



NORDREGIO
Nordic Centre for Spatial Development

Future Regional Development Policy for the Nordic Arctic: Foresight Analysis 2013–2016

Anna Karlsdottir, Lise Smed Olsen, Lisbeth Greve Harbo,
Leneisja Jungsberg, Rasmus Ole Rasmussen

NORDREGIO REPORT 2017:1



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Foresight Analysis 2013–2016

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Nordregio Report 2017:1

ISBN 978-91-87295-45-4
ISSN 1403-2503

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Cover photos: Rasmus Ole Rasmussen and Pipsa Salolammi

Nordic co-operation

Nordic co-operation is one of the world's most extensive forms of regional collaboration, involving Denmark, Finland, Iceland, Norway, Sweden, and the Faroe Islands, Greenland, and Åland. *Nordic co-operation* has firm traditions in politics, the economy, and culture. It plays an important role in European and international collaboration, and aims at creating a strong Nordic community in a strong Europe.

Nordic co-operation seeks to safeguard Nordic and regional interests and principles in the global community. Common Nordic values help the region solidify its position as one of the world's most innovative and competitive.

The Nordic Council

is a forum for co-operation between the Nordic parliaments and governments. The Council consists of 87 parliamentarians from the Nordic countries. The Nordic Council takes policy initiatives and monitors Nordic co-operation. Founded in 1952.

The Nordic Council of Ministers

is a forum of co-operation between the Nordic governments. The Nordic Council of Ministers implements Nordic co-operation. The prime ministers have the overall responsibility. Its activities are co-ordinated by the Nordic ministers for co-operation, the Nordic Committee for co-operation and portfolio ministers. Founded in 1971.

Nordregio – Nordic Centre for Spatial Development

conducts strategic research in the fields of planning and regional policy. Nordregio is active in research and dissemination and provides policy relevant knowledge, particularly with a Nordic and European comparative perspective. Nordregio was established in 1997 by the Nordic Council of Ministers, and is built on over 40 years of collaboration.

Stockholm, Sweden, 2017

Preface

This publication is the final report of the project *Foresight Analysis for Sustainable Regional Development in the Nordic Arctic*, commissioned by the Nordic Working Group for Sustainable Regional Development in the Arctic.

The purpose of the project behind the report was to assess opportunities and challenges for a sustainable regional development in the Nordic Arctic and to identify future development perspectives to provide more comprehensive knowledge and input for the development of the Nordic Arctic policy. The work was commissioned by the Nordic Council of Ministers' Committee of Senior Officials for Regional Policy (EK-R) for the period 2013–2016.

The Working Group comprised representatives from the Norwegian Ministry of Local Government and Modernisation (chair), the Norwegian Ministry of Climate and Environment, the Icelandic Regional Development Institute, the Ministry of Foreign Affairs and Trade of the Faroe Islands, the Greenlandic Ministry for Finance and Mineral Resources, the County Administrative Board of Norrbotten in Sweden and

the North Calotte Council in Finland.

The mandate given to the Working Group by the EK-R was formulated as follows.

“The regional sector of the Nordic Council of Ministers (NCM) wishes to initiate a thematically broad and in-depth study of the future development of the Arctic in the form of scenarios. The objective of the work is to provide input to the further development of the NCM Arctic Co-operation Programme by collecting, reviewing and analysing existing information, assessing different preconditions for future development in the area and developing future scenarios. This will contribute to the political debate and give a more holistic overview of the scientific knowledge.”

The Working Group has placed special emphasis on identifying the opportunities and challenges for business development and the perspectives of young people regarding their own future opportunities in the Nordic Arctic. As part of the project, separate studies on these topics have been carried out. This final report synthesises the findings from the three-year foresight process conducted in the Nordic Arctic.

Lisbeth Nylund
Chairman, the Nordic Working Group
Oslo, 10. January 2016

Kjell Nilsson
Director, Nordregio
Stockholm, 10. January 2016

Thank you

Below is a list of the people we would like to acknowledge for taking an active role in organising and facilitating foresight workshops. We also wish to thank the many stakeholders not mentioned by name who have taken part in the process. This foresight study would

not have been realised without the participation and engagement from citizens in Nordic Arctic communities, municipal, regional and national representatives, business, educational, civil society and cross-border organisation representatives.

■ Participants in the 20 workshops held in 2014–2016

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- Biblioteket i Runavik
- Gymnasiet i Hov
- Regionalinstituttet i Island, Sauðárkrókur

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1. Introduction

This report concludes a three-year foresight process on the topic of future sustainable regional development in the Nordic Arctic (2013–2016), based on the mandate given by the Nordic Council of Ministers' Committee of Senior Officials for Regional Policy to the Nordic Working Group for Sustainable Regional Development in the Arctic. The mandate has been *“to provide input to the further development of the NCM Arctic Co-operation Programme by collecting, reviewing and analysing existing information, assessing different preconditions for future development in the area and developing future scenarios. This will contribute to the political debate and give a more holistic overview of the scientific knowledge in the field.”*

The Nordic Working Group decided to implement this task by conducting a foresight analysis. To guide the work of the three-year project, three overarching questions were defined for the foresight analysis.

1. What social and resource conditions can be expected to have a decisive influence on regional development in the Arctic over the next 10, 20 and 30 years?
2. How will the management of these conditions affect the living standards and future prospects for the regions?
3. What are the implications of the identified challenges and opportunities for future planning and regional policy?

Previous foresight analyses have been carried out for the North Calotte region as part of the broader geographical area of the Northern Sparsely Populated Areas (Gløersen et al. 2009) and for the West Nordic countries (Gløersen, 2012).

However, this is the first foresight analysis that covers the Nordic Arctic region as a whole. It has been essential for this study to adopt a bottom-up perspective in the process with participation from citizens of local communities across the Nordic Arctic in the initial vision phase. As part of the process, specific attention has also been paid to youth participation and local and regional business development potential. As a supple-

ment to the foresight analysis, Working Papers have been produced on the topics of youth perspectives on future development (Karlsdóttir and Jungsberg, 2015) and challenges and opportunities for sustainable business development (Olsen et al. 2016).

1.1 Adopting the foresight method

Foresight analysis is a method that can provide a scientific basis for strategic decision-making. Based on a structured dialogue between relevant stakeholders, it involves taking a future-oriented perspective to gain insights for planning and development (Fuller et al. 2009). Foresight methodologies include both qualitative and quantitative analysis (Jackson, 2013). The bottom-up approach adopted in this project is in line with the contemporary notion of citizen consultations in planning activities.

The foresight process has comprised a workshop series involving three steps: the vision phase, the realism phase and the realisation phase. In the vision phase, local workshops were organised in two selected local communities in each region of the Nordic Arctic with the participation of local inhabitants (a total of 12 workshops). In the realism phase, dialogue was conducted at the regional/national level with a workshop that also included municipal, regional and national authority representatives (a total of six workshops). In the realisation phase, two transnational workshops were organised: one for members of the West Nordic Council and one for members of the North Calotte Council and other stakeholders in the cross-border region. The three-stage process and its outcomes will be further elaborated in chapter 5.

As quantitative background material for each of the foresight workshops, a series of maps displaying the current status and development over time in terms of demography, human resources and economy at local and regional level were produced (see <http://www.nordregio.se/foresightsummary>). The maps were printed in full poster size and were used at all workshops to facilitate the discussions.

1.2 The Nordic Arctic: Challenges and opportunities

The Nordic countries comprise five of the eight Arctic member states of the Arctic Council. With the increased interest in the Arctic in recent decades, the common development potential of the Nordic Arctic region in particular is of growing interest to the NCM and the individual Nordic states. The geographical coverage of the Nordic Arctic is Greenland, Iceland, the

Box 1: Nordic cross-border and transnational collaboration in the Nordic Arctic.

- The North Calotte region: The counties of Nordland, Finnmark and Troms (NO), Norrbotten (SE) and Finnish Lapland
- The West Nordic countries: Greenland, the Faroe Islands and Iceland
- The West Nordic region: Greenland, the Faroe Islands, Iceland, and the coastal areas of Norway

Faroe Islands and the northernmost counties of Norway (Finnmark, Troms and Nordland), Sweden (Norrbotten) and Finland (Lapland). Terms to describe specific areas of the Nordic Arctic as referred to in this report are presented in Box 1.

The Nordic Arctic is a diverse region and cannot always be referred to as one unit facing the same challenges and opportunities. In some cases, it is significant to distinguish between the North Calotte and the West Nordic regions, and in other cases, between individual regions and communities. However, commonalities can be observed in the Nordic Arctic. For example, the region is rich in natural resources and natural environments, it is characterised by both urbanisation and remote and sparsely populated areas, different levels of infrastructure and by its cold climate. Popular tourist destinations, large-scale industrial operations based on forestry, mining and oil, massive fishing businesses and aquaculture, small innovative entrepreneurs building new IT tools, creative entrepreneurs organising large cultural festivals, and vibrant towns and cities comprising high-tech universities can all be found in the Nordic Arctic. Thus, in many ways, the Nordic Arctic is a thriving region with development potential that can build on the strengths of the region. That said, the region is also facing a number of challenges.

Based on quantitative data, chapter 2 focuses on some of the common challenges faced by regions in the Nordic Arctic when seen in comparison with the Nordic region as a whole. First, there are high and increasing dependency ratios outside the urban areas/

regional centres, and a high share of elderly and male populations. Second, the level of educational attainment outside the urban centres is lower compared with elsewhere in the Nordic region, with the exception of Norrbotten and Finnish Lapland where the number of early school leavers is lower and educational attainment is higher than in the rest of the Nordic Arctic. Third, there is a high dependency on primary industries and an unskilled labour force in the Nordic Arctic in terms of both employment and regional gross value added. Taken together, these characteristics pose challenges for the Nordic Arctic in terms of future accessibility to social services of general interest, a qualified labour force and the future development of a diversified labour market.

Chapter 3 introduces the 12 towns and settlements where the initial local-level vision phase workshops were held. The local cases were selected to represent different characteristics of non-urban areas in the Nordic Arctic in terms of their demographic and economic profiles and the size of the settlements. In addition to the quantitative criteria, distance and accessibility were also taken into consideration; for each of the North Calotte counties, a Sami population and reindeer husbandry as a source of employment were selection criteria for the local cases.

Chapter 4 summarises the potential development scenarios with emphasis on demographic characteristics.

Chapter 5 presents a synthesis of the findings from the local-level vision phase, followed by the realism and realisation phases. Workshop discussions centred on the four overall themes of infrastructure, business development and job creation, education and skills development and social and cultural activities (attractiveness of the communities). Both challenges and opportunities were discussed in this regard. However, concrete initiatives and policy recommendations were proposed, particularly in the realism and realisation phases; thus in this chapter, there is a predominant focus on presenting opportunities for future regional development.

Chapter 6 provides a brief overview of the existing Arctic strategies of each of the Nordic states with a focus on the strategies that are likely to affect regional development. An overview of the existing administrative systems and recent reforms in the Nordic Arctic is also given. As varied as the priorities of individual national strategies are, there are commonalities in priorities on economic development and peacekeeping visions.

Chapter 7 addresses the three overarching questions that defined the Foresight project. Based on the conclusions that draw together the results from the foresight process, the key policy recommendations are introduced, as defined by the Nordic Working Group for Sustainable Regional Development in the Arctic.

2. Challenges facing the Nordic Arctic

This chapter is divided into three sections dealing with dependency ratio, educational attainment and regional economies. As is evident from the maps presented below, the Nordic Arctic is not a homogeneous region. For example, there is an ongoing urbanisation trend also in the Nordic Arctic. As seen in chapter 3, non-urban municipalities have been the focus of this study, and the 12 case areas also demonstrate variation with regard to their socio-economic characteristics. Furthermore, overall differences can be identified between the West Nordic countries and the North Calotte region. Chapter 2 highlights some of the current key challenges and opportunities of the Nordic Arctic region.

2.1 Dependency ratio in Nordic Arctic settlements

The dependency ratio measures the share of dependent persons not in the labour force (children aged 0–19 years and elderly aged 65 years and above) in relation to the labour force population (20–64 years old). This total dependency ratio is illustrated in Figure 1.

The average dependency ratio of 73.1 is slightly higher in the Nordic Arctic compared with the average for the Nordic region of 71.7. The main reason for this involves a higher total share of children and young people in the Nordic Arctic. However, the regional and

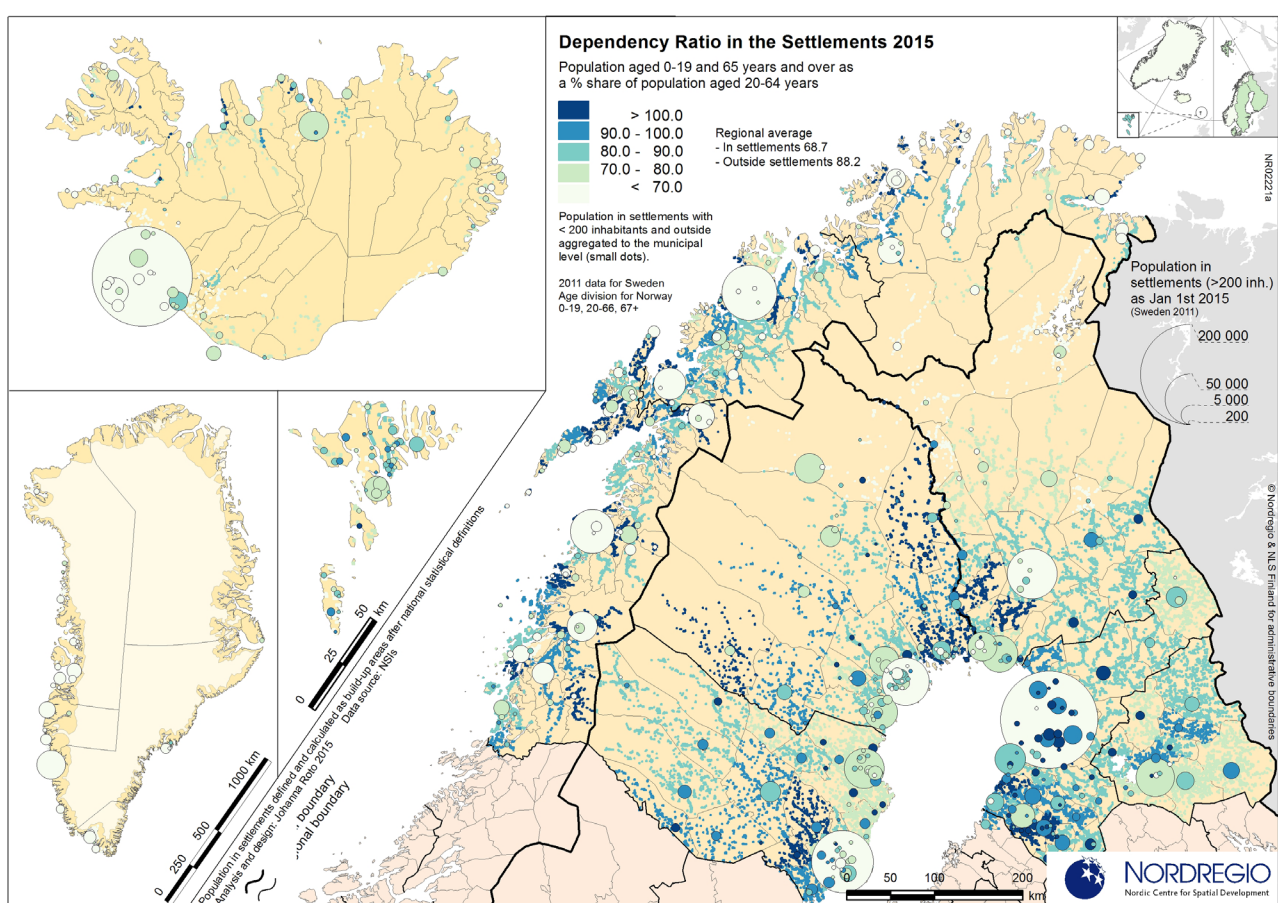


Figure 1. Average dependency ratio in settlements in 2015.

geographical differences are notable and in comparison with the Nordic region as a whole, the areas with the highest share of elderly population can be found in the Nordic Arctic.

The dependency ratio is almost 20 percentage points lower in the larger settlements with 68.7 compared with 88.2 outside the settlements. In general, the larger the settlement is, the lower is the dependency ratio; e.g. Nuuk (GL), Umeå (SE) and Tromsø (NO) belong to the settlements with the lowest dependency ratio. Other factors that explain the low dependency ratio and the low share of children and elderly are the location of higher education institutions and places where there is a concentration of certain economic activities that have created new settlements, or expanded the existing ones in recent decades, e.g. tourism development in the settlements of Saariselkä and Äkäslompolo (Ylläs) in northern Finland.

The highest dependency ratios can be found in northern Finland and northern Sweden, both in settlements located in the commuting catchment areas of larger cities with a large share of children, and in settlements that have experienced notable outmigration in recent decades and have a high share of elderly people.

Overall, the young age dependency ratio in the Nordic Arctic is 41.7 (see Figure 2) while the old age dependency ratio is 31.4 (see Figure 3).

With respect to the young age dependency ratio (i.e. the population aged 0–19 years as a percentage of the population aged 20–64 years), a remarkable difference between the West Nordic countries and the North Calotte region can be found. The highest young age dependency ratio can be found in the Faroe Islands and in the south-western part of Iceland. Some settlements in the Oulu region (FI) also have a very high share of children.

The high proportion of children in many areas of the Nordic Arctic, and especially in the West Nordic countries, does not necessarily tell us anything about the future potential for the labour supply, because of the selective outmigration of the younger working-age population to pursue education and better job opportunities.

The old age dependency ratio is highest in the areas outside settlements and in northern Finland and northern Sweden. The old age dependency ratio in settlements is 27.0 compared with 47.8 outside settlements. The highest values can be found in inland areas outside the commuting catchment areas of larger settlements.

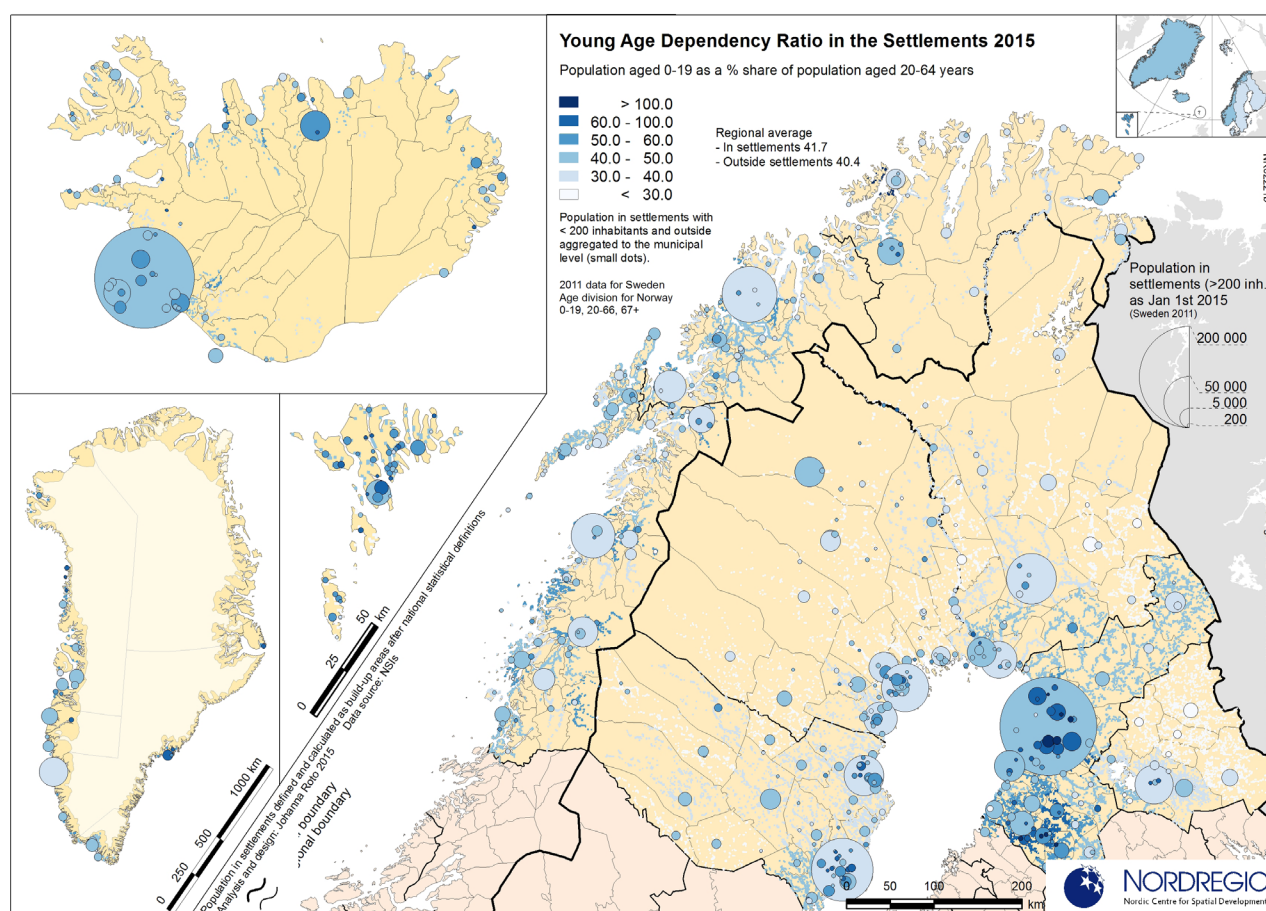


Figure 2. Young age dependency ratio in settlements in 2015.

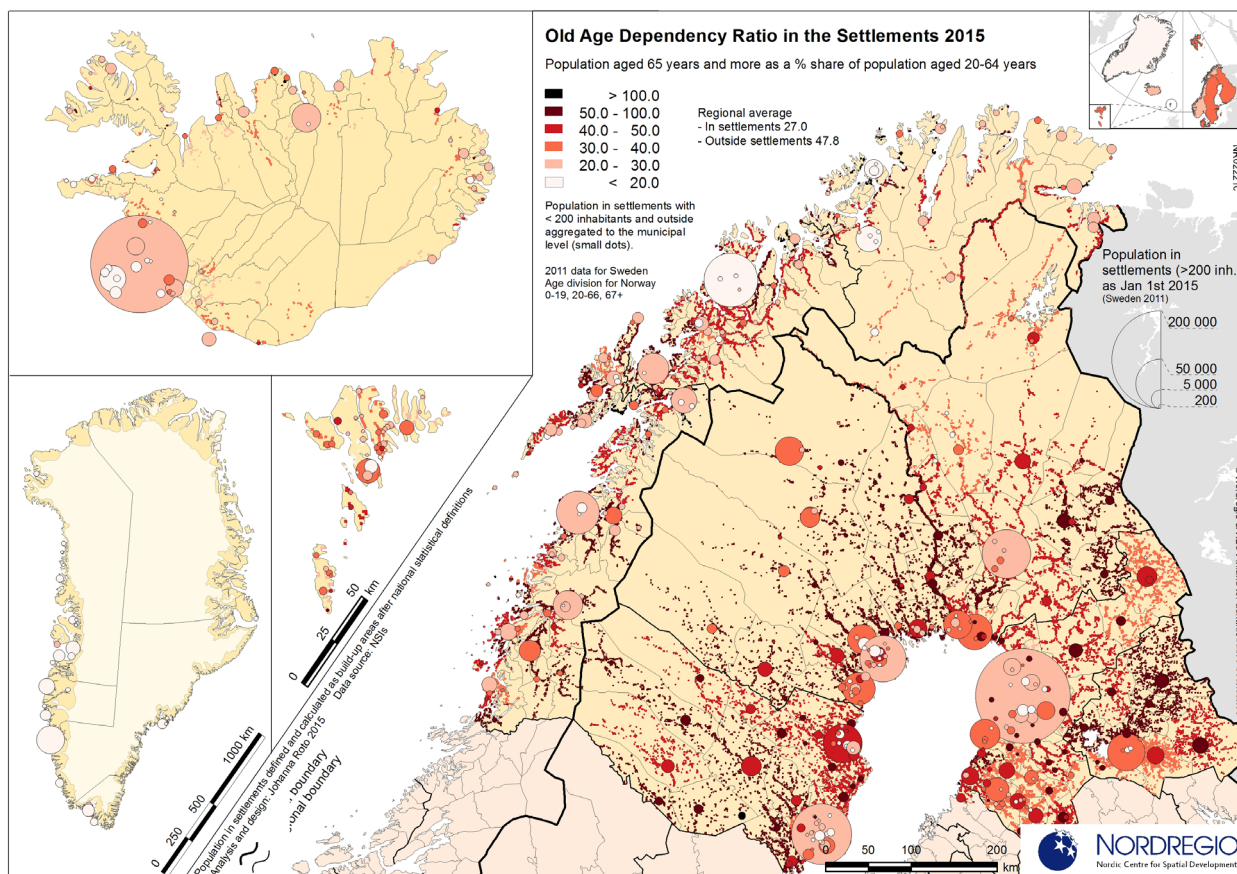


Figure 3. Old age dependency ratio in settlements in 2015.

