transformative impacts throughout the LS3 process. Extended contact with international mining companies operating in the area supported a stronger link between those actors engaged in 'the space of flows' and those actors engaged in 'the space of place'. In addition to improving dialogue with mining companies, interaction and collaboration between stakeholders from the private sector (including entrepreneurs and SMEs), the public authorities and civil society was also improved.

6.2 A place-based process and outcome?

In the qualitative evaluation, both Storuman and Sodankylä achieved lower scores for outcome criteria than for process criteria. Even so, the LS3 process was still considered valuable, according to key stakeholders, because it supported the generation of new knowledge and drew more attention to practical ways of increasing local preparedness for community-based environmental management.

In a rural development perspective, the LS3 process builds on the neo-endogenous approach by bringing in external funding to activate local stakeholders and to stimulate local economic benefit retention. However, the combination of both internal resources (the local authorities) and external resources (programme funding and international partners) is also an important prerequisite for understanding the potential long-term effects of the LS3 process. Notably, when the external funding ended, work on enhancing preparedness slowed down in Sodankylä, and finished in Storuman. So they remain vulnerable, as a result both of limited human capacity and a lack of committed competence for attracting new external resources – even though a number of competences have been enhanced by working with the three territorial challenges (demographic change, land-use conflicts, and local economic benefits). Because the LS3 was developed over a limited period, many activities ceased when project funding ended. This included the employment of the two project managers, who were responsible for carrying out each of the steps in the LS3 process, as well as for coordinating activities, mediating input from the researchers, and finalising the reporting.

7. Conclusions

The objective of this paper has been to assess both the process and the outcome of local smart specialisation strategies (LS3s) in two municipalities in the Northern Periphery, Storuman (Sweden) and Sodankylä (Finland). It has also aimed to understand how, and to what extent, LS3s can enhance local preparedness in meeting core challenges related to demographic change, land-use conflicts, and local economic development. All strategic dimensions were present in the LS3 process. Overall, they were more responsive than transformative in character. Even so, the assessment showed positive impacts from transformative traits throughout the process. The community workshops ensured a bottom-up approach by bringing in perspectives from different stakeholder groups with regard to the opportunities and challenges of local territorial development.

A key outcome has been increased knowledge about population change, including the creation of scenarios for demographic development in the process of establishing new resource-based industries, as well as input on the perceived impact of such industries in the area, and Local Benefit-Retention Analysis. These LS3 activities supported local preparedness in both municipalities. In Sodankylä, the LS3 resulted in a mining programme for 2018-2021. This created preparedness through dialogue between local stakeholders about the future development of resource-based industries in the area. In Storuman, the LS3 contributed

knowledge about demographic challenges, land-use planning and local benefit retention. All this led to better knowledge-based preparedness among both planners and the municipality's management group.

However, shortcomings were also noted. These were primarily related to a lack of continuity, and correspondingly to limited potential for making a long-term impact. Despite active stakeholder interaction and collaboration, implementation of several of the resulting ideas was never realised, due to lack of human and financial resources being committed to them. The ability to continue strategic work depends upon the priorities of local, regional and national decision-makers. One way to improve LS3s, therefore, would be to incorporate plans for continuation from the outset, so that resources are allocated to implement some of the ideas generated by the LS3 process.

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Endnotes

- ¹ <https://cityplanneronline.com/site/index.php/3d-visualisation-for-urban-planning/>

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