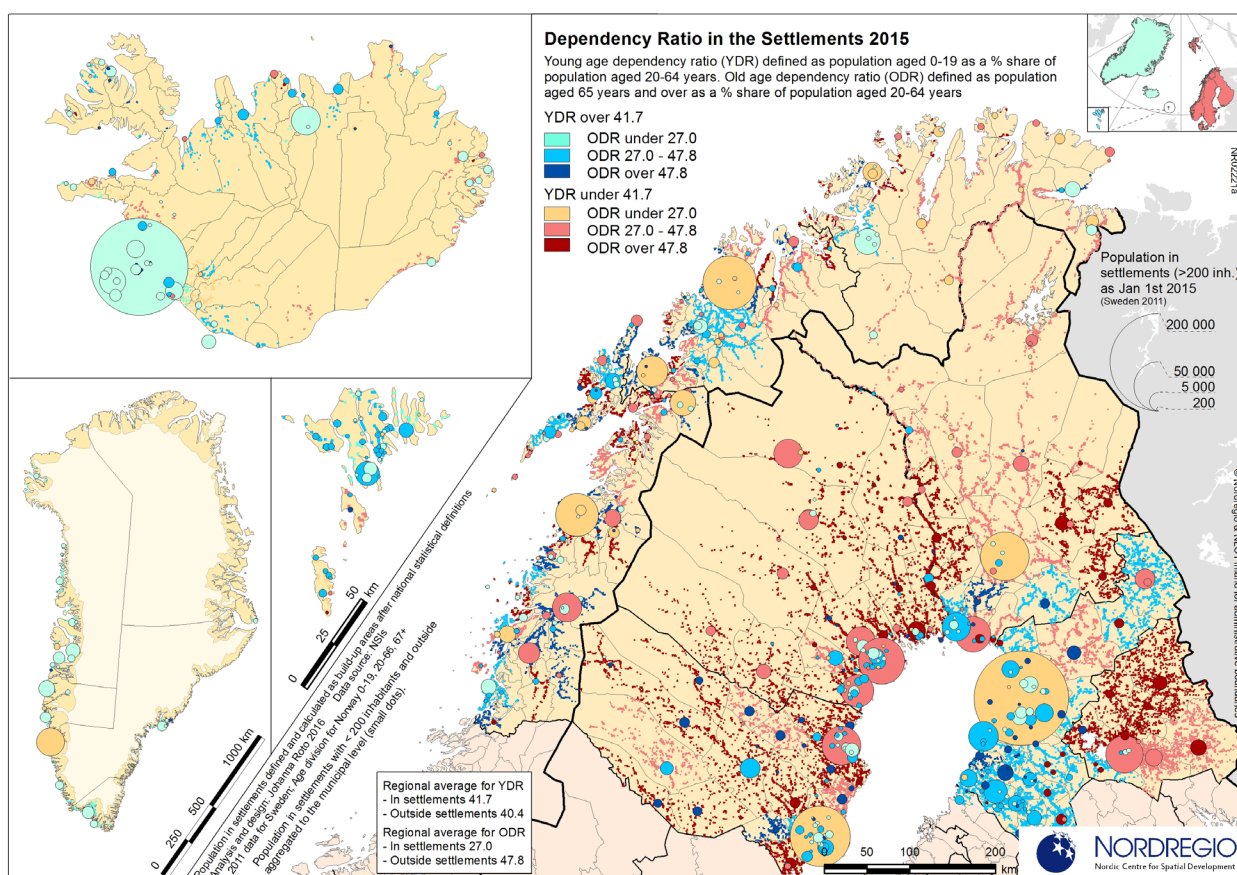


Figure 4. Young age dependency ratio compared with old age dependency ratio in settlements in 2015.

Figure 4 compares the young age dependency ratio to the old age dependency ratio. Green settlements indicate where the young age dependency ratio is higher than the average for Nordic Arctic settlements, and the old age dependency ratio is lower than the average for Nordic Arctic settlements. These settlements are mostly located in the West Nordic countries and in the suburbs of larger settlements in the North Calotte region.

Dark blue settlements have a high share of both young and old populations. Orange settlements indicate where the share of the labour force population (aged 20–64 years) is highest. These are mostly found in larger settlements and in regional centres. Red settlements have few young people and a high share of elderly population.

2.2 Skills and educational attainment in the Nordic Arctic

A highly skilled labour force is an important asset for the Nordic labour market. From a European perspective, the education level of the Nordic Arctic region is good, but less so compared with the Nordic and na-

tional averages. The share of the population with primary education or no education (international standard classification of education [ISCED] levels 0–2) is slightly higher, and the share of the population with higher/tertiary education (ISCED levels 5–8) is lower in the Nordic Arctic among the labour force population (aged 20–64 years old). In addition, gender differences with respect to level of education are notable, with more females than males having a higher education degree.

Figures 5–7 illustrate educational attainment based on ISCED levels. Figure 5 shows that the highest share of the population with tertiary education can be found in the university cities.

Figure 6 indicates that the share of people with a lower level of education (ISCED levels 0–2) is highest in Greenland and in areas outside the capital region in Iceland. In northern Sweden and northern Finland, the majority of regions have 10–15% of the population with ISCED levels 0–2, while northern Norway has a comparatively higher share with variation between municipalities.

This situation is illustrated further in Figure 7, where we see that Northern Norway has a significantly higher

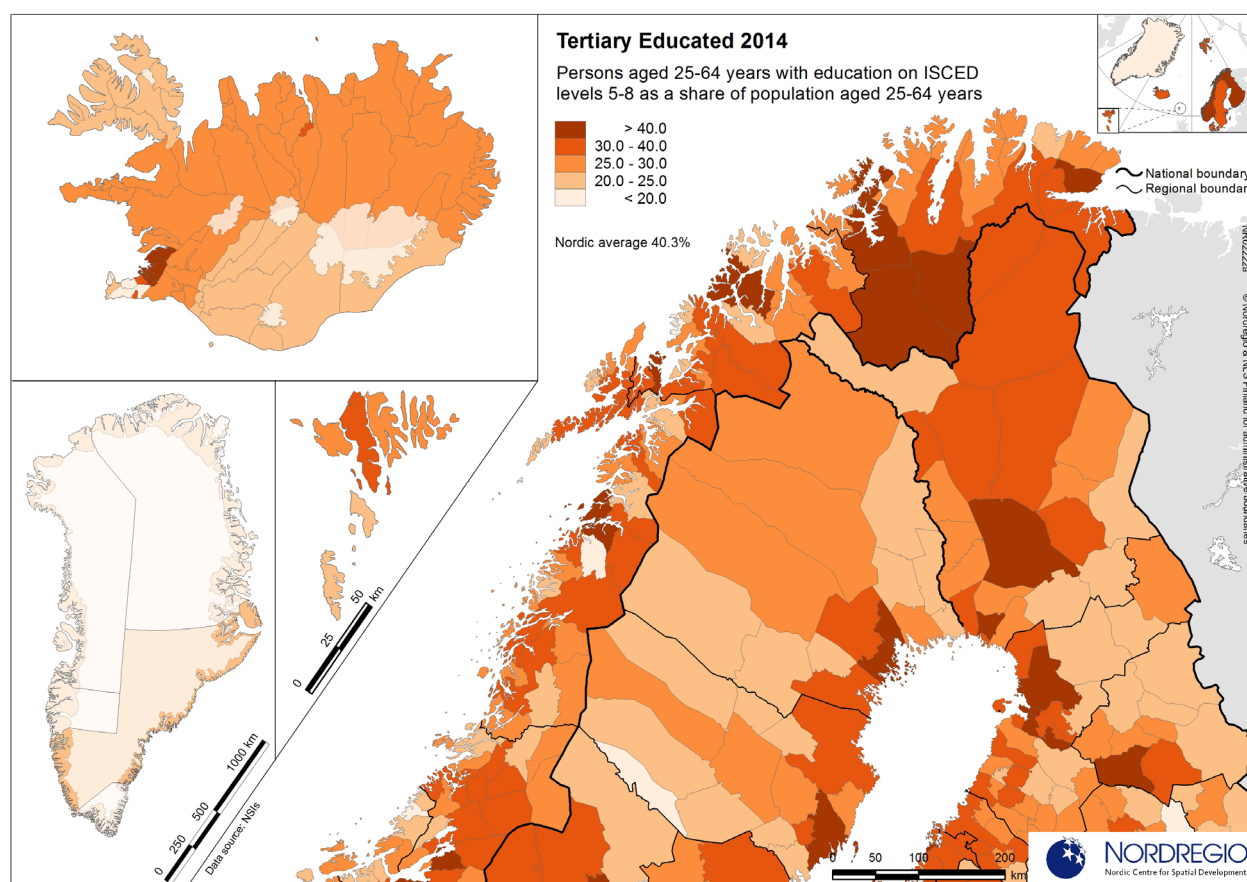


Figure 5. Share of the population with tertiary education in 2014.

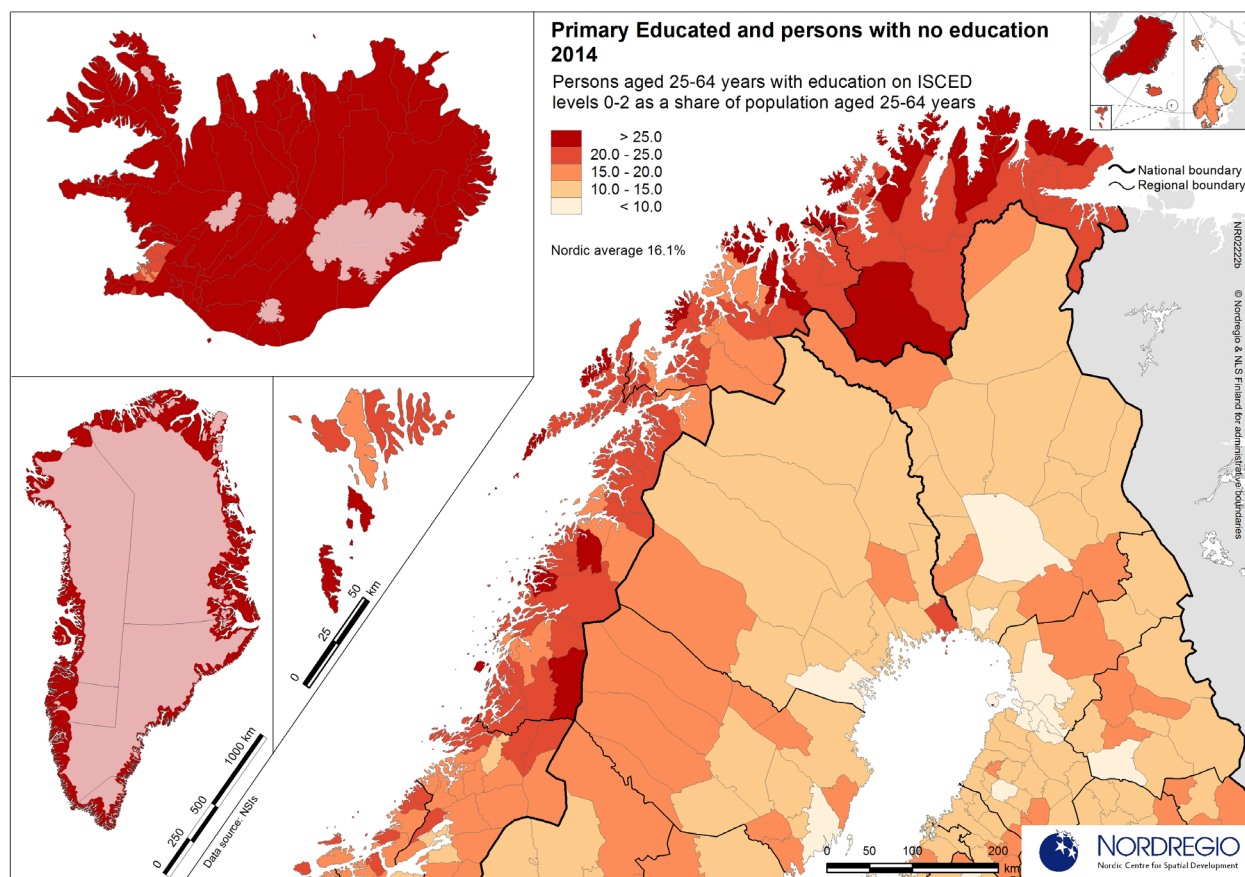


Figure 6. Share of the population with ISCED levels 0–2 in 2014.

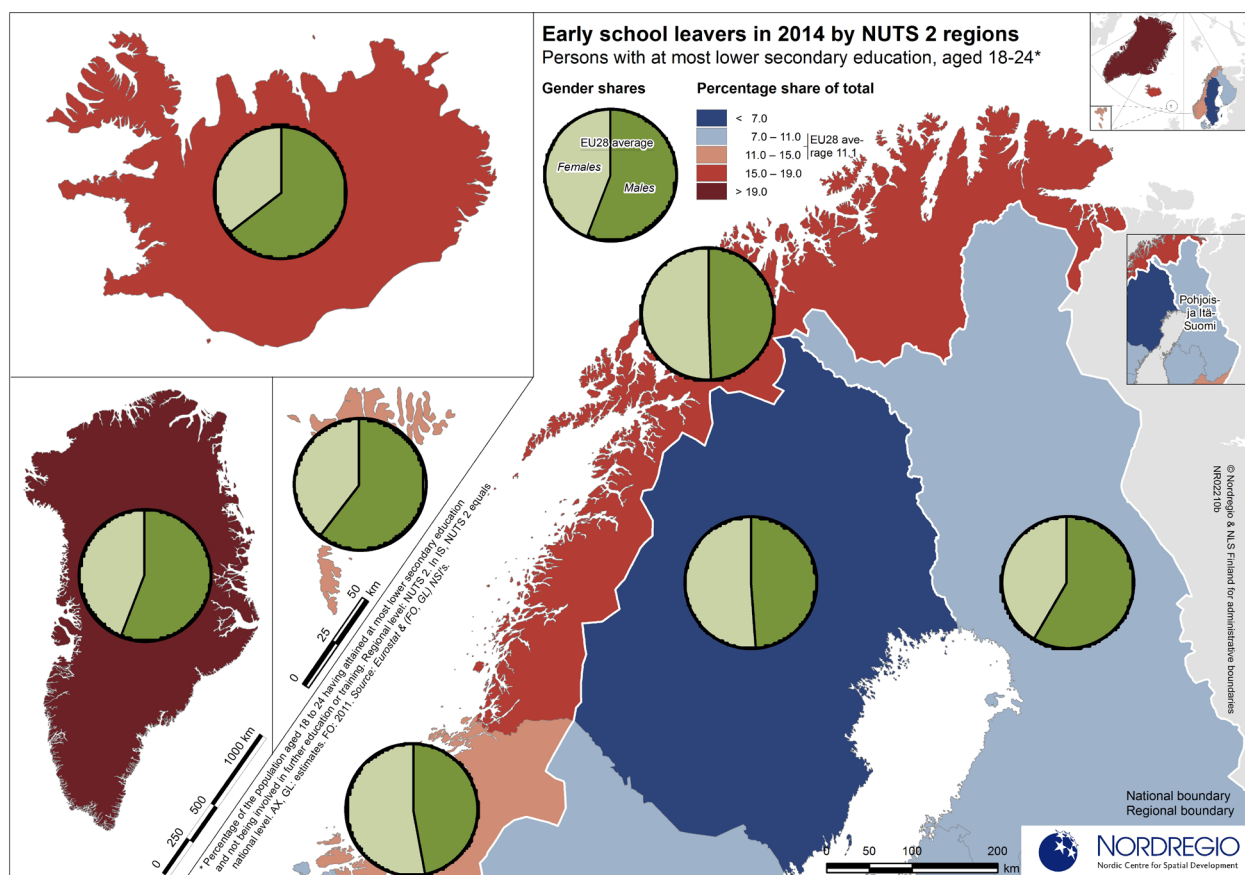


Figure 7. Early school leavers in 2014.

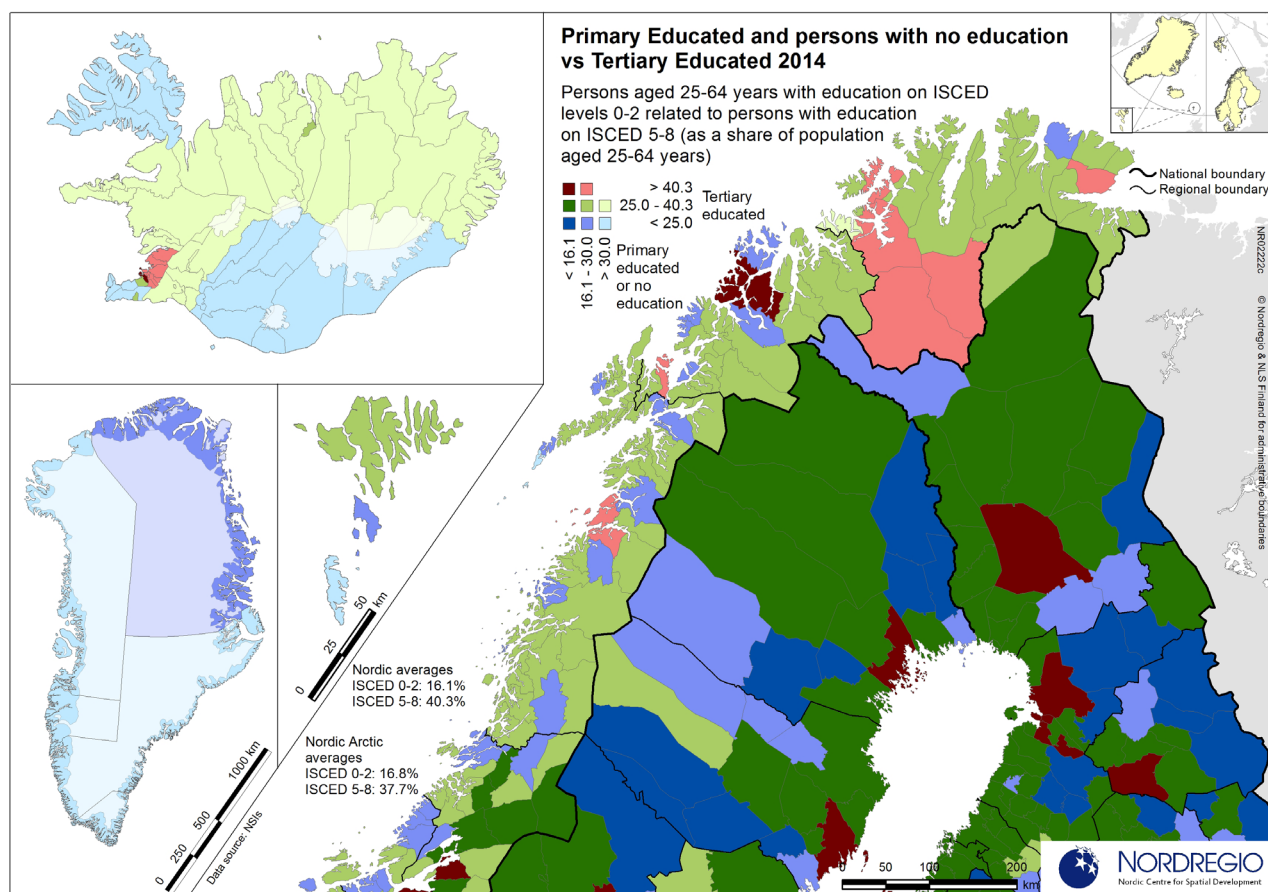


Figure 8. Population with ISCED levels 0–2 compared with population with ISCED levels 5–8 in 2014.

share of early school leavers (aged 18–24 years) compared with the rest of the North Calotte region. Figure 7 also highlights that Norrbotten and Finnish Lapland are the only regions in the Nordic Arctic with lower percentages of early school leavers compared with the European Union (EU) average.

Figure 8 shows the population with ISCED levels 0–2 relative to the population with ISCED levels 5–8. The university cities of Oulu, Rovaniemi, Tromsø, Umeå and Luleå are characterised by high shares of the population with tertiary education and low shares of people with no or primary education only.

Other larger cities in Norway and the Reykjavik region are characterised by having both a high share of the population with tertiary level education and an above Nordic average share of people with primary education only.

Areas outside the main cities in Finland, Norway and Sweden and in the Faroe Islands are characterised by a low or medium share of tertiary educated persons. The main difference between those areas is that in Finland and Sweden, the share of the population with primary education only is below the Nordic average, whereas in Norway and the Faroe Islands the share of the popula-

tion with no or primary education only is higher.

Outside the capital regions, Greenland and Iceland are characterised by a low or medium share of tertiary educated people and high shares of the population with no or primary education only.

2.3 Regional economies in the Nordic Arctic

Figure 9 provides an overview of the regional gross value added (GVA) in the Nordic Arctic. In the Nordic region overall, 1.8% of production comes from the agriculture, forestry and fishing (NACE A) sectors, whereas the average share is 5.5% in the Nordic Arctic. The value of production in primary sectors is higher than the Nordic average in all of the Nordic Arctic regions. The GVA from industry (NACE B–F) corresponds to 29.9% in the Nordic region as a whole, and 27.0% in the Nordic Arctic, whereas services (NACE G–U) comprise around 68% in both.

Regional differences exist. In northern Norway, Iceland and Greenland, the GVA of primary production and services is higher than the Nordic and Nordic Arc-

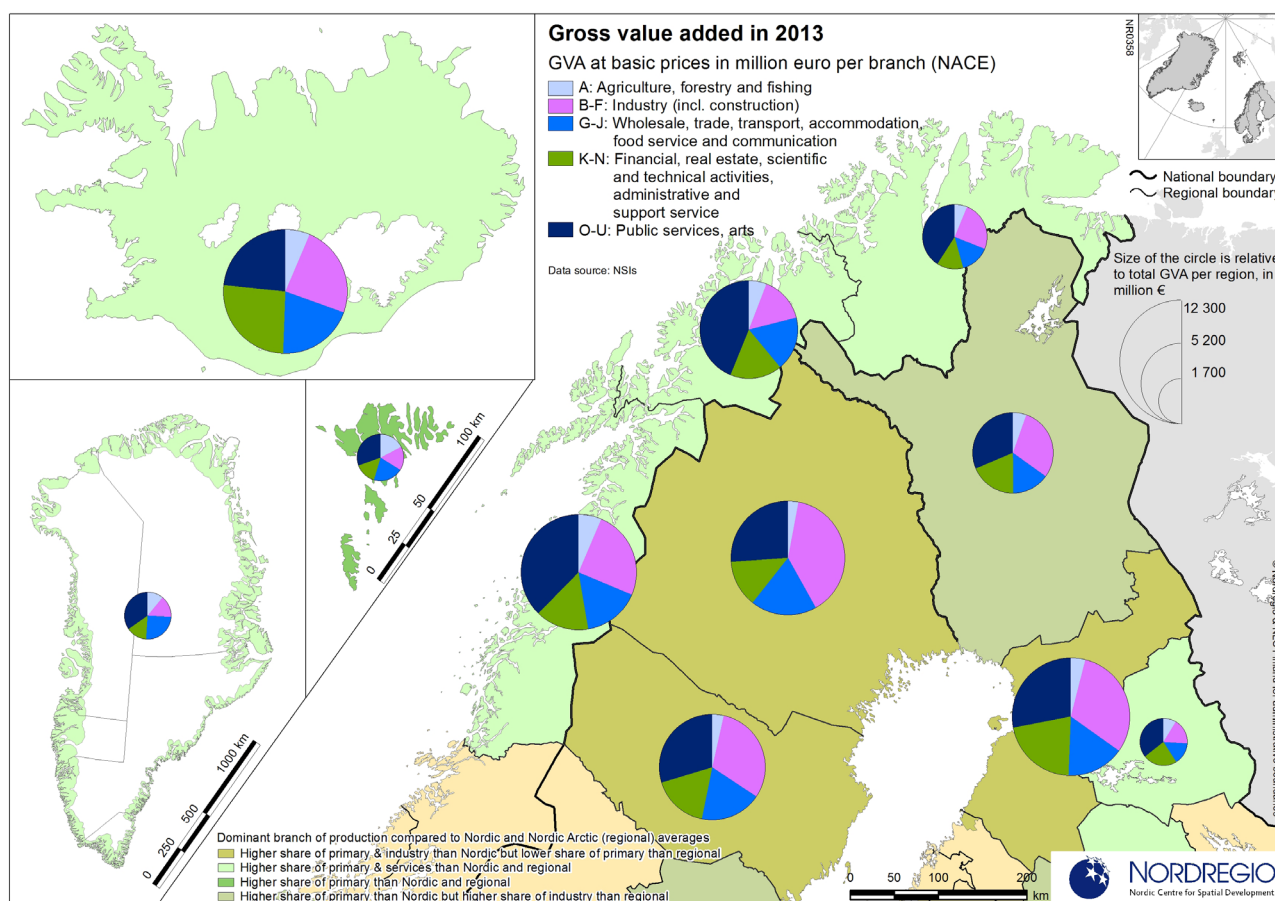


Figure 9. Gross value added (in million euros) by economic sector in 2013.

tic averages. In northern Sweden, manufacturing industry is the dominant branch of the economy. Finnish Lapland is also dominated by industry, but compared with the Nordic average, the importance of the sector is lower. Notably, the mining industry, which would otherwise be characterised as primary industry, is registered as industry in statistics. This is the main reason for the higher weight of industry in Northern Finland and Northern Sweden. The Faroe Islands are characterised by a high share of primary production compared with the Nordic and Nordic Arctic averages.

When dividing gross production in the service sector by subcategories, additional differences between the regions are identified. Transport, accommodation and food services are over-represented in the West Nordic countries. Iceland, Sweden and Pohjois-Pohjanmaa in Northern Finland have a high share of production from information and communication. Public administration, education and health care dominate in northern Norway and Greenland. The more business-oriented services comprise only a minor share of regional GVA in the Nordic Arctic.

There are some 186,000 companies in the Nordic Arctic, which correspond to 12% of all registered com-

panies in the Nordic region. Private companies are found in all the Nordic Arctic municipalities. The relative under-representation of companies in numbers is related to the high share of employment in the public sector in the Nordic Arctic. In general, employment in the public sector is higher in the northernmost regions compared with the national averages. A notable share of services of general interest is organised by municipalities, municipal groups or regions, which means that, combined with the limited size of the population and local demand for goods and services, there is a lack of competition in service provision. Long distances also pose challenges for business conditions in the region.

As illustrated in Figure 10, when comparing the total number of companies with the total population, there are fewer companies in the Nordic Arctic regions than in the other parts of the Nordic region. The number of companies is relatively high in Iceland (203 new companies per 1,000 existing companies) and northern Norway (100 per 1,000 existing companies), whereas the numbers are lower in northern Finland (53 per 1,000 existing companies) and in northern Sweden (57 per 1,000 existing companies). However, it should be noted that neither the size of companies nor their

survival rates are included in statistics.

The small size of the regional economies combined with limited local demand means that economic growth potential is strongly correlated with the capacity of firms, and especially of the smaller ones, to engage in business relations with actors located in other (larger) regional economies (Dubois & Roto, 2013).

The challenges of running a business are not only related to the number and current location of companies, but also to the interest in starting up new companies. In 2013–2014, almost 13,000 new companies were started up in the Nordic Arctic, involving an average of 68 new companies per 1,000 existing companies. For the Nordic region overall the number was 101 new companies.

Although regional variations exist, when comparing the quantitative data for the Nordic Arctic with the Nordic region as a whole, three overall challenges facing the Nordic Arctic can be identified.

First, the Nordic Arctic is characterised by high dependency ratios outside the urban areas/regional centres, and the share of elderly and male populations is high compared with the Nordic average. This poses a challenge for the future availability of manpower and the accessibility to social services of general interest.

Second, the level of educational attainment outside the urban centres is lower in the Nordic Arctic compared with elsewhere in the Nordic region. This poses a challenge for ensuring a qualified labour force for both services of general interest and advanced business sectors. Third, there is a comparatively high dependency on primary industries in the Nordic Arctic in terms of both employment and regional GVA, with the exception of northern Sweden and northern Finland where there is a higher dominance of manufacturing industry. Most of the services of general interest are organised by the public sector in the Nordic Arctic, and the number of business start-ups per capita is lower than in the rest of the Nordic region. This poses a challenge in the future for ensuring a more diversified labour market, including more business start-ups. These three challenges can be summarised as follows.

- Challenge 1. Accessibility to social services of general interest.
- Challenge 2. A qualified labour force for services of general interest and advanced business sectors.
- Challenge 3. A diversified labour market, including more entrepreneurship.

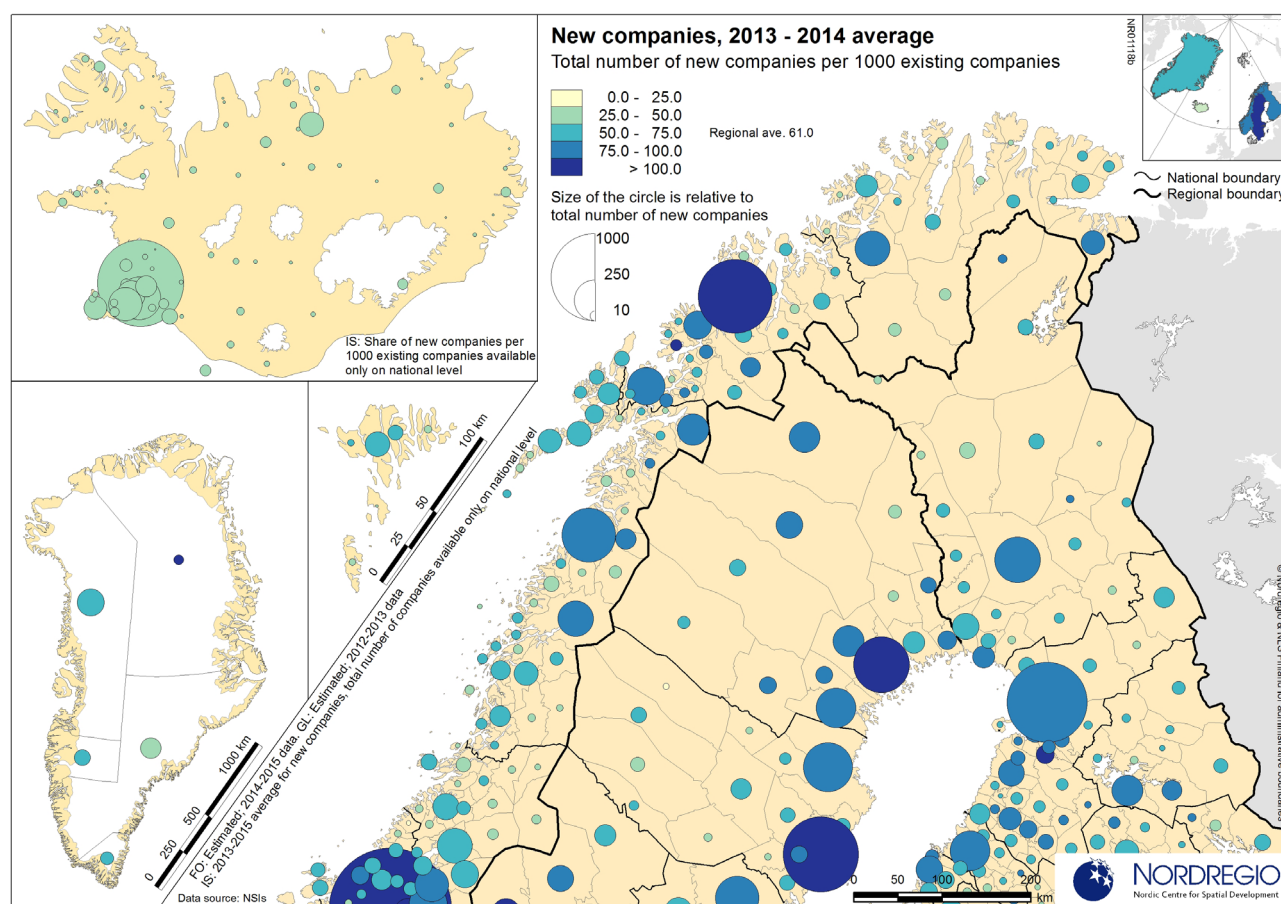


Figure 10. Average number of business start-ups 2013–2014.

3. Different preconditions in the Nordic Arctic: Presentation of cases

The rationale for the selection of areas where local workshops were organised was that, as a group, they should showcase the range of realities that are found in the Nordic Arctic. Therefore, the cases constitute a representative selection of communities in the Nordic Arctic, while also showcasing the variety of the Nordic Arctic communities in terms of size, degree of remoteness, demographic composition, economic base and geographical specificities. However, given the bottom-up approach of the foresight method, the societies had to be compatible with the involvement of citizens already in the first round of workshops, and the largest towns and communities were therefore excluded from the outset of the case selection.

3.1 The 12 cases in overview

With a focus on settlement dynamics, a matrix of quantitative categories for each of the 567 Nordic Arctic settlements was developed as the starting point for the case selection. Since the overall focus of the Foresight project was on small and medium-sized settlements, the size of settlements was included as one of the matrix categories in addition to the demographic and economic profiles of each settlement (see Table 1 for the full matrix).

	Population size (approx.)	Location	Population change as % (last 12 years)	Labour force as % of population	Gender profile (female to male ratio)
Qaqortoq, GL	3300	Coastal	5.9	69	93
Alluitsup Paa, GL	300	Coastal	-13	59	78
Fjarðabyggð, IS	4500	Coastal	44.0	67	86
Árborg, IS	7800	Inland	34.0	76	96
Suðuroy, FO	4700	Coastal	-5	77	88
Runavík, FO	3800	Coastal	-2	85	87
Hasvik, NO	1000	Coastal	-17	68	90
Kautokeino, NO	3000	Inland	-5	69	93
Jokkmokk, SE	5000	Inland	-16	62	97
Pajala, SE	6200	Inland	-16	74	92
Kemijärvi, FI	8000	Inland	-23	59	98
Inari, FI	6800	Inland	-8	73	90

Table 1. The quantitative criteria applied to the 12 selected cases based on 2013 data.

Size of settlement

- <1,000 inhabitants
- 1,000–5,000 inhabitants
- >5,000 inhabitants

Economic profile

- Dominated by primary sector jobs (fishery, farming, forestry)
- Dominated by secondary sector jobs (mining, oil and gas extraction, production industry, other production)
- Dominated by tertiary sector jobs (public services, tourism)

Demographic profile

- Ageing societies, net emigration
- Societies in demographic balance, equilibrium between immigration and emigration
- Growing societies due to net immigration

Based on this matrix, a group of 12 settlements (two in each country) was selected (see overview table 1). Even though it was not possible to include every combination, the group represented a variety of the 27 total possibilities listed above. The process for selecting these 12 involved the Working Group members who were asked to prioritise one or two of the above nine characteristics (within different categories; e.g. ageing societies and small settlements), which were then taken into consideration for the selection of the 12 potential cases based on the quantitative criteria (Table 1).

To ensure the inclusion of all of the thematic issues that the Working Group wanted to see addressed in the project, the characteristics listed in Table 2 (SWOT analysis framework) were considered in greater detail before the final selection of the 12 settlements. These SWOT characteristics were assessed by the Working Group members as particularly crucial for the future perspectives of each Nordic Arctic community.

In particular, distance and accessibility (remote/commuting distance to larger towns), variation in economic base and recent administrative changes were given prominence in this final selection of the 12 case study areas. During this process, it was also decided that two or three of the cases (in Norway, Sweden and Finland) should comprise settlements with Sami population, and where reindeer herding is a significant economic activity. The final selection thus contained variation within these themes as well as the quantitative variation described above. The intention with the 12 cases was also to provide a broad overview of socio-economic characteristics of the Nordic Arctic. Finally, for methodological purposes, it was decided that in the three rounds of the foresight workshops, the two selected cases in each country should be located within the same regional administration (where applicable).

Figure 11 gives the exact geographical location of each case. In the following sections, the key economic activities and other distinct characteristics that were considered in the selection process of the 12 cases are introduced.

Strengths	Weaknesses
■ High level of education ■ Strong availability of skilled labour force ■ Substantial number of qualified jobs ■ Solid economic base ■ High attractiveness ■ Integrated and strong local culture ■ Independent development	■ Low level of education ■ Weak availability of skilled labour force ■ Limited number of qualified jobs ■ Weak economic base ■ Low attractiveness ■ Weak local culture ■ Dependent development
Opportunities	Threats
■ High level of accessibility ■ Easy management of distances ■ Easy sources of communication ■ Low level of climate change exposure ■ Low level of climate change challenges ■ Strong economic base ■ Boom economy ■ Strong demographic structure ■ Strong options for new economic activities	■ Low level of accessibility ■ Difficult management of distances ■ Difficult sources of communication ■ High level of climate change exposure ■ High level of climate change challenges ■ Dwindling economic base ■ Bust economy ■ Challenged demographic structure ■ Limited options for new economic activities

Table 2. SWOT assessment of the quantitative possibilities.

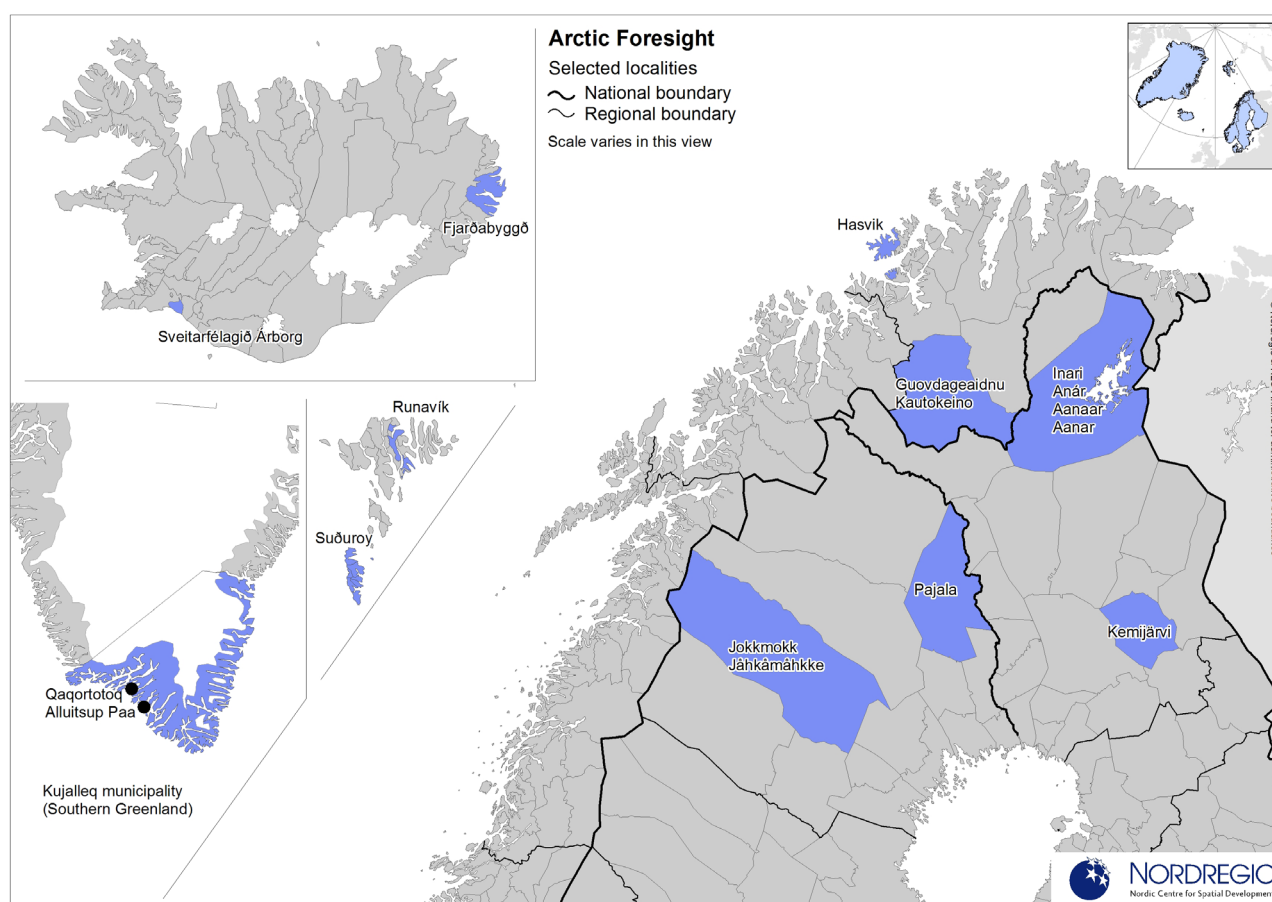


Figure 11. The local case areas.

3.1.1 Runavík, Faroe Islands

Main and potential economic activities

Runavík is the Faroese centre for fish farming and development of fish farming technology, as well as one of the main ports for the Faroese fishing industry; it is thus also home to a number of other businesses related to fishing. Due to its location about a one-hour drive from Torshavn, there is some commuting to the capital region. The plan for construction of a tunnel under the fiord (to be completed in 2018) will drastically reduce travel time to the capital and is thus expected to create further opportunities. Runavík is also designated as the main port for the potential Faroese oil industry.

Other characteristics

The current municipality of Runavík comprises a total of 15 settlements and is the outcome of several municipal amalgamation steps.

3.1.2 Suðuroy, Faroe Islands

Main and potential economic activities

Farming and fishery are the dominant sectors for the economy in Suðuroy, including industry related to fishing. Public services, in particular education, are other important sectors for employment. Despite a relatively

long commute, particularly in the Faroese context (2 hours plus potential local transportation on Suðuroy), a ferry service makes it possible to commute to Torshavn.

Other characteristics

Suðuroy is one of the islands in the Faroes without permanent links to the other islands. However, a ferry service makes several daily trips to Torshavn. Despite its small population and coherent geography, the island with 15 settlements is administered in its original seven municipalities.

3.1.3 Qaqortoq, Greenland

Main and potential economic activities

Qaqortoq is the centre for public administration in Kujalleq municipality and also hosts most of the municipality's secondary and vocational education institutions. Retail and other services are centred in Qaqortoq, where a number of construction and production firms are also found. The development of large-scale extraction industries is one potential for adding to the economic base, with further development of Qaqortoq's role in the South Greenlandic tourism sector being a second potential.

Other characteristics

Since the Greenlandic municipal restructuring in 2009, Qaqortoq has gained increased importance as the main town in the new Kujalleq municipality.

3.1.4 Alluitsup Paa, Greenland

Main and potential economic activities

As a relatively large settlement, a number of public services are found in the village, among them a primary school and a kindergarten. The informal economy of hunting and fishing plays an important role, and people may be partly self-sufficient as hunters and fishers. The village is home to a fish factory and improved conditions in the Greenlandic fishing industry hold the potential to affect also the economy in Alluitsup Paa.

Other characteristics

Alluitsup Paa has the administrative status of village (bygd) within Kujalleq Municipality, which means that the village council can decide on priorities for small-scale projects. While local and regional transportation is a challenge anywhere in Greenland, Alluitsup Paa is not particularly remote in the Greenlandic context.

3.1.5 Fjarðabyggð, Iceland

Main and potential economic activities

Fisheries, aluminium production and a range of services are the foundation of the economy in the municipality. A large share of the labour force works in the fishery industry, at the aluminium smelter and in the field of industrial technology. Tourism is growing in the region like elsewhere in Iceland. The municipality's harbours are the second largest harbour unit in Iceland, and together they create about a quarter of Iceland's export earnings. The hospital for Eastern Iceland is located in the municipality.

Other characteristics

One of Europe's largest hydropower plants and an aluminium smelter are located in the region. Their short-term effects have already been felt with the influx of labour and in some cases long-term new settlers; however, in the long run, it remains to be seen if the crowding-out effect for other industries (i.e. fisheries, tourism and agriculture) and other sectors will fade.

3.1.6 Árborg, Iceland

Main and potential economic activities

In recent decades, Selfoss has grown from being a service centre for the heartland of the agricultural region of Iceland to become a service town for the flow of tourists in the South region and for second-home own-

ers. Eyrarbakki hosts the largest prison in Iceland and is thus a large employer, as is the milk processing plant MS, which is the largest of its kind in the country as a result of amalgamations and consolidation.

Other characteristics

Only an hour's drive from Reykjavik, Árborg is within the radius of the effect zone of the capital region. Before the economic collapse in 2008, there was a considerable influx of new inhabitants seeking less expensive housing while still keeping their jobs in the capital region. Many commuters are settled in Árborg's varied communities, which affects the daily life in the communities. However, the main road between Reykjavik and Árborg is sometimes impassable because of local conditions.

3.1.7 Hasvik, Norway

Main and potential economic activities

Fishery has traditionally been and is still today, along with aquaculture, the most important economic activity. Over the past decade, tourism has grown, especially within the niche market of fisheries tourism. Hasvik has also experienced increasing labour immigration, especially from Eastern Europe and Iceland.

Other characteristics

Hasvik was partly selected as a case area due to its proximity to the oil industry in Hammerfest, which provides the opportunity to live in Hasvik and commute to Hammerfest.

3.1.8 Kautokeino, Norway

Main and potential economic activities

A number of Sami institutions are based in Kautokeino, including the Sami University College and the International Sami Film Centre. Reindeer herding and related business activities are an important private sector activity. Interest has been expressed in starting up an iron ore mine in the municipality at a location where another mine was previously run and closed down in the 1990s. However, this project was in conflict with reindeer herding activity in the area. The request to carry out an impact assessment by the mining company was rejected by the municipal council by a close vote due to the inherent conflict with reindeer husbandry and environmental concerns.

Other characteristics

The Sami constitute the majority population in Kautokeino and the neighbouring Karasjokha municipality, where Sami and Norwegian are equal official administrative languages.

3.1.9 Jokkmokk, Sweden

Main and potential economic activities

Reindeer herding and related Sami business activities are an important industry in the municipality. The national energy company was previously the largest employer in the municipality, and still provides a number of jobs in the area. The construction of an iron ore mine is being considered. However, the area of the proposed mine crosses the reindeer pastures of one of the Sami co-operatives.

Other characteristics

Jokkmokk is known for its annual winter market and as a centre for Sami culture in Sweden with the location of the Sami Education Centre, the Sami Handicraft Foundation, and the Ájtte Museum of Sami culture in Jokkmokk.

3.1.10 Pajala, Sweden

Main and potential economic activities

Forestry is an important private sector activity in Pajala, although the number of jobs in wood processing has declined. At the time the Foresight project was initiated in 2013, an iron ore mine had recently come into operation in Kaunisvaara outside Pajala, the local economy was booming and population numbers were increasing. However, already in 2014, the mining company was declared bankrupt, and any potential reopening of the mine is uncertain.

Other characteristics

Pajala is a part of the area of Tornedalen and inhabited by Tornedalingar who speak the language meänkieli, close to Finnish. They are recognised as a national minority in Sweden. The theatre Tornedalsteatern is based in Pajala.

3.1.11 Kemijärvi, Finland

Main and potential economic activities

The industry in Kemijärvi has traditionally been based on forestry. In 2008, Stora Enso's pulp mill in Kemi-

järvi was shut down and consequently around 200 jobs were lost. In 2014, a new sawmill and laminated beam factory were established by a Finnish company providing employment for local inhabitants. Additionally, local actors have made plans for establishing a new biorefinery in Kemijärvi, which would employ up to 1,000 people by the end of 2019. They are currently looking for investors for the project.

Other characteristics

The Eastern Lapland area where Kemijärvi is situated is well known for the nearby skiing resorts, and nearby Lake Kemijärvi is much visited in the summertime. Besides fishing, popular summer pastimes include hiking, trekking, boating and hunting. Kemijärvi also hosts one of the largest music festivals in Northern Finland.

3.1.12 Inari, Finland

Main and potential economic activities

The major sources of income in Inari are the lumber industry, outdoor and nature-related activities, and tourism. With its own airport and good road connections, Inari is popular particularly for winter sports and hiking. Vast parts of the municipality are designated wilderness areas and nature reserves. Inari constitutes an important reindeer herding area in Finland. In addition, Sami-related businesses and services (including festivals and culture centres) are an important part of the local economy.

Other characteristics

Inari is the largest municipality in Finland in terms of land area and shares a border with both Norway and Russia. Inari has a large Sami population and four official languages (Finnish, Inari Sami, Skolt Sami and Northern Sami). The Sami Siida Museum is based in the village of Inari.

4. Scenarios for future development

A SCENARIO CAN be regarded as a story about the way the world might turn out tomorrow (Moriarty et al. 2005). In our context, a scenario is not a specific forecast of the future, but a plausible description of what might happen based on certain preconditions in the Nordic Arctic and an outlining of potential trends and events. When describing potential scenarios, therefore, it is important that there should be a focus on uncertainties, risks and constraints that could be encountered in the future. The use of scenario building is thus closely connected to the foresight method applied in this project.

Chapter 4 provides an analysis of the challenges and preconditions facing the Nordic Arctic and chapter 5 outlines the opportunities for future development. In chapter 6, we position the various scenarios within the Arctic strategies and the governance structure in the Nordic Arctic.

4.1 A basic demographic approach

The population model used in generating population projections is usually based on the demographic component method, which ultimately is grounded in data for mortality, fertility and internal migration (George et al. 2004).

All calculations based on the model are attributable

to the population broken down by year of birth and changes in fertility rate. Fertility rate statistics refer to the mean number of children born to a woman during her lifetime. Total fertility rate (TFR) compares figures for the average number of children that would be born per woman if all women lived to the end of their child-bearing years and bore children according to a given fertility rate at each age. A more common concept used in the Nordic countries is the crude birth rate, which is the number of live births occurring among the population of a given geographical area during a given year, per 1,000 mid-year total population of the given geographical area during the same year. Figure 12 shows the development in fertility rate from 1960 to 2014 showing how the Nordic countries are situated today at a level below 2 compared with the relatively high levels in the 1960s and 1970s. There used to be very clear differences in fertility rates between urban and rural regions, and with the sparsely populated areas showing the highest levels. However, this situation has been reversed in recent decades and it is expected to continue with the pattern of declining levels of fertility in core urban and remote sparsely populated areas where social services are limited, while high-income areas in the suburban and urban fringe areas show increasing fertility rates.

EU	Periphery				Norden				Balticum		Eastern Europe										Central Europe					Mediterranean													
EU-28 (*)	Turkey	France (*)	Ireland	United Kingdom	Iceland	Sweden	Norway	Finland	Denmark	Latvia	Lithuania	Estonia	Montenegro	Albania	Slovenia	Bulgaria	Romania	FYR of Macedonia	Czech Republic	Serbia (*)	Croatia	Slovakia	Hungary	Poland (*)	Netherlands	Belgium (*)	Liechtenstein	Luxembourg (*)	Germany (*)	Austria	Switzerland (*)	Malta	Italy	Spain	Greece	Cyprus	Portugal		
	1960	:	:	3,8	:	:	:	:	2,7	2,6	:	:	2,0	:	:	:	2,3	:	2,1	:	:	:	3,0	2,0	:	3,1	2,5	:	2,3	:	2,7	2,4	:	2,4	:	2,2	:	3,2	
	1970	:	:	3,9	:	2,8	1,9	2,5	1,8	2,0	:	2,4	2,2	:	:	:	2,2	:	:	1,9	:	:	2,4	2,0	:	2,6	2,3	:	2,0	:	2,3	2,1	:	2,4	:	2,4	:	3,0	
	1980	:	:	3,2	1,9	2,5	1,7	1,7	1,6	1,5	:	2,0	2,0	:	:	:	2,1	2,4	:	2,1	:	:	2,3	1,9	:	1,6	1,7	:	1,5	:	1,7	1,6	2,0	1,6	2,2	2,2	:	2,3	
	1990	:	:	2,1	1,8	2,3	2,1	1,9	1,8	1,7	:	2,0	2,0	:	:	1,5	1,8	1,8	:	1,9	:	:	2,1	1,9	2,1	1,6	1,6	:	1,6	:	1,5	1,6	2,0	1,3	1,4	1,4	2,4	1,6	
	2000	:	1,9	1,9	1,6	2,1	1,5	1,9	1,7	1,8	1,2	1,4	1,4	:	:	1,3	1,3	1,3	1,9	1,1	1,5	:	1,3	1,3	1,4	1,7	1,7	1,6	1,8	1,4	1,4	1,5	1,7	1,3	1,2	1,3	1,6	1,5	
	2010	1,6	2,0	2,0	2,0	1,9	2,2	2,0	1,9	1,9	1,9	1,4	1,5	1,7	1,7	:	1,6	1,6	1,6	1,6	1,5	1,4	1,5	1,4	1,2	1,4	1,8	1,9	1,4	1,6	1,4	1,4	1,5	1,4	1,5	1,4	1,5	1,4	1,4
	2012	1,6	2,1	2,0	2,0	1,9	2,0	1,9	1,9	1,8	1,7	1,4	1,6	1,6	1,7	:	1,6	1,5	1,5	1,5	1,5	1,4	1,5	1,3	1,3	1,3	1,7	1,8	1,5	1,6	1,4	1,4	1,5	1,4	1,4	1,3	1,3	1,4	1,3
	2013	1,5	2,1	2,0	2,0	1,8	1,9	1,9	1,8	1,7	1,7	1,5	1,6	1,5	1,7	:	1,5	1,5	1,4	1,5	1,5	1,4	1,5	1,3	1,4	1,3	1,7	1,8	1,5	1,5	1,4	1,4	1,5	1,4	1,4	1,3	1,3	1,3	1,2
	2014	1,6	2,2	2,0	1,9	1,8	1,9	1,9	1,8	1,7	1,7	1,6	1,6	1,5	1,8	1,8	1,6	1,5	1,5	1,5	1,5	1,5	1,5	1,4	1,4	1,3	1,7	1,7	1,6	1,5	1,5	1,5	1,5	1,4	1,4	1,3	1,3	1,3	1,2

Figure 12. Development in fertility rate. Source: Eurostat.

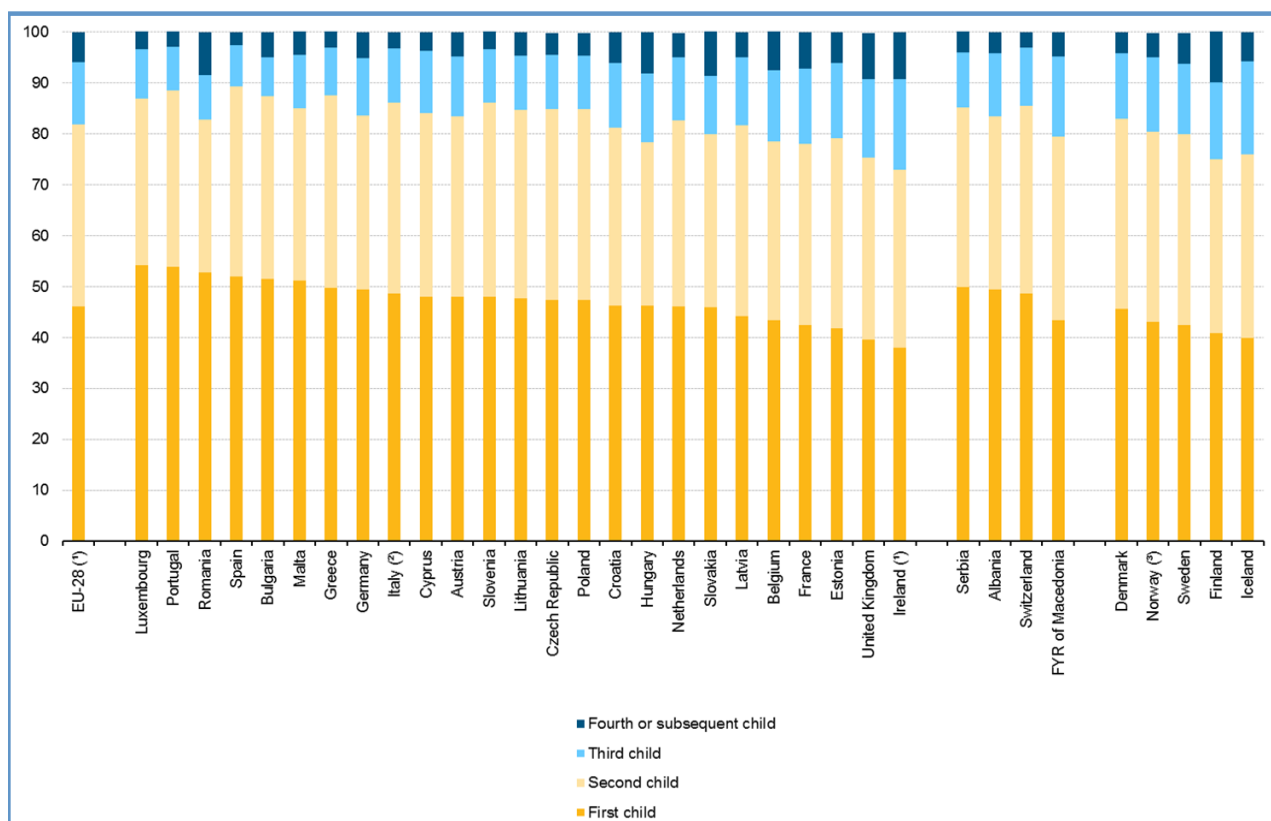


Figure 13. Share of live births by birth order in 2014. Source: Eurostat.

4.1.1 Family structure

Such a marked decline in fertility rates has substantial consequences for the more remote Arctic regions, not only because of the low level of the natural regeneration of the population, but also due to the changes in family structure.

The welfare systems of the Nordic countries have influenced family patterns and incentives for reproduction planning. As the new economic options emerged, where needs for higher education have expanded considerably have to some extent been counterproductive to this process.

Figure 13 shows the situation regarding choices related to family structure with families of one, two, three and four or more children. As seen on the right-hand side of the figure, in the Nordic countries, roughly 40% and 80% of families have one or two children, respectively. Around 20% of families have three and four or more children.

In addition to the deliberate choices concerning family structure and number of children, another important aspect related to reproduction rates is the age of women giving birth. Figure 14 shows the relationship between the median age of women giving birth to their first child and the TFR. Most of the Nordic countries are situated relatively close to the average of the EU 28 countries. A general trend is evident in families

having their first child later in life than, e.g. 20 years ago. This is likely to be associated with the increasing level of education before more general family-related development takes place. In addition, the differences between urban and suburban development and that in the more remote rural areas need to be taken into consideration in the scenario building, not least because the characteristics of internal migration in the Nordic countries. Rural – rural, rural urban migrations are often related to these issues (focusing on the basic demographic approaches), where the number of internal immigrants is calculated as a proportion of those who emigrated and added to the model population in accordance with the experiential relative age distribution of internal migrants.

4.1.2 Uncertainties and effects

The uncertainty of the calculated target regarding frequency of fertility, mortality etc. is diminished when population size of the groups is taken into account. This becomes evident when working with small populations such as that of Greenland, where the population varies dramatically from one year to the next. The only explanation for this is the influence of random annual variations. To eliminate these effects, the calculated targets for a period will typically be set to five years. There is thus an inherent limitation in the approach, as

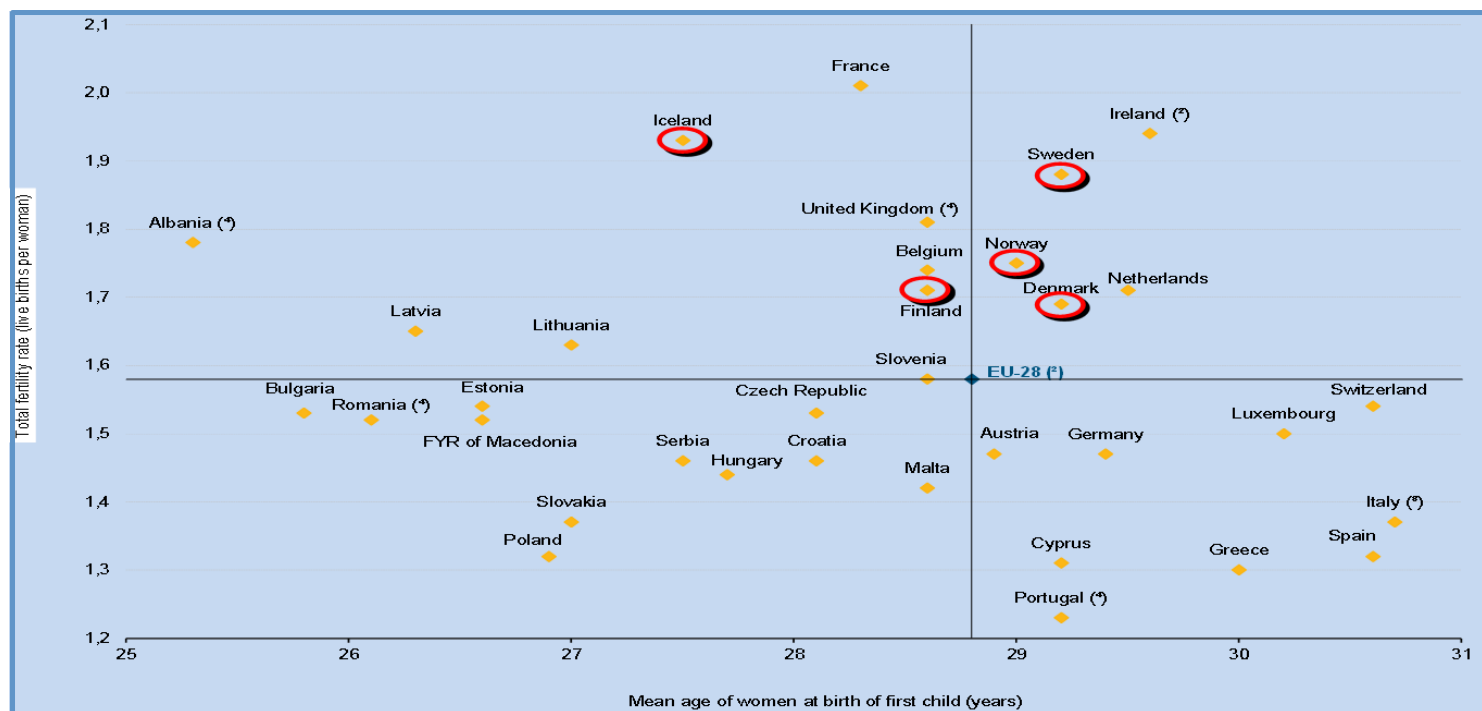


Figure 14. Fertility rate and age of woman giving birth of first child.
Source: Eurostat 2014.

it does not grasp the observed coincidences, but rather the underlying theoretical reality.

4.2 The consequences of changes in mobility

Another factor that is needed in the scenario building is the patterns of immigration and emigration combined with the previous year's impact of refugees looking for opportunities in the Nordic countries.

4.2.1 Newcomers

For the patterns of immigration and emigration, the tradition among all Nordic countries and self-governing areas is to use register-based registration and accounting, which enables the registration of the population based on personal identification number as the identification key. From this, it is possible to produce the data necessary for the projections. The uncertainty of population projections is increased by the length of the selected projection period and at least for that part of the population who were already born at the start of the first years included in the calculation. For this population, only mortality and migration are included, which adds uncertainty to the projection. The uncertainty concerning the fertility rate will be further affected by the generations born during the projection period.

Figure 15 (left) shows Polish-born migrants to the Nordic countries by number of inhabitants in 2014; they are considered to be the first major group of migrants leaving their home country and moving to the Nordic countries after the break-up of the Soviet Union

and their affiliated neighbours in Eastern Europe. Figure 15 (right) shows similar data for those originally from the Baltic countries, Estonia, Latvia and Lithuania, as well as Russia in 2014. It is an indication of the tendency that male migrants were previously involved in heavy industries, mining and extraction of renewable resources; female migrants were primarily involved in a variety of service sector activities. Male migrants from the five countries shown in Figure 15 look for employment in their traditional vocations. The marked increase in migrants in the capitals and larger cities is a result of female migrants employed in the service sector. Some of them began working in primary and secondary industries, and others were employed in hospitals where practical training is more important than language skills. As the migrants gain competence in local language skills, they tend to aim for jobs in the urban Arctic area of the Nordic countries.

Figure 16 (left) shows similar data for migrants from the South East Asian countries of the Philippines, Thailand and Vietnam. In many situations, jobs for male migrants were the impetus for the introduction to the Nordic labour markets of Eastern European migrants. In contrast, the labour force from South East Asia resembled that of female migrants from Eastern Europe, i.e. arriving with good skills in the service sector – restaurants, the food industries and other services, as nurses and cleaners – and to some extent also in relation to agriculture. The introduction to the labour market of male workers from South East Asian countries took longer compared with Eastern Europeans.

However, the newcomers from foreign countries

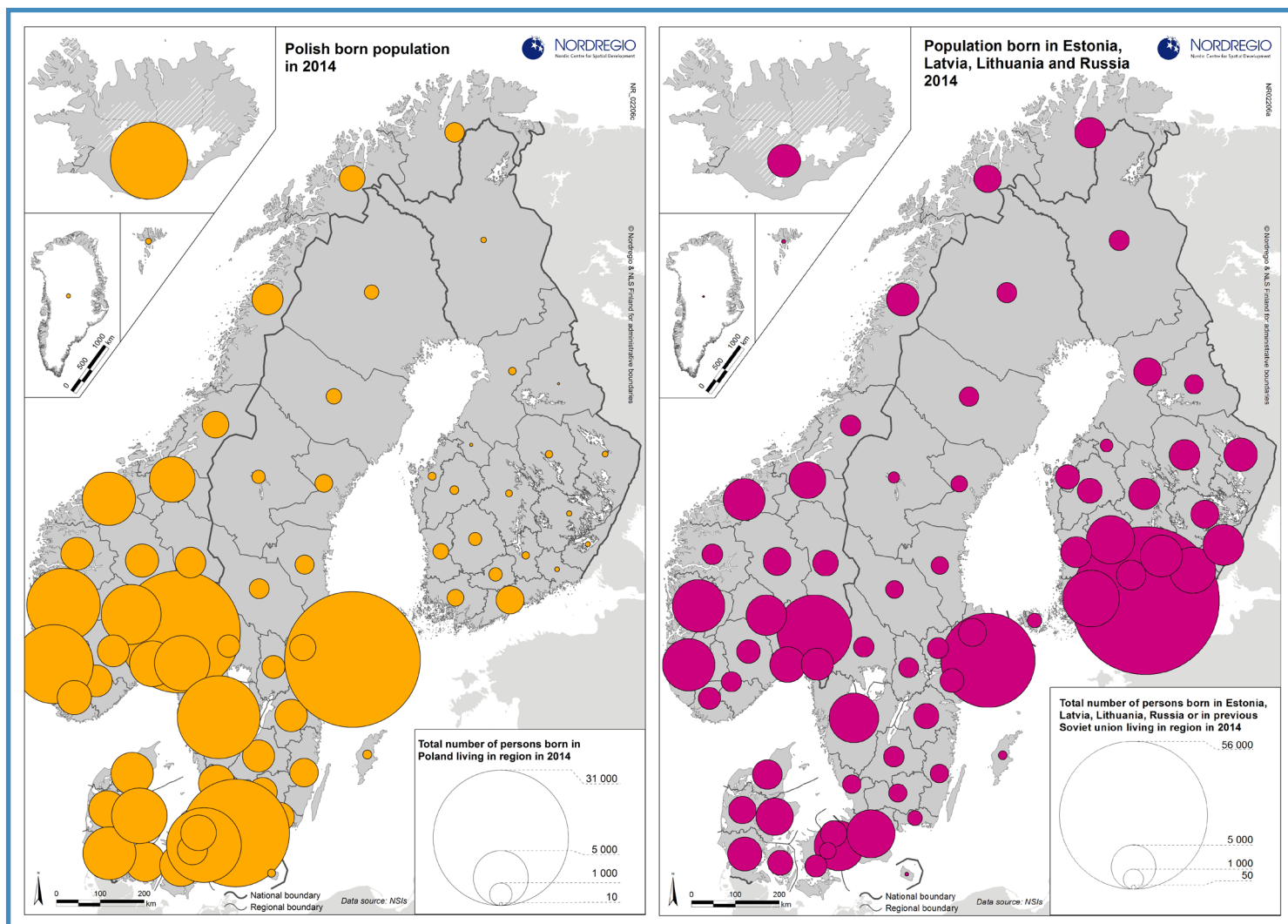


Figure 15. In-migrants to the Nordic countries from Poland (left) and the Baltic countries and Russia (right) in 2014.

have now become major contributors to the labour force in all the Nordic countries. Figure 16 illustrates the increase in newcomers in absolute terms by means of the size of the circles, as well as the share of foreign-born inhabitants as a percentage of the total population in the Nordic regions. The Nordic average of this group stood at 6.5% in 1995 and rose to 8.5% in 2005 and 12.7% in 2015, which emphasises the relatively marked increase. Figure 16 (right) also shows how the darker blue circles move further north over time, demonstrating the importance of newcomers in the Nordic Arctic.

Figure 17 (left) shows this marked and consistent increase, emphasising the higher levels (>15%) of the foreign-born population. Figure 17 (right) illustrates the more even distribution of the foreign-born population throughout the Nordic Arctic and in a number of municipalities that experience an increase of >10%, as well as a few places where there is a reduction. These changes are of course very important for the labour markets in the Arctic regions; they are also crucial components in the evaluation of the potential scenarios for future development.

4.3 Micro simulations: Projection of the demographic development

The Arctic is a region of great diversity, not least in terms of the human populations that live there and their demographic behaviour. Arctic populations include those of the Swedish county Norrbotten and Finnish Lapland, both of which declined in size between 2000 and 2010. In contrast, in Iceland and the Faroe Islands population numbers increased during the same time period. In some of these regions, population change was mainly driven by migration; in other areas, fertility and mortality trends were more important. Arctic populations are also characterised by differences in age structure, with some regions such as Greenland having larger populations of young people than others (Heleniak 2014).

We can assume that the demographic diversity in the Arctic will persist in the coming decades. The future may therefore hold various types of challenges and opportunities for Arctic communities, towns and municipalities. Within this context, it is the goal of this report to estimate some of the demographic trends that

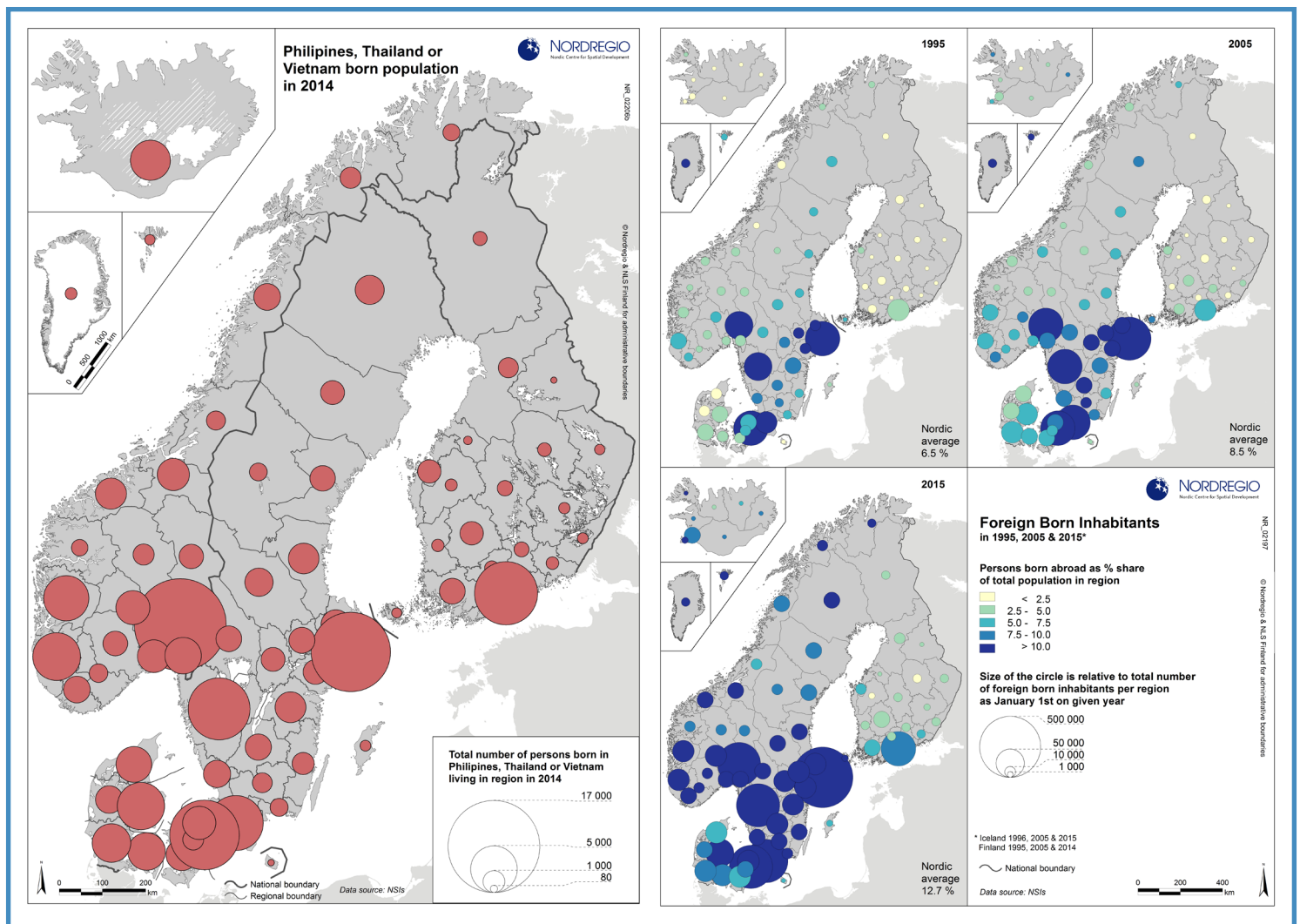


Figure 16. In-migrants from South East Asia in 2014 (left) and foreign-born inhabitants as a percentage share of the local population in 1995, 2005 and 2015 (right).

we may expect in different parts of the Arctic between 2016 and 2040. With a focus on our 12 settlements, towns and municipalities in our six case study regions, we seek to answer the following questions with the help of population projections.

1. How will the total population size in these different settlements and municipalities develop between 2016 and 2040? Which demographic behaviours – fertility, mortality or migration – are likely to be particularly influential in driving demographic changes?
2. How will the age structure of these populations develop in future years?

As stressed earlier in this chapter, the future is uncertain and population projections cannot predict demographic trends with precision. Nonetheless, they can provide valuable information on how future trends may look, given that certain assumptions about fertility, mortality and migration developments or future population growth rate are accepted as plausible. To

capture various population trends that appear plausible from today's viewpoint, Statistical Offices and demographers have traditionally published several projection scenarios. Each of the scenarios is based on a separate set of assumptions about how demographic behaviours may change in the future. The results of these scenarios then depict a range of alternative population developments (Booth 2006).

We follow this tradition in presenting the results of six individual projection scenarios that were calculated with different methods and are based on different types of assumptions. Due to data availability, only five scenarios could be calculated in a few individual cases, and the projection period had to be restricted to 2016–2030. The average scenario combines the results of these six projections and calculates their average. This procedure has been shown to increase accuracy when projecting total population sizes and the size of age groups in subnational areas (Reinhold and Thomsen 2015, Wilson 2015). The following sections present the main results obtained from the seven projection scenarios for the 12 case studies. Projection methods

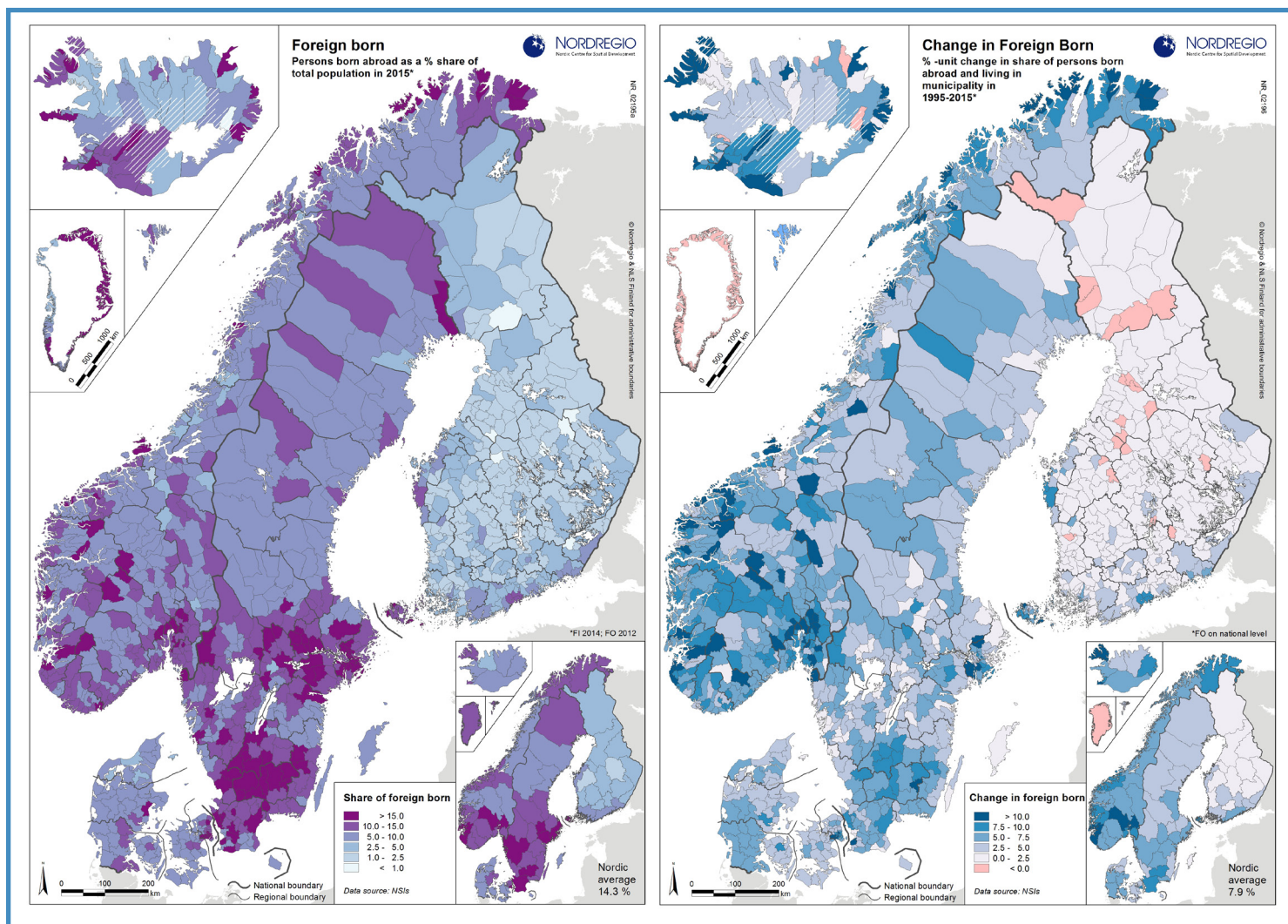


Figure 17. Foreign-born population as percentage share of total population in 2015 (left). Change in foreign-born

population as percentage share of persons born abroad and living in the municipality in 1995–2015 (right).

or assumptions are only discussed where it is pertinent to understanding individual projection results.

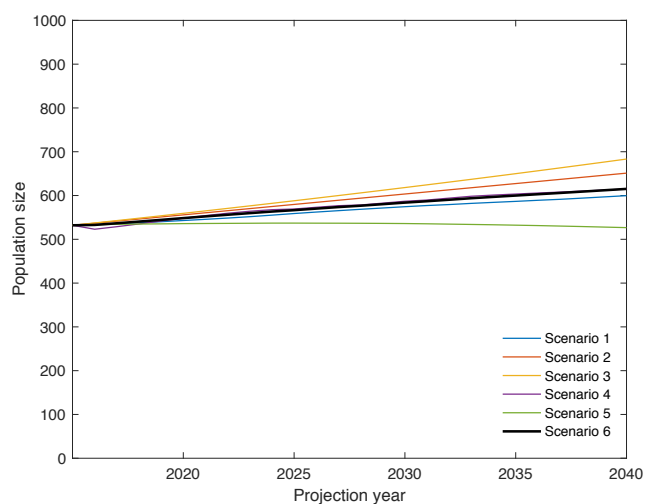
The development of total population sizes 2016–2040

Figure 18 (page 32–33) shows how the number of persons living in the 12 towns and municipalities will develop until 2040 according to the projection scenarios calculated here. Clear trends emerge for some towns and municipalities in the Arctic: Inari and Kemijärvi in Finland, Jokkmokk and Pajala in Sweden as well as Alluitsup Paa in Greenland are likely to see their populations decline over the next 25 years. In contrast, Sveitarfélagið Árborg and Fjarðabyggð in Iceland and Runavík in the Faroe Islands are likely to have larger populations in 2040 than today. These trends emerge from all scenarios calculated here, irrespective of the methods, assumptions or data sources that were used. However, the extent and speed of population growth or decline differ between scenarios. In the case of Inari, for instance, projection results suggest that the population will decline slowly and reach 5,800–6,500 persons

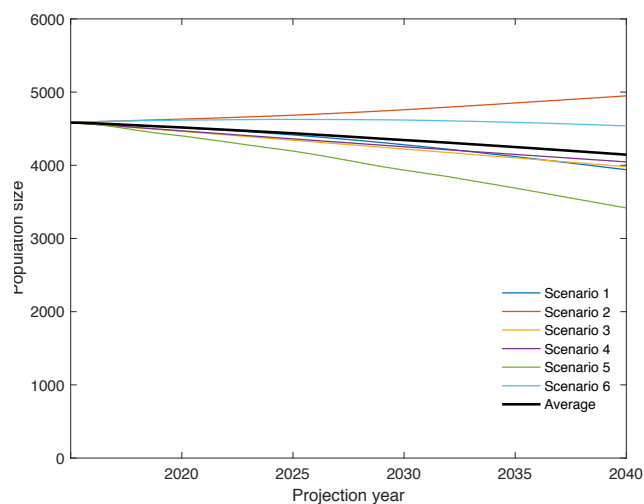
in 2040. In Alluitsup Paa and Kemijärvi, a broader range of trends appears possible. Alluitsup Paa, which already had the smallest of all populations in 2016, might become entirely depopulated before 2040, depending on which scenario is considered. In Kemijärvi, population numbers may remain at 7,300 or drop to around 3,000 persons, the difference between these being a result of differing scenario assumptions. The population of Kemijärvi declined by an average of 192 persons per year in 2000–2016. One scenario visualises how the population would develop in the future if this trend were to continue. Clearly, it would lead to the largest population loss of all scenarios calculated here. Another scenario links the demographic future of Kemijärvi to the province of Lapland in which it is situated. In 2015, 4% of all inhabitants of Lapland lived in Kemijärvi. Eurostat anticipates that the population of Lapland will decline in size only slowly until 2040 (Eurostat 2016). If Kemijärvi remains the home of 4% of the population of the Lapland region, the town's population will decrease more slowly than in the recent past and than suggested by the other scenarios.

Faroe Islands

Runavík

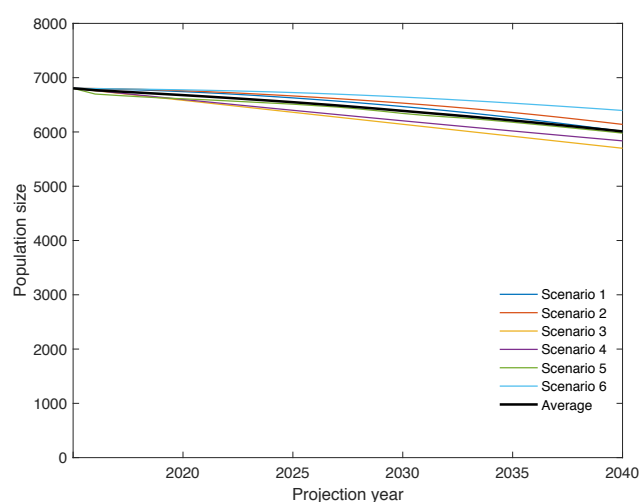


Suðuroy

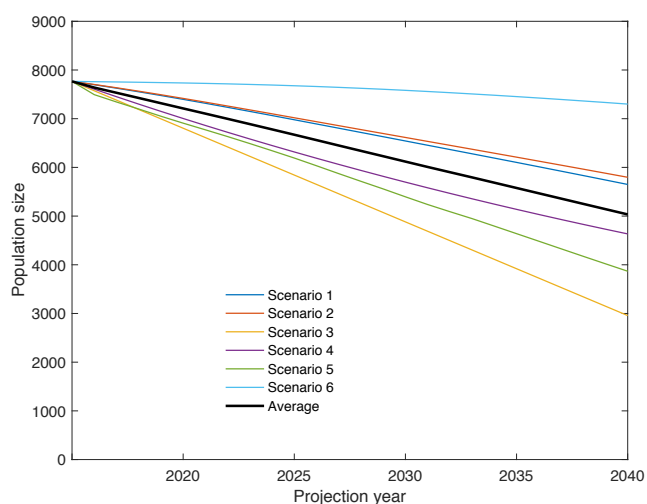


Finland

Inari

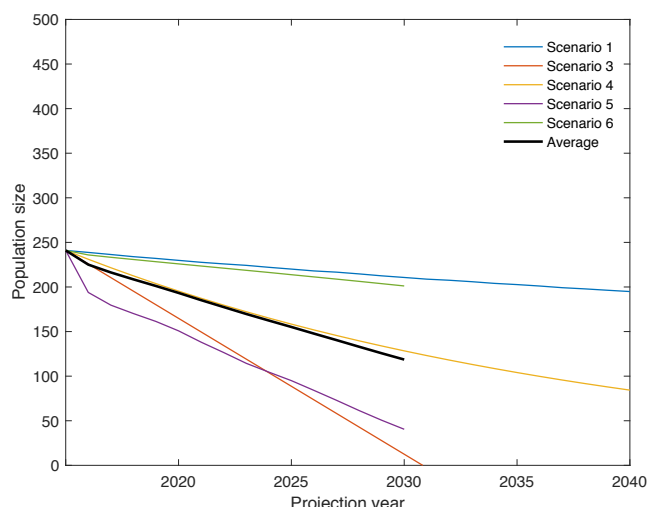


Kemijärvi



Greenland

Alluitsup Paa



Qaortoq

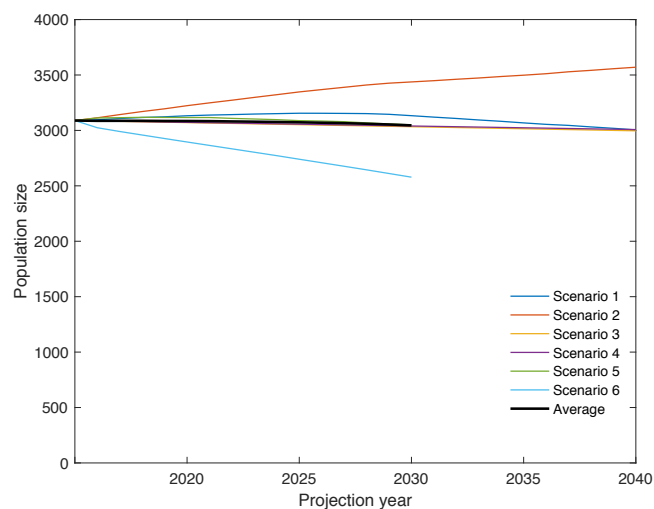


Figure 18. (Page 32–33) Projected total population sizes (2016–2040). The seven scenarios. Source: Own calculations (Sanchez & Karlsdóttir 2017; Roto, Harbo & Rasmussen 2017).

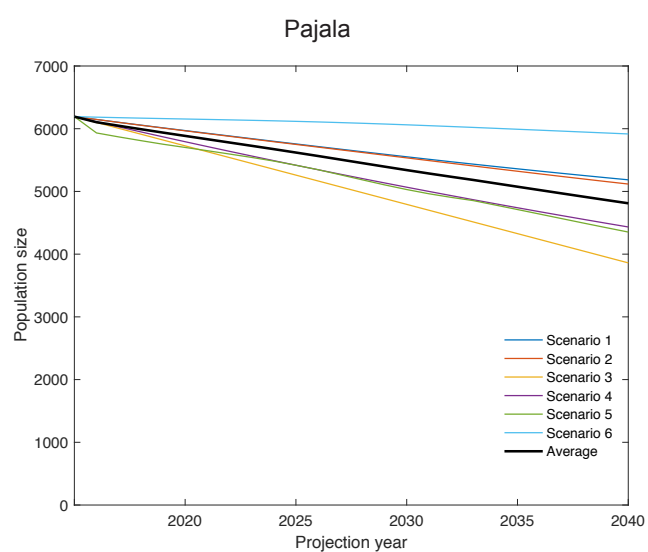
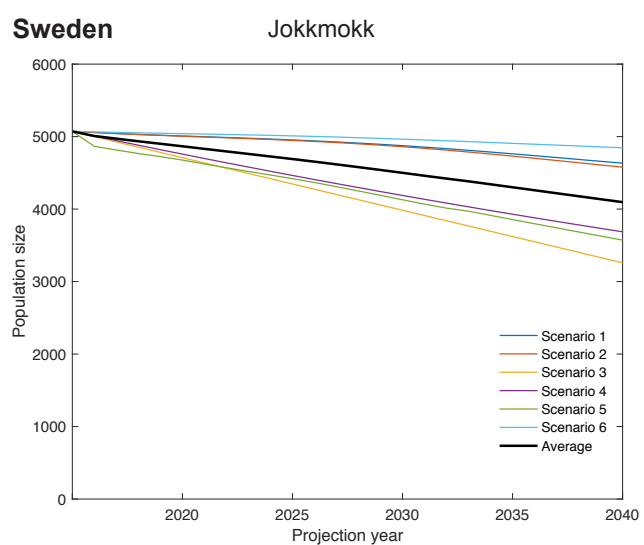
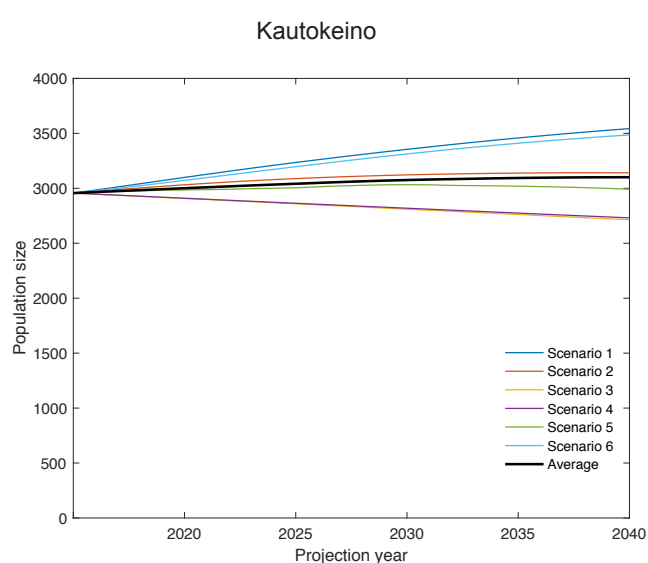
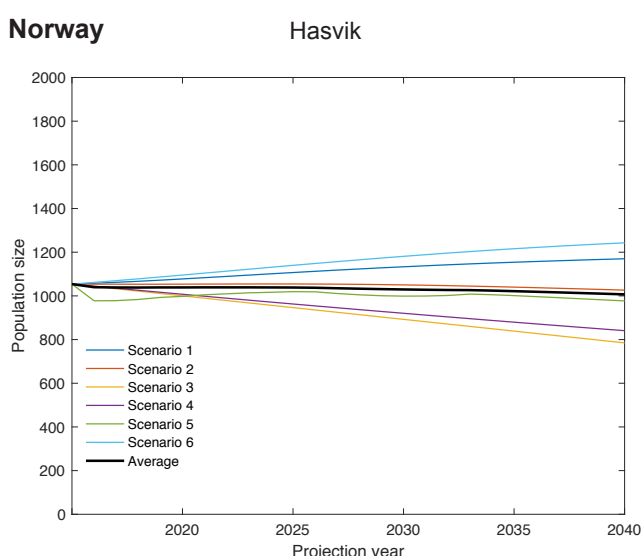
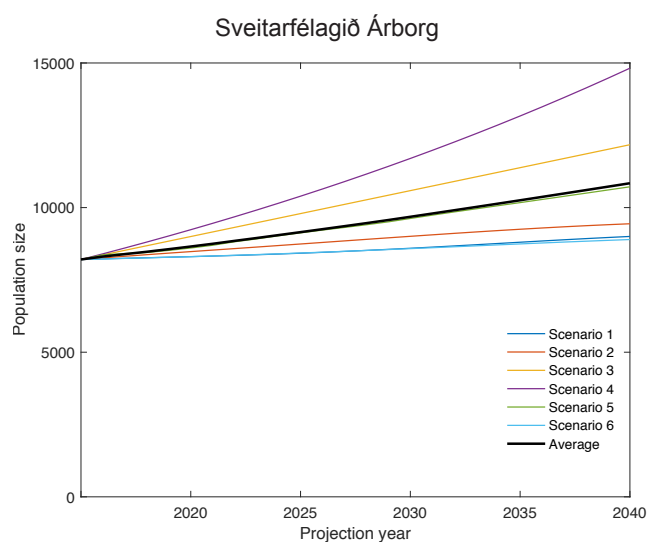
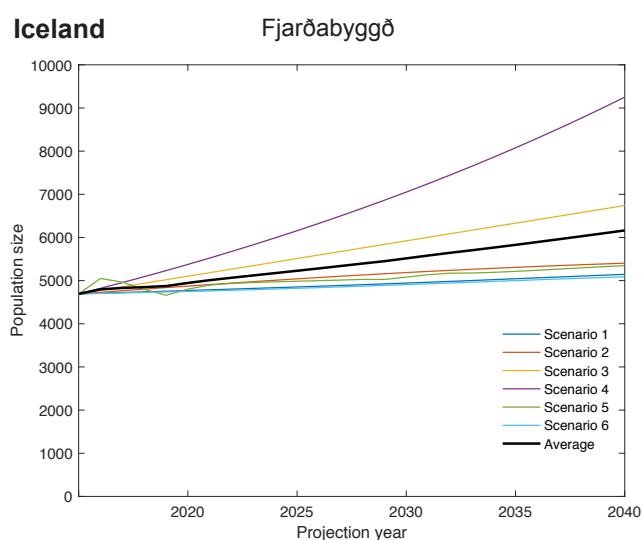


Figure 18 (Page 32–33). Projected total population sizes (2016–2040). The seven scenarios. Source: Own calculations (Sanchez & Karlsdóttir 2017; Roto, Harbo & Rasmussen 2017).

The demographic future of Suðuroy (Faroe Islands), Qaqortoq (Greenland), and Hasvik and Kautokeino (Norway) appears more uncertain. Here, both future increases and declines in population size appear possible, depending on which scenario is considered. In Suðuroy, for instance, Scenario 2 suggests that the population may increase until 2040. In this scenario, migration levels were set to zero, so that all population dynamics are the result of population ageing, fertility and mortality trends. Suðuroy has been losing its population through outmigration in recent decades. The results of Scenario 2 suggest that future population decline could be avoided if this process was halted and the island could manage to remain attractive to its inhabitants or even attract newcomers. Most of the other pro-

jection results, which implicitly or explicitly take future migration flows into account, suggest that the population of Suðuroy will continue to decline until 2040.

The future growth or decline of populations is determined by trends in fertility, mortality and migration, in addition to the existing population size and structure. In the case of Suðuroy, the comparison of scenario results suggests that migration trends will be influential in determining whether the population will decrease in size or grow until 2040. However, in the 11 other case studies, other demographic trends may be more important, and the next step is to investigate this issue in detail.

The question concerning how mortality, fertility and migration trends may influence population dynamics

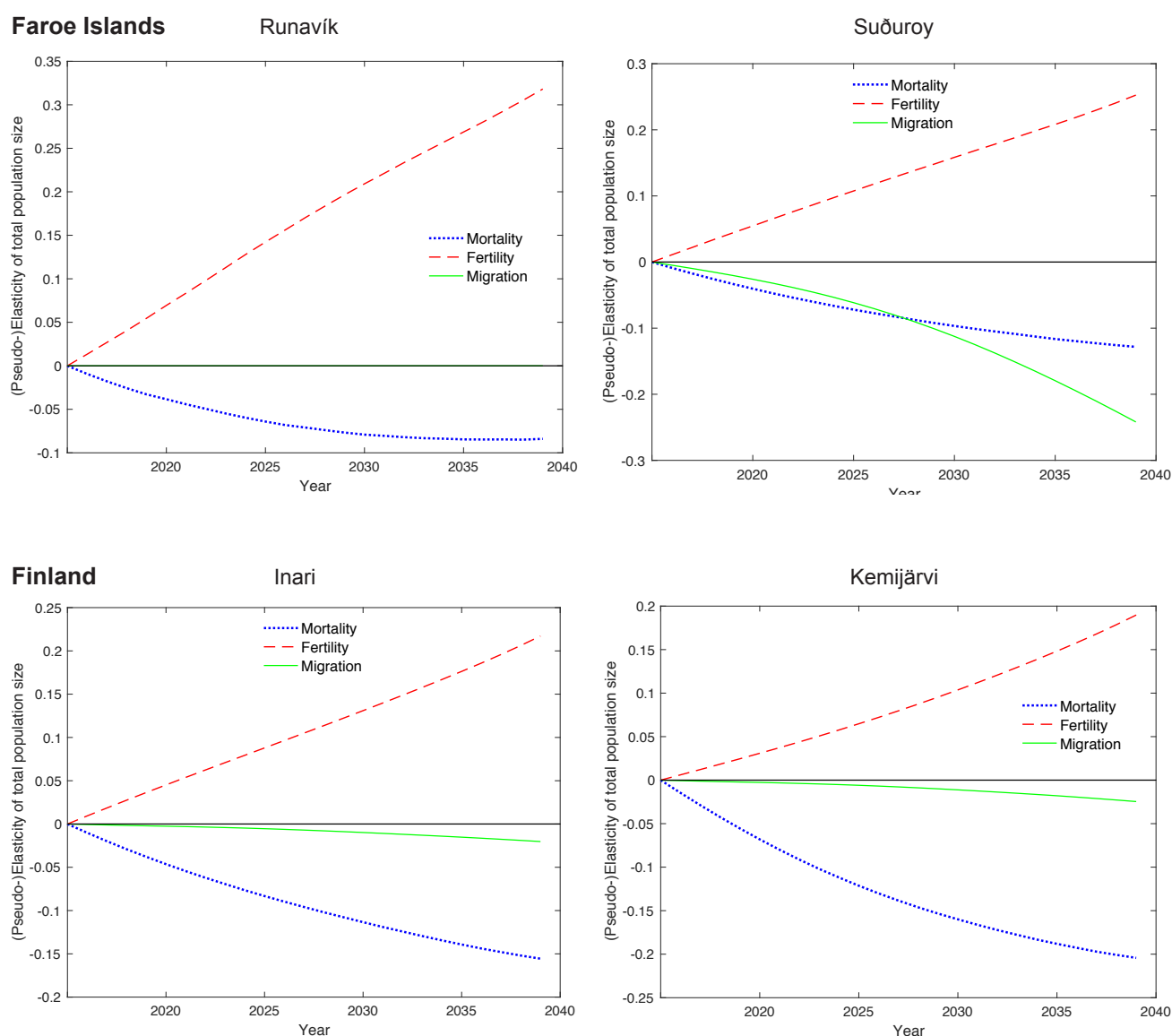
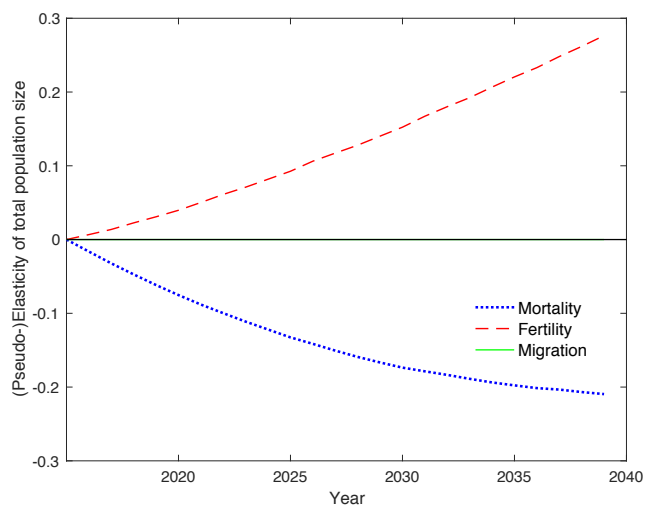


Figure 19 (Page 34–36). Elasticity of total population size in 2040 to fertility, mortality and migration (based on Scenario 1)

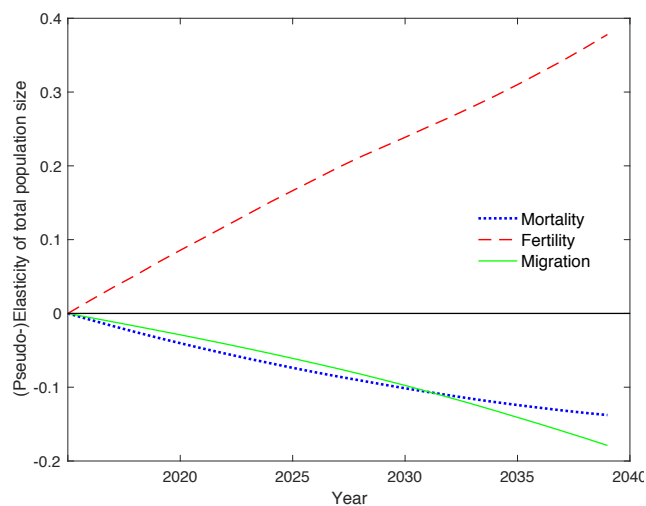
Source: Own calculations (Sanchez & Karlsdóttir 2017, Roto, Harbo & Rasmussen 2017).

Greenland

Alluitsup Paa

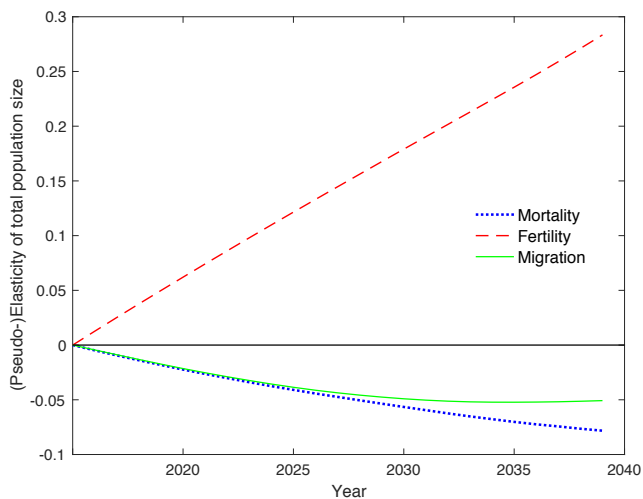


Qaqortoq

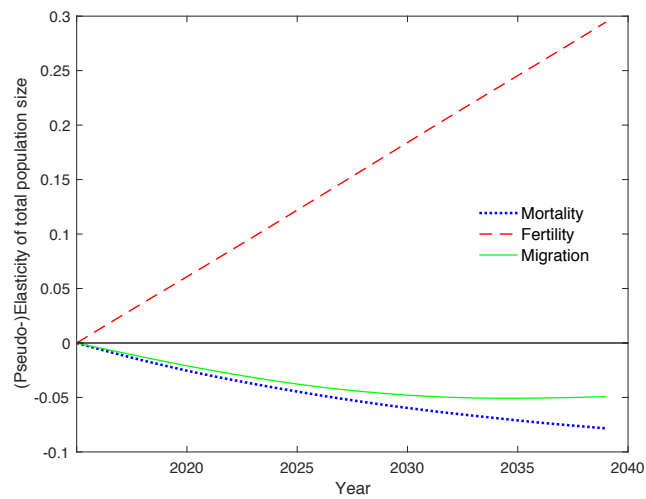


Iceland

Fjarðabyggð

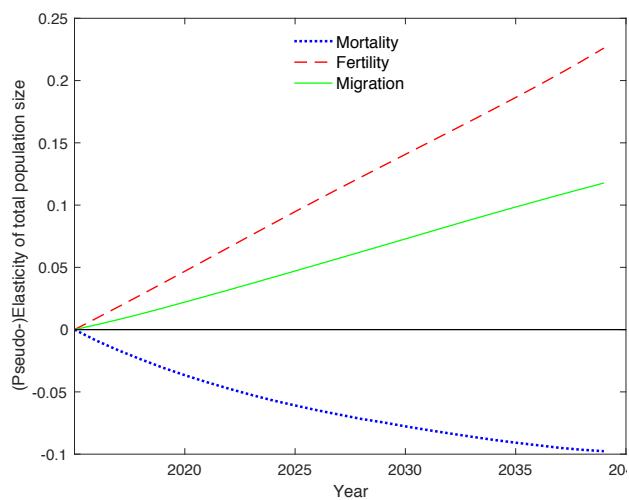


Sveitarfélagið Árborg



Norway

Hasvik



Kautokeino

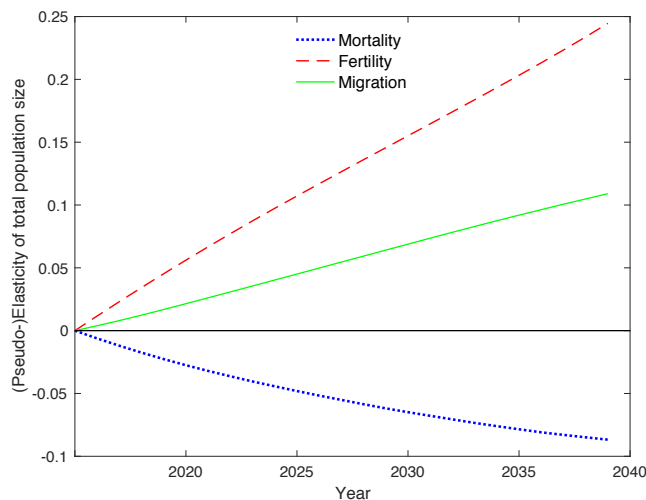
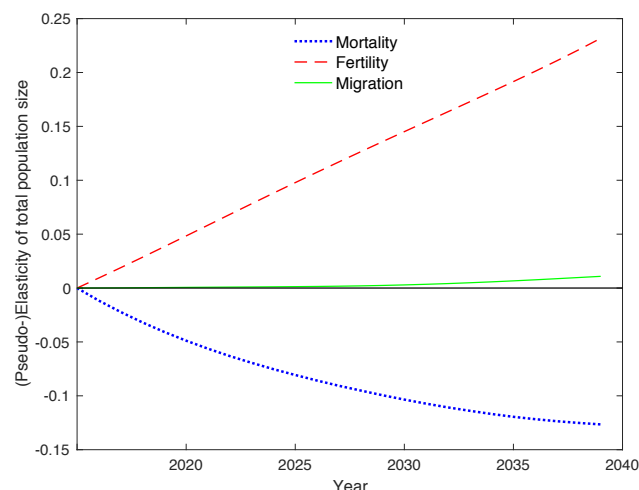


Figure 19 (Page 34–36). Elasticity of total population size in 2040 to fertility, mortality and migration (based on Scenario 1)

Source: Own calculations (Sanchez & Karlsdóttir 2017, Roto, Harbo & Rasmussen 2017).

Sweden

Jokkmokk



Pajala

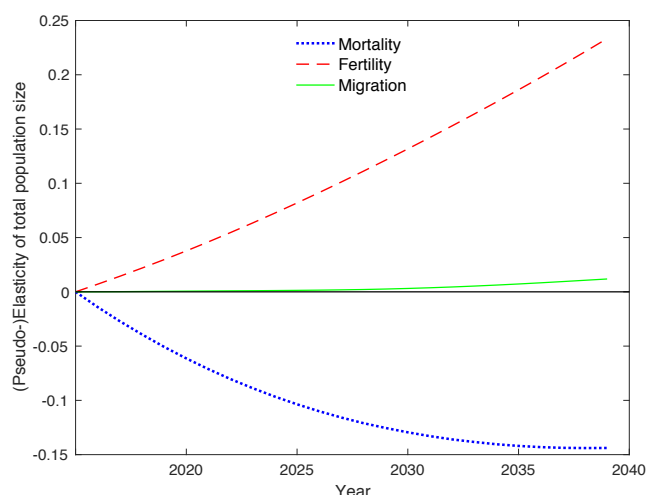


Figure 19 (Page 34–36). Elasticity of total population size in 2040 to fertility, mortality and migration (based on Scenario 1)

Source: Own calculations (Sanchez & Karlsdóttir 2017, Roto, Harbo & Rasmussen 2017).

in the future can be addressed with the help of elasticity analysis (for more information on this method, see Caswell and Gassen 2015; Gassen and Caswell 2016). Elasticity analysis of population projections asks how projection results change if we increase the mortality, fertility and migration parameters on which the projection is based by a small proportion (e.g. 1%). If these small parameter changes have a large impact on projection results, this suggests that the parameter is important for the projection. If small parameter changes leave projection results virtually unchanged, we can assume that the parameter has little or no influence. If we believe that the demographic parameters on which the projection is based are accurate, the elasticity results also provide a good indication of which demographic behaviours may be most influential in driving not only projection results but also de facto population trends of the future.

We performed elasticity analysis for all 12 settlements and municipalities using Scenario 1 (Figure 19). The y-axis indicates how much the projected population size of each community changes if we increase the mortality, fertility or migration parameters in the projection by 1%. Larger positive or negative values on the y-axis indicate that these changes increase or reduce projected population sizes particularly strongly.

The elasticity results for Suđuroy confirm that migration trends will have an important influence on how the population size will develop until 2040. In Scenario 1, an increase of 1% in the negative net migration flows that are expected for Suđuroy would lead to even more people leaving the municipality until 2040. In this last projection year, the population of Suđuroy would be an

additional 0.25% less than is already expected in Scenario 1. Small changes in fertility could also strongly affect future population size in Suđuroy, but in the opposite direction: if fertility parameters are increased in the projection by 1%, the population of Suđuroy would be 0.25% larger in 2040 than is expected in Scenario 1. The two issues concerning how migration and fertility trends will develop in the future therefore seem to be important in determining future population dynamics in Suđuroy.

In most of the other municipalities and settlements, migration plays a weaker role. In Jokkmokk, Hasvik, Inari and Qaqortoq, for instance, small changes in fertility rates have the largest impact on projected population sizes. In Kemijärvi, both fertility and mortality have a strong influence on projected population results. While detailed results differ between the 12 towns and municipalities, the issue concerning how fertility trends will develop appears to be important in all of them. Even small increases in fertility rates would give an additional boost to population sizes everywhere, and this may be as important as or more important than comparable small increases of in- or outmigration numbers.

When considering these results, it is important to keep in mind that we simulate here the effect of small 1% increases in fertility rates, mortality rates or migration numbers without asking how easily such changes would emerge. In some of the communities considered here, it may be very difficult to influence migration movements, for instance due to economic opportunity structures or trends in the housing markets. Other municipalities may find it harder to create family-friendly

living conditions that might encourage couples to have (more) children. When interpreting elasticity results, the specific conditions in each municipality or town and the question concerning how easily changes in demographic behaviour could be achieved in reality should always be kept in mind. In addition, it should be noted that the elasticity results presented here are based on Scenario 1. If we repeat the same analysis with one of the other projection scenarios, the results may look somewhat different.

The development of age structures 2016–2040

While the 12 Arctic communities differ with respect to their projected population sizes, they share more similarities when projecting how their age structures may develop over the next 25 years. Figure 20 shows the relative size of five different age groups in the 12 municipalities and towns in 2016 and until 2020, 2030 and 2040

(from left to right, respectively) according to Scenario 1.

A comparison of the panels shows that the relative size of the oldest age group (80+ years) is likely to increase everywhere. In some places, such as Kemijärvi or Pajala, 15%–22% of the population will belong to this age group, while in Kautokeino or Qaqortoq, it will remain below 10%. We also see similarities when considering the age groups 20–39 years and 40–59 years, which constitute the main workforce. The projection results suggest that these age groups are likely to constitute a relatively smaller part of the overall populations in 2040 than in 2016, with the exception of Pajala. Pajala already had a comparatively old age structure in 2016, with large parts of its population aged 60 years or older. In 2040, many of these older residents will no longer be living, and the age groups 20–39 years and 40–59 years will constitute a somewhat larger part of the population than they do today.

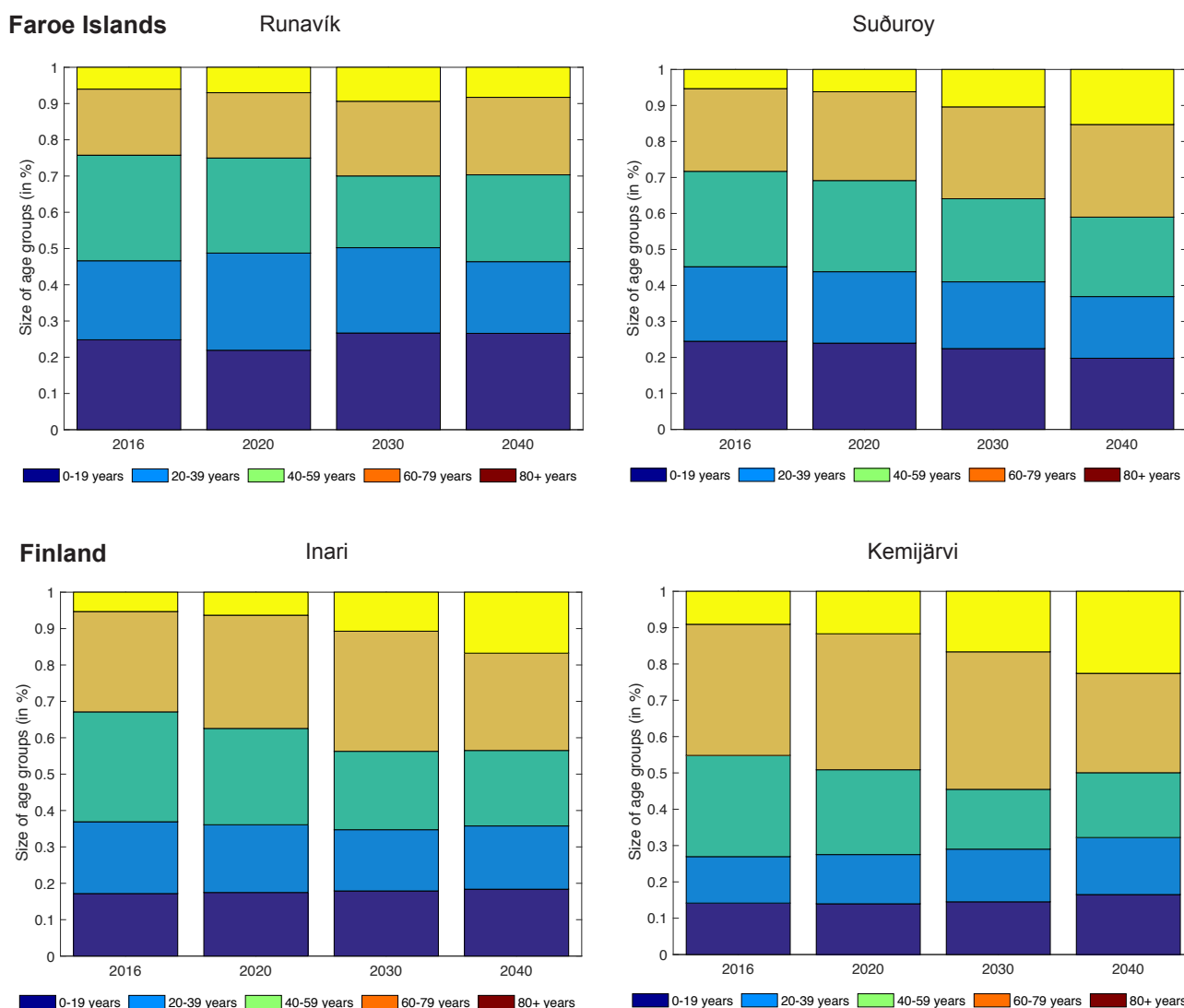
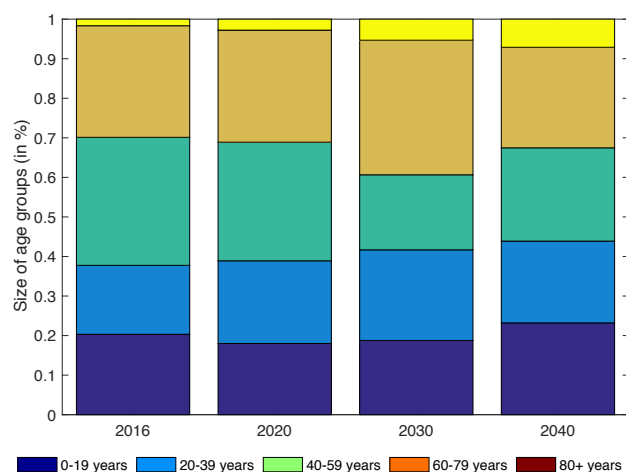


Figure 20 (page 37–39). Projected age structures in 2016, 2020, 2030 and 2040: The seven scenarios.

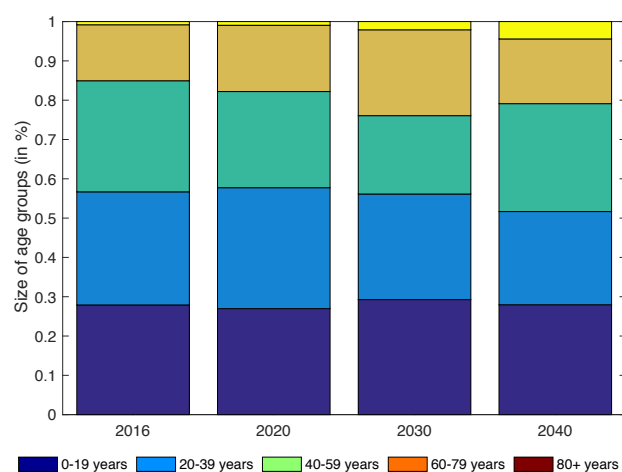
Source: Own calculations (Sanchez & Karlsdóttir 2017; Roto, Harbo & Rasmussen 2017).

Greenland

Alluitsup Paa

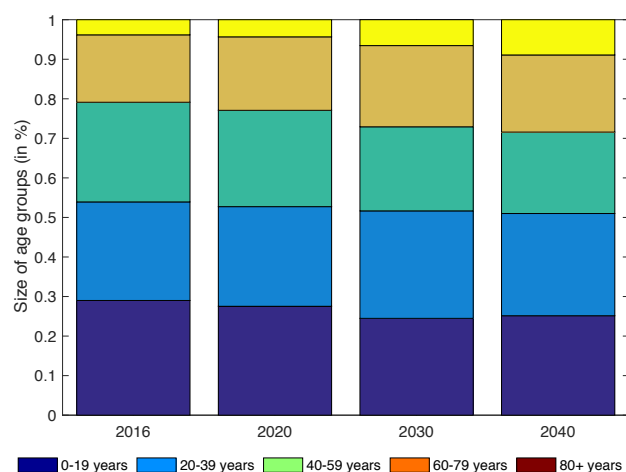


Qaqortoq

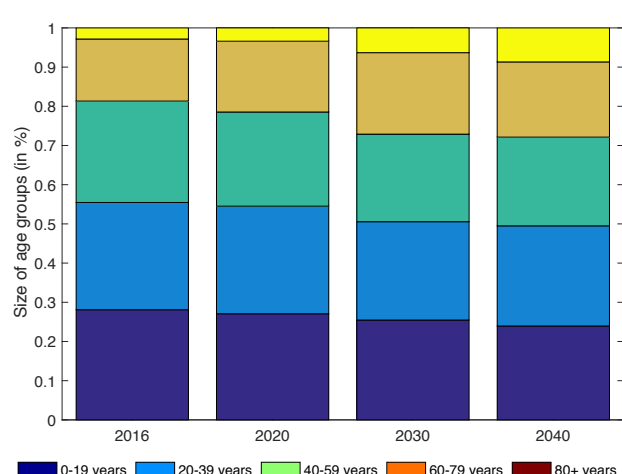


Iceland

Sveitarfélagið Árborg

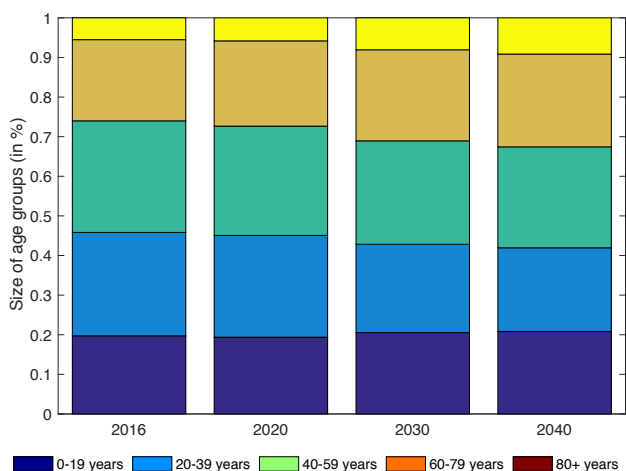


Fjarðabyggð



Norway

Hasvik



Kautokeino

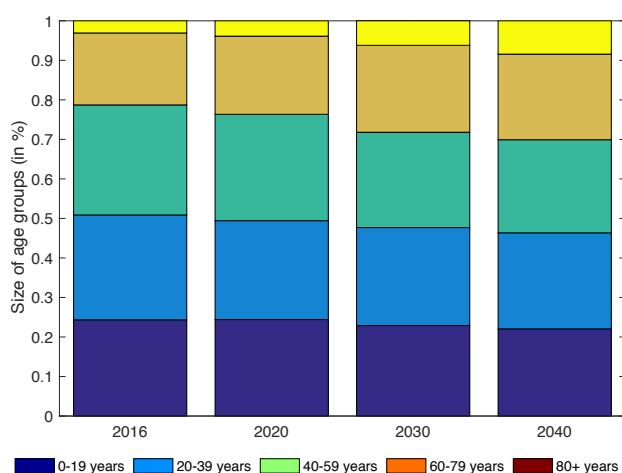
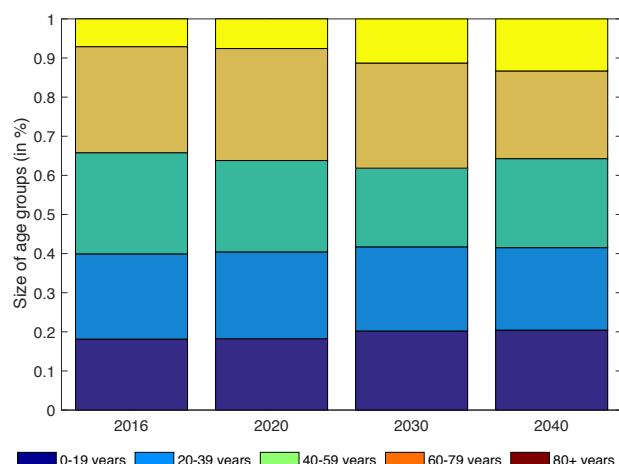


Figure 20 (page 37–39). Projected age structures in 2016, 2020, 2030 and 2040: The seven scenarios.

Source: Own calculations (Sanchez & Karlsdóttir 2017; Roto, Harbo & Rasmussen 2017).

Sweden

Jokkmokk



Pajala

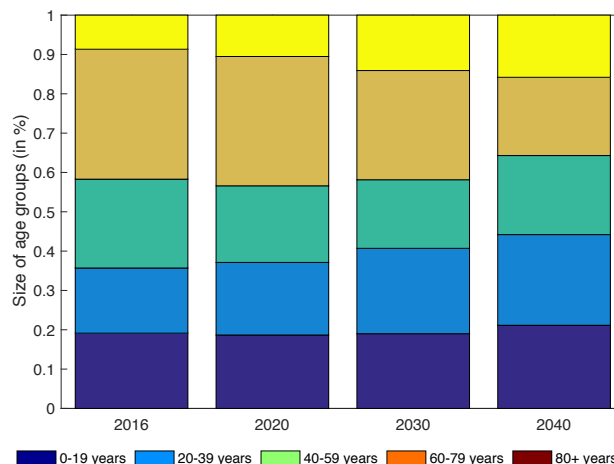


Figure 20 (page 37–39). Projected age structures in 2016, 2020, 2030 and 2040: The seven scenarios.

Source: Own calculations (Sanchez & Karlsdóttir 2017; Roto, Harbo & Rasmussen 2017).

The greatest differences between the 12 towns and municipalities appear when comparing the relative size of the youngest age group (0–19 years), which will depend on how future fertility rates develop, as well as on how the size of older population groups will change due to migration or mortality. In some places, such as Suðuroy in the Faroe Islands and Sveitarfélagið Árborg in Iceland, even comparatively high fertility rates cannot prevent a decline in the relative size of the youngest age group. In contrast, in places such as Jokkmokk or

Kemijärvi, the relative size of the youngest age group will increase according to Scenario 1.

Shifts in the population age structure are hence likely to occur everywhere, and while Arctic municipalities and towns may experience some common trends, they are likely to differ with respect to others. Overall, we find that the Arctic is likely to remain a diverse region in terms of its demography, and the projected population trends suggest that unique challenges and opportunities may arise in the different towns and municipalities.

5. Opportunities for future development: Findings from the Foresight process

In accordance with the bottom-up approach of the foresight process, this chapter focuses on a presentation of stakeholder discussions in a synthesis of the workshop results. Although discussions concern challenges faced by the communities, to a greater extent they involve opportunities for development, first from the perspective of local stakeholders, followed by the inclusion of regional- and national-level representatives from development authorities, education institutions and the business community. Here, findings from the vision phase are first introduced followed by the realism and realisation phases.

5.1. The vision phase

In the vision phase (September 2014 to February 2015), local communities' visions for future development were formulated at 12 workshops across the Nordic Arctic. For each of the local foresight workshops, the goal was to have 15–20 participants who broadly represented the composition of the local community (different occupations, age groups, gender). Therefore, in each community, a local contact person was engaged to invite participants and to help Nordregio facilitate the workshop.

At each workshop, participants were divided into groups. In the first part, the groups discussed what they perceived as the most important challenges and opportunities. Subsequent discussions concerned future visions for the local area in a 10-year and 10–30-year perspective; wishes for future development (age, gender, business development); how local, regional and national authorities can facilitate this development; and advice for responsible authorities and ideas on how the local population can contribute to the desired development.

In the following, discussion points that were common across the 12 local workshops are summarised, and include challenges that Nordic Arctic communi-

ties are facing, and the key opportunities for future development as perceived by the local inhabitants. Discussion points are summarised under the headings of infrastructure, business development and job creation, education and skills development and cultural and social activities, which were the main overall issues identified from the vision phase workshops.

5.1.1 Infrastructure

Transport infrastructure

Places where transport infrastructure was particularly emphasised as a challenge were in the coastal communities that depend on regular ferry and plane connections to the mainland (Hasvik, Greenland, Suđuroy). Some mainland communities, with few and infrequent bus and plane connections and no railway stations, highlighted the need to improve public transport possibilities and road networks (Pajala, Jokkmokk, Inari).

Housing

In general, one problematic situation in the local communities where the workshops were held was that there is a surplus of timeworn houses that need to be renovated. Housing was highlighted as a challenge in several places. For example, there is an interest among young couples with children to move back to Hasvik, but there is a shortage of houses and investing in new construction is risky, as it is not possible to resell houses at the same cost (also the case in Fjarðabyggð). Another problematic situation can be identified in Pajala where new apartments were constructed as the mine was established. With the current situation in which the mine has been shut down, many apartments are left empty. Furthermore, some of the apartments were constructed under guarantee from the municipality, which puts the local authority in a vulnerable position. Another concern is the limited options of rental contracts. Several participants noted that this was a barrier to attracting young people to stay in the area (Árborg, Hasvik).

5.1.2 Job creation and business development

Primary industries and processing of natural resources

In most places, local processing of natural resources was highlighted as opportunities for future development. This involves the production/processing of forestry, fisheries and agriculture resources (in some cases also mineral resources; further on this below). In some cases, the relevance of ensuring more local value creation was emphasised, e.g. not exporting fish directly but ensuring more processing and value creation on land through strengthening collaboration between fishery businesses and local processing businesses. The same was highlighted with regard to utilising opportunities for local food production, e.g. more local slaughter-houses and food production from reindeer and using the berries that are available locally for food production. More local processing of natural resources is seen to involve opportunities for both small-scale entrepreneurship and larger companies opening production facilities in the communities. Processing of natural resources was also highlighted in relation to the development of the tourism industry, as nature is an important attraction in the Arctic regions. Locally produced food is also an attraction for tourists. Furthermore, the importance of maintaining the attractiveness of working in primary sectors was highlighted in some places, especially in Hasvik, Fjarðabyggð and Kautokeino.

Large-scale industries

Some of the local communities are affected by large-scale industries that either previously existed (Kautokeino, Pajala), where opportunities to establish mines have been identified but rejected by the local authorities (Inari, Kautokeino), and where an opportunity to establish a mine is under review (Jokkmokk). In Kemijärvi and Pajala, it was stressed that people moving to the communities to work in the mines will leave when the mines close down. This is currently a critical situation, especially in Pajala, since there has been a positive in-migration during recent years with the establishment of the mine. Because the mine has now shut down, people will move to find employment elsewhere. Similarly to what happened with the establishment of a paper and pulp plant in Kemijärvi, the opening of the mine in Pajala led to a positive development in the hospitality and service sector.

Tourism

At all workshops, tourism was emphasised as an opportunity for future development. Nature-based experiences and the opportunity to see the Midnight Sun

and the Northern Lights are attractions shared by the destinations. In some areas, Sami cultural experiences are offered to tourists. Some tourism destinations are closely linked to the primary sector, e.g. in Hasvik, where fishery tourism has developed, and local food culture, e.g. in Jokkmokk, where a number of restaurants are in operation. Inari on the other hand is a successful sports/ski tourism destination.

Cultural economy

Opportunities for the development of the cultural economy were especially emphasised in Kautokeino where the International Sami Film Centre, the Sami University College and other Sami institutions are based. In particular, film production and the organising of events were highlighted as cultural sector opportunities. The development of the cultural economy was also highlighted as an opportunity for future development in other places, e.g. Fjarðabyggð.

5.1.3 Education and competence development

Distance education and distance work facilities

In some places, the need for higher education opportunities was stressed, mainly in terms of improving opportunities for distance education; a few places also suggested the need for a local campus (Kemijärvi and Inari). Another idea that was highlighted was the opportunity to establish facilities for distance work, such as business hotels, not only for entrepreneurs but also for employees of firms not based in the community.

5.1.4 Social and cultural activities

Nature

At all workshops, the value of nature was emphasised, often in association with discussions of quality of life assigning value to the nature of the local communities as providing “space”, “open landscapes”, “peace and quiet” and also providing good opportunities for outdoor leisure activities. Nature was also mentioned as an asset to be highlighted to attract new inhabitants to the area and as an opportunity for promoting tourism.

Opportunities for leisure and cultural activities

Limited opportunities for leisure activities were highlighted as a challenge in some places, as well as a lack of cultural experiences and meeting places in general for the local populations. In one community, the wish for a meeting place where no alcohol is served was mentioned as important for improved well-being of the community (Qaqortoq). Elsewhere the need to increase the visibility of leisure options already existing, such as hiking, cycling, swimming and cultural events with music and arts were highlighted.

Multicultural communities

Ensuring the integration of migrant workers into a small community was highlighted as both a challenge and an opportunity (e.g. Hasvik). In the municipalities of Pajala and Jokkmokk, a relatively high number of asylum seekers are being placed, and concerns were expressed in terms of long-term integration as well as for the short-term opportunities for the asylum seekers to find meaningful day-to-day activities. Inari is a popular tourist destination bordering Russia and Norway, and a community with a Sami population; for this reason, it was highlighted by workshop participants as a well-functioning multicultural community.

Attitudes

In some places, a sense of community involvement and the initiative of people were emphasised as strengths for future development. In other places, however, very different attitudes among the local population were highlighted as an issue. Reference was made to problems of “clan behaviour”/family feuds and problems of envy of others’ success, all of which constrain communication and collaboration between local inhabitants in everyday life, including in business and politics (mainly stressed in the North Calotte). In the same places, reference was made to struggling with a poor reputation and misconceived perceptions about the North; these issues were discussed as problematic in terms of attracting residents to some places, e.g. Fjarðabyggð. Other communities also reported issues concerning attitudes towards individuals who were not seen as meeting the norms of civil behaviour. In one community, a key challenge was highlighted as the need for “stronger individuals” as the first priority and “lack of independence among inhabitants” in the community (GL). Elsewhere, the need to be self-confident and to “develop on your own initiative”, i.e. not depending on the assistance of the public sector was highlighted with regard to entrepreneurship and other initiatives to ensure development in the community.

Local politics

In some places, issues concerning criticism of the political leadership of the municipalities were highlighted as important challenges. This referred to a lack of trust in local politicians and the lack of transparency of their decisions; moreover, there were concerns that the municipal administration spent too much on its own operations rather than on local development. The greatest challenge, however, was seen to be the lack of vision for future development. In these places, criticisms concerning nepotism or a “clan mindset” were also made in relation to the local municipal administration. In

the area where the mine had recently been shut down and where its future reopening was uncertain, the need for a clear local development strategy and action plan was highlighted.

5.2 The realism and realisation phases

The purpose of the realism phase (August 2015 to November 2015) was to concretise the ideas presented in the vision phase. To this end, workshop participants discussed the development of policy measures to support future regional development with regard to issues particularly highlighted in the local workshops, namely, infrastructure, business development and job creation, education and skills development, as well as social and cultural activities.

Participants in the realism phase included representatives from the local-level workshops, civil servants from local, regional and national development authorities, education institutions and business associations. As far as possible, the local contact persons from the vision phase workshops also participated. In most cases, the workshops were co-hosted by the national member of the Nordic Working Group and Nordregio. The goal was to have 15–20 participants at each workshop.

In the realisation phase (January 2016 to March 2016), two transnational workshops were organised, one for members of the West Nordic Council and one for members of the North Calotte Council and other representatives from the cross-border region. The workshops were co-organised by respectively the West Nordic Council, and the North Calotte Council and Nordregio. The purpose of the transnational workshops was to continue the discussions from the realism phase with a focus on transnational collaboration. Thematic discussions focused on infrastructure, business development and job creation, and education and skills development.

This section summarises the discussions from both the realism and realisation phases with a focus on reporting the measures that were proposed to promote development in the Nordic Arctic. In some cases, there are clear overlaps with the issues discussed in the North Calotte region and in the West Nordic countries; measures that were proposed for certain areas are highlighted in the text.

5.2.1 Infrastructure

Improve broadband connection for faster and cheaper Internet

The majority of households have a broadband connection, but the need for higher capacity was stressed in

the North Calotte region. High-speed Internet accessibility is more uneven in the West Nordic countries. Members of the West Nordic Council discussed opportunities for knowledge sharing between the countries about how to ensure cheaper and faster Internet access. The main reasons for cheaper and faster Internet access include expanding opportunities for telemedicine, supporting the digitisation process of businesses, and supporting the possibility for individuals to participate in distance education programmes.

Enhance transnational collaboration on transport

Transport infrastructure is of particular concern in the Nordic Arctic region. Some coastal areas depend on boat and air traffic, while other areas depend more on a solid road and railway infrastructure. Often transport is expensive, the frequency of departures is low and connections between the West Nordic countries and the regions of the North Calotte are limited. An affordable and well-connected transport infrastructure is vital for promoting business development, exports, education and commuting opportunities, and for the general attractiveness to individuals of living in the Nordic Arctic. A number of domestic and regional transport infrastructure issues were highlighted at foresight workshops; in particular, from a cross-border and transnational perspective, the need for common transport planning and collaboration was underlined. In the North Calotte region, the Joint Barents Transport Plan has already provided recommendations for the development of road transport and infrastructure in the Barents Region. Arctic Airlink has direct flights between Oulu, Luleå and Tromsø and is in operation for a five-year probation period (co-financed by Norrbotten County Council, Oulu Municipality and Troms County Council). Similar initiatives have not been implemented to support traffic infrastructure between the West Nordic countries. However, Air Iceland has departures between Reykjavik and a number of destinations in Greenland, and Atlantic Airways have two departures per week between Torshavn and Reykjavik.

Improved air traffic between the West Nordic countries and the regions of the North Calotte was highlighted especially for developing the potential of cross-border “package solutions” for tourists, and for generally increasing the attractiveness of the North Calotte region and the West Nordic countries as tourism destinations. Better accessibility is expected to support job creation. The following initiatives were proposed by workshop participants.

- Promote plans to build a railway to connect the Nordic Arctic to continental Europe (Ishavsbanan).

- Develop new public-private partnerships and business models to finance air traffic in rural areas, e.g. through establishing risk-sharing funds.

- Continue the Arctic Airlink direct flights between Oulu, Luleå and Tromsø. A North Calotte flight route should be continued after this five-year probation period.

- Need for joint lobbying of the nation-states about improved transport infrastructure by the North Calotte Council.

Today, Greenland imports all of its goods through Aalborg, Denmark. In May 2016, the shipping companies Royal Arctic Line (GL) and Eimskip (IS) signed a letter of intent to connect Greenland to Eimskip’s international route.

Establish a free trade agreement between the West Nordic countries to promote more trade/shipping between them. This also includes the possibility of being more self-sufficient in food production by transporting goods between the countries.

5.2.2 Job creation and business development

Promote entrepreneurship and diversified business development

The need to promote diversified business development and entrepreneurship was highlighted at the foresight workshops, not least in relation to avoiding dependency on one economic sector. It is already common for individuals in rural areas to have more than one occupation to make a living. To support both small- and larger-scale entrepreneurship and business development, a well-functioning business support system that also ensures that advisory services are accessible in remote communities in the Arctic needs to be in place (such issues were especially highlighted in GL and FO). It is important for business advisors to adopt a gender awareness perspective (i.e. meet women and men equally) and to provide support in starting up and developing different types of businesses (initiatives by Innovation Center Iceland and Innovation Norway can be highlighted as good examples in this context). A number of issues were also highlighted by young people who did not feel that they were taken seriously when presenting their business ideas to advisors. The following initiatives were proposed by workshop participants.

- Ensure a business support structure where individuals in remote areas have easy access to business support services, e.g. “travelling” advisors.

- Ensure collaboration structures between the local and the regional/national business support system, i.e. local general advisors can refer to specialist advisors.

In a cross-border perspective, options for strengthening collaboration were discussed.

- Educate business advisors to ensure awareness of gender equality and attention to the ideas of young people.

Business networks were another discussion point, and the need to facilitate more systemic collaboration for businesses to better utilise each other's competencies. This issue was also discussed in the context of cross-border collaboration in the North Calotte region.

- Facilitate network/cluster development, e.g. based on addressing common challenges and opportunities. This could involve cross-border collaboration in the North Calotte region to develop the market for data centres, such as the Facebook data centre established in Luleå.

- Create meeting places for business networks, and take into consideration the large distances in the Nordic Arctic by including opportunities to participate through videoconferencing or via Skype (depending on a good broadband connection).

- Establish distance workplaces and facilitate the environment for business development and entrepreneurship, e.g. with business hotels in remote areas.

Access to capital is another recurrent concern in the Nordic Arctic. One proposal that was made was that in regions with large private sector industries, companies might take more responsibility for local business development by establishing risk capital funds.

Analyse opportunities for the development of local/regional financial instruments (e.g. venture capital, microloans) including public-private funded partnerships.

Promote a sustainable bioeconomy

The blue bioeconomy, and especially aquaculture, is a growing industry in both the West Nordic countries and the North Calotte region, and this topic was discussed at foresight workshops particularly in the context of transnational collaboration. The Faroe Islands were highlighted as being successful in their expansion of aquaculture, while Iceland was noted for its success in fish processing. In the Faroe Islands and Greenland, approximately half of the fish is thrown out, and the industry here could learn from Iceland. Better utilisation of aquaculture was discussed at workshops with reference to Northern Sweden and Northern Finland, highlighting the opportunity to learn from fish processing companies in Iceland where there are good examples of utilising the whole fish for producing and selling a range of products such as cosmetics, dermato-

logical products, food supplements, purses, feed and fish fillets. Because processing companies cannot compete on price in the global market, they should rather focus on qualities such as ethical production, organic products, strict environmental standards and good employment conditions. The following initiative was proposed by workshop participants.

- Exchange knowledge between local, regional and national authorities about issues of regulation, planning, environmental management and business support in relation to aquaculture development.

Opportunities for local food production were discussed not only in relation to fish, but also in connection with, e.g. berries and reindeer. Discussions centred on pre-conditions for economically sustainable food production in the Nordic Arctic and the possibilities to promote synergies with the tourism industry.

- Develop structures to support small-scale sustainable fisheries, food production and slaughter-houses.

- Change regulations to be able to utilise every part of the reindeer (North Calotte).

- Develop certification for regionally produced food, such as the quality label Renlycka in Sweden.

- Adopt a niche approach rather than bulk production; the Nordic Arctic will become associated with high-quality products for conscious consumers.

Promote tourism, the experience economy and creative industries

The development of the tourism industry was predominantly discussed in a transnational perspective. For example, it was highlighted that the tourism industry in Northern Sweden and Northern Norway can learn from Finnish approaches in developing package tours. The development of cross-border package solutions is currently addressed through the Interreg co-financed project Visit Arctic Europe. In the West Nordic countries, the development of package tours with particular focus on cultural tourism was highlighted. The promotion of festivals and event organising were discussed, as well as opportunities for the promotion of food tourism. The following initiatives were proposed by workshop participants.

- Support competence/skills development in the tourism and services industries, also with respect to utilising opportunities to extend tourism seasons.

- Introduce tourism taxes to finance the development of local service infrastructure for tourism.

- Consider making it possible to charge a tax or fee for land use (some tourism activities take up space, which prohibits alternative commercial use).

Measures to support creative industries were also discussed in different ways. For example, common West Nordic branding of handicrafts was proposed, as was support for the development of creative industries through initiatives such as FabLab (Fabrication Laboratory) also in remote areas.

Explore and utilise the potential for green businesses and renewable energy

Eco-innovation and renewable energy development were topics for discussion that focused on business opportunities arising from the transition to a low-carbon economy. The following initiatives were proposed by workshop participants.

- Increase co-operation between university/research institutions and private companies on new green solutions.
- Place greater emphasis on renewable energy solutions, i.e. wind turbines and wave power.
- Increase emphasis on waste recycling and sewage, and on securing sustainable practices.

5.2.3 Education and competence development *Entrepreneurship and regional specificities as an integrated part of the education system*

Although entrepreneurship as an integrated part of the school system is already in place, especially in the North Calotte region, it was argued that the initiatives could be started even earlier. In the West Nordic countries, it was stressed that there could be more focus in schools on entrepreneurship and the development of ideas – “thinking out of the box” – e.g. by having project weeks with a focus on being an entrepreneur. Also linked to discussions on entrepreneurship in the education system was the need to ensure that students have greater knowledge about the region they are living in, which should also enhance entrepreneurial thinking. The following initiatives were proposed by workshop participants.

- Adapt teaching plans towards understanding the historical, cultural and geographical specificities of the West Nordic/North Calotte regions.
- Use role models and mentoring opportunities to inspire students to take pride in living in the West Nordic/North Calotte regions.

Gender awareness in the school system

Enhancing gender awareness in the school system is based on the fact that more boys than girls drop out of the education system. In Northern Norway, especially in Finnmark, drop-out rates for boys are pronounced compared with the national average. Here, it was proposed to change the “counting system” from five to 10 years to complete an education. Overall, it was questioned whether the “right” educational opportunities were in place, and how more boys can be motivated to go on to higher education. The following initiatives were proposed by workshop participants.

- Train guidance counsellors in gender equality awareness to help counteract a gender-segregated labour market. Educate guidance counsellors on labour market needs, with a focus on the shortage occupations.
- Do more to strengthen the competence of teachers as motivators and study advisors.

Competence matching: More organised collaboration

Because there are a limited number of knowledge-intensive jobs in the non-urban part of the Nordic Arctic, many young people leave the area after completing higher education; this mismatch between education programmes and the labour market needs to be addressed. The need for more organised collaboration between universities, vocational education institutions, representatives from the regional labour market and public authorities concerning current and expected competence needs was stressed at workshops. The following initiatives were proposed by workshop participants.

- Establish more distance learning opportunities, including a focus on competence development/lifelong learning, which may also increase the potential for transnational collaboration.
- Conduct better analysis of regional competence needs, including more benchmarking in the North Calotte region, which may be more relevant than national benchmarking.
- Establish work rotation schemes for occupations such as nurses, mechanics and craftspersons (West Nordic countries).

Higher education and research in the Arctic, West Nordic and North Calotte regions

University of the Arctic (UArctic) is a co-operative network of universities, colleges, research institutes and other organisations concerned with education and re-

search in and about the Arctic region; a number of education institutions are also active in the Nordic Arctic. UArctic currently runs two common education programmes: West Nordic Studies for the West Nordic region and Polar Law in Akureyri. However, further opportunities could be explored, e.g. in the natural sciences and marine-related research. In the North Calotte region, it was proposed that regional authorities, the business community and education institutions should collaborate to develop common and complementary education programmes with Arctic specialisations, e.g. related to cold climate technologies. The following initiative was proposed by workshop participants.

- Promote West Nordic and North Calotte branding to attract students as well as individuals with higher education.

Exchange programmes, internships and apprenticeships

Although these issues were discussed in relation to particular regional concerns, e.g. a lack of apprenticeship placements in Northern Norway, they were discussed more broadly in the context of transnational collaboration. The following initiatives were proposed by workshop participants.

- Establish work experience as an integrated part of education programmes from elementary school through to university. The call for more work experience placements during lower secondary school (13–15 years old) is related to the relevance of exploring different career options at an early stage. Germany was referred to as having a good system in place for this.
- Streamline/recognise vocational education between the countries and support apprenticeship placements in other Nordic countries.
- Promote more student exchange semesters across borders/countries as part of education programmes (e.g. as occurs between Greenland and Iceland).

5.2.4 Social and cultural activities

Cultural events

By utilising strengths such as a region's nature, history and culture, more festivals, events and art exhibitions could be organised. It was stressed at workshops that local and regional authorities can play an important role as

co-ordinators and/or co-financers of events. The following initiatives were proposed by workshop participants.

- Promote highly motivated individuals and non-profit associations that will organise events in the region. Increase co-operation between local authorities and individuals and organisations.
- Create the infrastructure for art exhibitions and events (e.g. like open air museums).
- Offer artists residence
- Designate art ambassadors.
- Organise West Nordic Days as a cultural event, e.g. every other year, to include sports, music and dance, arts and other creative activities. The event should have a particular focus on involving young people.

A more diverse supply of leisure and cultural activities

Discussions here mainly centred on utilising existing buildings in local communities, such as using schools for other activities at night or having in place active community houses (like Folkets hus in Sweden). In Norway it was stressed that it is important to preserve culture schools for the purpose of leisure activities and to cultivate an interest in the creative industries. The following initiatives were proposed by workshop participants.

- Promote driven individuals and non-profit associations that will initiate and run more leisure activities.
- Create a Facebook or other web page with updates about cultural activities taking place.
- Run evening courses with leisure activities and education opportunities for adults.
- Organise community evenings to support social cohesion and solidarity among people living in the same community.

Approaches to welcoming (and keeping) newcomers

It was suggested that communities should establish approaches to welcoming newcomers to the Nordic Arctic. The following initiatives were proposed by workshop participants

- Introduce an arrangement, in which local people introduce newcomers to the sports facilities, cultural events, local restaurants, etc. of the area.
- Create a website to help newcomers gain an overview of what the region has to offer.

6. Arctic strategies and governance structure in the Nordic Arctic

6.1 From national Arctic strategies to supranational Arctic strategies focusing on the regional level

Future development of the Nordic Arctic region is not only a matter for the nations, regions and municipalities that govern the territory. In recent decades, it has also become a matter for policy interest at the supranational level. Due to their geographical location and particular environment, the Arctic regions have specific national interests; since 2007, all Nordic countries have drawn up Arctic strategy documents for their Arctic regions, as have Canada, Russia and the USA.

National security issues and positioning within the greater Arctic region obviously play an important role in the national strategies. However, this topic will not be covered in this chapter since it refers more to political manoeuvres and less to the everyday life of people residing in the Nordic Arctic and to the regional effects, which are the focus of the Foresight project.

Associated with national foreign policy interests are the intergovernmental councils where the Nordic Arctic region constitutes (part of) their territories of interest, such as the Arctic Council, the West Nordic Council and the NCM. All bodies have developed strategy and other policy documents that address development in the Nordic Arctic region (Van der Zwet, Bachtler, & McMaster 2014, Nordic Council of Ministers 2014). Lately, other political entities that were previously not directly associated with the Arctic region have also developed strategy papers. One example is the EU, which published in April 2016 a Joint Communication (“An integrated European Union policy for the Arctic”) on their policies in the region (Council of the European Union 2014, European Commission 2016).

While a number of sometimes conflicting interests are at play in these international policy papers, another dimension of the Nordic Arctic is that the Arctic settlements are located in municipalities and regions that are included in the national planning systems, and thus are governed most directly by the tasks and responsibilities that these administrative levels have been assigned. This includes nationally appointed regional

development policies, as well as the local and regional administrations’ own strategies and priorities for the development of their regions and municipalities (to the extent that the administrative system leaves scope for such more strategic tasks).

In this chapter, we briefly outline the aim and content of the current Arctic strategies that govern the Nordic Arctic region. We also describe the national administrative structures to highlight the interplay and possibilities for bottom-up influence on these international and national strategies. This policy interplay and the tasks and responsibilities assigned to each administrative level are crucial for informing the findings from the foresight workshops, just as the governance structures frame the policy recommendations that are developed on the basis of the outcome of the foresight process.

6.2 National Arctic strategies

This overview of the Arctic strategies is structured around the following two questions.

- What have been the stable and ongoing elements in the Arctic strategies of the Nordic countries?
- What have been the changes in some of the Arctic policies following revisions, and which policies are likely to impact regional development conditions?

6.2.1 Finland’s strategy for the Arctic region

Finland’s first Arctic Strategy was initially presented in 2010, revised in 2013 and further developed in 2016 (Table 3). The initial strategy focused on external relations and discussed issues relating to security, the environment, the economy, infrastructure and the indigenous peoples in the Arctic, as well as utilisation of Finland’s Arctic know-how, research, and the strengthening of the Arctic Council. The document defined Finland’s Arctic policy objectives and discussed ways of promoting them. Proposals for the development of the EU’s Arctic policy were also presented in the revised document, “Finland’s Strategy for the Arctic Region 2013” (Prime Minister’s Office 2013), which ad-

National Arctic Strategy	First version	1 st revision	2 nd revision
Finland	2010	2013	2016
Sweden	2011	2016	
Norway	2006	2009	2014 (with further revision expected in 2017)
Kingdom of Denmark – Greenland – Faroe Islands	2011	Sectorial revisions expected in 2017	
- Faroe Islands		(2013)*	
Iceland	2009	2011	(2016)*

Table 3. Nordic Arctic countries timeline for publishing Arctic strategies.
*stakeholder analysis positioning the countries in Arctic collaboration.

dressed a wider range of issues by examining the possibilities for bolstering Finland's position within the Arctic region; the creation of new business opportunities; the Arctic environment and the region's security and stability; the position of the northern parts of Finland; international co-operation; and Arctic expertise in the broadest sense of the term.

In the Finnish strategic programme of Prime Minister Juha Sipilä's government, published in May 2015 and supporting the updating process of Finland's Arctic Strategy in 2016, the main aim was to develop concrete instruments to aid implementation of the strategy by the year 2019 (personal correspondence with the Prime Minister's Office, April 2016). However, in the publication "Finland, a land of solutions", the themes touched upon are aims for sustainable growth and public finances, while the themes of employment and competitiveness with knowledge and education also have a prominent role. In addition, well-being and health have now been put on the agenda (Prime Minister's Office, Finland 2015a).

Comparing Finland's policy objectives from 2010, the new vision for 2025 reveals that economic development incentives remain a steady overall goal. In the new strategy, regional impacts on rigid structures of the labour market, bureaucracy in the public sector, over-regulation and standardisation are identified. The structural challenges are claimed to lead to inequality between regions, and thus there is a significant shift towards focusing more on the internal regional processes in the Finnish Arctic Strategy revision (Prime Minister's Office, Finland 2015).

Finland's continuing objectives regarding economic activities and know-how involve the promotion and strengthening of Finland's role as an international

expert on Arctic issues; making better use of Finnish technological expertise in winter shipping, transport, shipbuilding, forest management, mining and the metals industry, and cold-climate research; and expanding the opportunities for Finnish companies to benefit from their Arctic expertise and know-how in the megaprojects of the Barents Region (Heininen 2011b). Responsible exploitation of Arctic resources is repeatedly highlighted. The latest revision of the Finnish Strategy, which was presented by the Prime Minister at NordArc 2016, is based on the promotion of environmental protection, stability, vitality and viability in the Arctic Region (The Prime ministers' office, Finland 2016). It therefore aims to rest on the three pillars of sustainability, namely environmental, social and economic sustainability.

Administrative divisions of Finland

While Finland has a three-tier administrative system, it differs from the Norwegian and Swedish structures by not having directly elected regional administrations. Instead, the municipalities are members of statutory regional councils that serve as the regional development and planning authorities and are to ensure regional interests.

In addition to the regional councils, there is also joint intermunicipal collaboration where the municipalities that constitute a functional region co-operate on various municipal issues, such as public service provision and land use questions.

Directing Finnish regional planning are the regional development plans that are drawn up by the regional councils, which steer the municipalities' more detailed plans, as well as the government authorities' land use planning and implementation.

6.2.2 Sweden's strategy for the Arctic region

Sweden was the last of the eight Arctic states to issue and approve an Arctic strategy. The government adopted Sweden's Arctic Strategy in May 2011 (Table 3). The strategy should be seen as a starting point for further development of co-operation in the region; in early 2016, the Swedish government renewed its environmental Arctic Strategy, as a follow-up from the 2015 World Climate Summit in Paris (Regeringskansliet 2016).

The Swedish strategy promotes deeper Nordic and European co-operation in the Arctic. Sweden aims to ensure that new emerging activities are governed by common and robust regulatory frameworks and, above all, ensure that there is a focus on environmental sustainability.

Sweden emphasises the importance of using civil instruments over military means in the Arctic, but the priority areas are climate and the environment with a focus on reducing emissions and strengthening the adaptation capacity of effects of climate change. Sweden intends to become a leading research nation in the fields of climate and environment. Other more stable aspects of the strategy are the economic development of mining, oil and gas in the Arctic region, with a specific emphasis on free trade development (Heininen 2011a). Using Swedish expertise in the field of energy efficiency is promoted, as is the development of long-term, relevant transport solutions in the Barents Region and maritime security. A further aspect of the strategy focuses on the human dimension and the gender perspective as well as counteracting the negative health and social effects of climate change, hazardous substances and the expected increase in the exploitation of Arctic natural resources. Sweden aims to ensure the rights of indigenous peoples to maintain and develop their identity, culture, knowledge transfer and traditional trades. The Sami identity, culture and traditional industries and languages must be preserved. The Sami research programme should use Arctic-related co-operation projects to amplify the impact of research activities (Ministry for Foreign Affairs, Sweden, 2011).

In the Swedish strategy, climate change, global pollution, global markets and socio-economic pressures are considered the key drivers of change in the Arctic that will have significant consequences for Arctic societies, Arctic nations and the global community. However, the emphasis on environment and climate is preeminent (Ministry of Environment, 2013; Regeringskansliet, 2016).

Administrative divisions of Sweden

The Swedish administrative system is a three-tier system in which the municipalities play the strongest role

in local planning. The Swedish regional authorities consist of both the national regional offices, county administrative boards, whose task it is to ensure that the national aims and strategies are implemented at regional and local level, and the elected county councils, whose key responsibilities are public health and public transportation. While the importance of strategic planning was emphasised in the revision of the Swedish Planning Act in 2011, there are neither national land use guidelines nor any regional land use plans. However, there are possibilities for regions to draw up their own guidelines. The compulsory but not legally binding comprehensive municipal plan often includes both strategic development policies as well as land use guidelines.

6.2.3 Norway's strategy for the Arctic region

The Arctic is Norway's most important foreign policy priority. The first "High North" strategy was issued in December 2006, and in 2014, the current government issued the report "Norway's Arctic Policy".

The five main policy priorities in the 2014 Norwegian Arctic Strategy are international co-operation, business development, knowledge development, infrastructure, environmental protection and emergency preparedness (Utenriksdepartementet 2015). Through international diplomacy in the Arctic and close co-operation with other countries and organisations on how best to develop the region, Norway's overall goal is to ensure that the Arctic continues to be stable, peaceful and predictable (Utenriksdepartementet 2014).

In the government's 2016 budget, a total of NOK 2.7 billion was set aside for initiatives in the High North, a significant portion of which was earmarked for research. Project co-operation is an important instrument in Norway's High North strategy. Through the establishment of a new grant scheme in 2015 ("Arctic 2030"), Norway is expanding its perspective both geographically (to the circumpolar Arctic) and in time (previously until 2020, now to 2030). The new scheme has a framework of NOK 127 million for 2016. The purpose of Arctic 2030 is to promote Norwegian interests and to contribute to realising the Government's priorities for the High North.

Administrative divisions of Norway

Regional authorities in Norway consist of both the county governor and the counties. The county governor is the regional government agency that acts as a link between the national and the municipal level, while the county councils are the elected regional bodies. The county councils are responsible for certain aspects of education and regional planning. The current

Planning Act from 2009 emphasises the strategic aspects within planning and the synchronisation and co-ordination between the different national, regional and municipal plans. According to the Act, regions must develop strategic plans and regional plans, and the municipalities also need to develop strategic plans and comprehensive plans. In the Norwegian system, there are both municipal planning strategies and a comprehensive municipal plan, and the comprehensive plan includes also a strategic part.

6.2.4 The Arctic strategy of the Kingdom of Denmark, Greenland and the Faroe Islands

The Kingdom of Denmark is a member of the Arctic Council due to the Unity of the Realm with Greenland and the Faroe Islands. The three parts of the realm work in close co-operation with the aim of strengthening the Kingdom's status as a global player in the Arctic (Ministry for Foreign Affairs Denmark, 2011, p. 11).

The document "Denmark, Greenland and the Faroe Islands: Kingdom of Denmark Strategy for the Arctic 2011–2020" was adopted by the governments of Denmark, the Faroe Islands and Greenland and launched by the Danish Ministry of Foreign Affairs in August 2011. The joint strategy deals mostly with areas of overarching interest, grounded in fundamental principles and broad co-operation between the countries (Ministry of Foreign Affairs, 2011).

A strategy for the Arctic region is primarily a strategy for development that benefits the inhabitants of the Arctic (Ministry for Foreign Affairs Denmark 2011, p. 10). The strategy focuses on Denmark's relations with the self-governing territories of Greenland and the Faroe Islands, and on what can be done to strengthen the Kingdom of Denmark's status in the Arctic. Its objective is twofold: first, to react and respond to the significant environmental and geopolitical change(s) in the Arctic and the growing global interest in the region; and second, to redefine a (new) position for the Kingdom of Denmark and strengthen its status as a player in the Arctic (Heininen 2011c).

The strategy stresses that the EU's involvement in the Arctic should take place on the Arctic populations' own terms. This is important for avoiding cases where the laws, traditions, cultures and needs of the Arctic societies are neglected, e.g. as in the EU's ban on the import of seal products. At the same time, the strategy strongly urges co-operative relations between the EU, Denmark, Greenland and the Faroe Islands (Łuszczuk 2012).

Priority areas of the strategy include enhancing maritime safety, undertaking surveillance and resolving maritime boundary disputes in accordance with

international law. The strategy highlights the importance of international research co-operation as well as Greenland's prominent role in such co-operation. The strategy also emphasises the importance of the development of "new" economic activities.

In early 2016, the Danish authorities published a report on their diplomacy in times of transition (Udredning om dansk udenrigs- og sikkerhedspolitik, Maj 2016), which was initiated by the Prime Minister and not yet an approved policy. However, the intention of the report was to draw up potential foreign policy strategies for Denmark, and position its interests and values towards the year 2030. The report stresses that the Kingdom of Denmark is an Arctic powerhouse through the Unity of the Realm with Greenland and the Faroe Islands, and thus, even if Denmark is one of the smaller European countries, the Realm has regional influence and responsibility in the Nordic Arctic, and also globally as the 12th largest territory (Taksøe-Jensen, 2016). This rationale for positioning Denmark according to the size of the territory of the realm is a new approach (Nutaarsiaasaqartitsivik/Nyhedsredaktionen KNR, 2016); however, it remains to be seen whether the report will become official Danish foreign policy.

Two new dimensions are also identifiable in the 2016 attempt to redraw the Kingdom of Denmark's Arctic strategy. First, great emphasis is placed on economic diplomacy, advocating for foreign policy to spur innovation, economic incentives and development for the Kingdom, an emphasis that is in line with the Finnish strategy. Second, there is a more regionally specific focus, e.g. one of the policy recommendations in relation to economic diplomacy is precisely to establish a structure in government that secures prioritisation of and a long-term perspective on economic diplomacies for the Danish state, regional and municipal authorities.

A strategic assessment: "The Faroe Islands – a Nation in the Arctic"

In 2013, the government of the Faroe Islands produced a strategic national assessment that provides a deeper and broader understanding of the challenges and potential of the Faroe Islands in the years to come and their place in the future development of the Arctic region. While the joint strategy ("Kingdom of Denmark's Arctic Strategy 2011–2020") deals mostly with areas of general interest, the Faroese assessment focuses on areas of specific relevance and interest for the Faroe Islands. Among the key recommendations is that the Faroe Islands should continue to strengthen their participation in Arctic co-operation, such as in the Arctic Council, and draw attention to the expertise and perspectives on the Arctic that are exclusive to the Faroese.

The joint West Nordic approach in Arctic co-operation, together with Iceland, Greenland and Northern Norway, is also promoted (Prime Minister's Office of the Faroe Islands 2013).

Administrative divisions of the Faroe Islands and Greenland

Both Greenland and the Faroe Islands have self-governing status in the Danish realm, and it is thus the respective Greenlandic and Faroese governments that are responsible for local and regional development.

The two-tiered administrative systems of the Faroe Islands and Greenland and the relatively few settlements tie the regionalised strategic development much more closely to the national planning dispositions. Although the strong position of the national level is also emphasised by the relatively small municipalities, both the Faroe Islands and Greenland have sought to reduce the number of municipalities and thereby increase the capacity of the local governments to carry out the tasks and responsibilities required of them. Greenland reduced their previously 18 municipalities to only four in 2009 through municipal reform; some municipalities in the Faroe Islands have been merged through voluntary amalgamations.

The national level in Greenland plays a strong role in the Greenlandic planning system, i.e. in addition to setting national planning strategies and policies. It also carries out a significant number of decision-making tasks on behalf of the municipalities. However, the municipal reform in 2009 was an attempt to transfer more responsibility for local-level decision-making to the four new municipalities while also giving municipal planning in Greenland a more strategic role with less emphasis on implementing decisions from the national level and more autonomy in the new larger municipalities. Considering the scope of the current Greenlandic municipalities where they cover several previous municipal centres and administer a wide range of smaller settlements from the reformed municipal centre, it can be argued that they themselves are conducting regional planning when they make strategic decisions regarding location and continuation/discontinuation of e.g. public services.

6.2.5 Iceland's strategy for the Arctic region

The Icelandic authorities emphasise that Iceland is the only nation-state that is located wholly in the Arctic (Útanríkisráðuneytið 2009).

There have been two developments of Icelandic Arctic strategies. The first attempt to position Iceland within the framework of the Arctic nations was in 2005 with a background report related to the possibilities of mari-

time transport in the Arctic ("Fyrir stafni", Útanríkisráðuneytið 2005). The more formal Arctic policy was issued with the report "Ísland á Norðurslóðum" ("Iceland in the High North") by the Icelandic Ministry of Foreign Affairs in 2009. This report was then followed by "A Parliamentary Resolution on Iceland's Arctic Policy" ("Þingsályktun um stefnu Íslands í málefnum Norðurslóða") in 2011. Both documents emphasise that Iceland's prosperity relies heavily on the sustainable utilisation of the region's natural resources.

The parliamentary resolution from 2011 includes 12 main priority areas. One emphasis is on the importance of international co-operation within the Arctic Council, which should be promoted and strengthened. Another crucial priority is to secure Iceland as one of the Arctic coastal states as well as its right to influence international decisions. The argument is based on how Iceland's exclusive maritime zone extends to Greenland in the Arctic Ocean and beyond the Arctic Circle. The Icelandic authorities want to sharpen the understanding that narrow geographical definitions are inadequate in defining the Arctic and encourage a more holistic approach to ecosystems, the economic and political specificities, and security-related aspects as defining markers (Alþingi 2011, Althingi 2011a). Iceland prioritises the United Nations Convention on the Law of the Sea as the problem-solving approach to issues occurring in the Arctic maritime zone, and as the framework that should be used for legal cases on navigation, fisheries, gas, oil and other natural resource utilisation of the seas, as well as in relation to coastal shelf issues and the delimitation of maritime zones (Alþingi 2011a).

Iceland wants to reinforce collaboration with the other West Nordic countries – the Faroe Islands and Greenland – to increase the political weight of this group. Other priorities include supporting indigenous population groups and their right to build intergovernmental collaboration with other stakeholders in the Arctic region, mitigating anthropogenic climate change, and ensuring that increased economic activity will contribute to sustainable utilisation of resources. Another priority involves educating about and thereby increasing domestic knowledge of the Arctic conditions and their importance, as well as strengthening international co-operation on Arctic issues (Alþingi, 2011). In the autumn of 2016, Iceland published a new position paper with respect to the Arctic realm and its interests in the Arctic context.

Administrative divisions in Iceland

In Iceland, planning is carried out at national and local level and includes three main instruments: the national

planning strategy, regional plans and municipal plans. The municipal authorities are responsible for both levels of plans and are also expected to take the current national planning strategy into account. With regard to regional plans, two or more local authorities have the option to join forces voluntarily to create a common regional plan across municipal boundaries. This plan requires the approval of the respective local authorities and the Minister for the Environment (SEA on Iceland, 2014; Icelandic National Planning Agency, 1997).

6.3 Comparison of the national Nordic Arctic strategies

As can be inferred from the brief outlines above, the national Arctic strategies of the Nordic countries share similarities regarding some of the included themes and issues, while at the same time reflecting quite different political perspectives. Below is a short overview of the main similarities and differences (summarised in Table 4).

The national strategies of the Nordic Arctic states place a positive emphasis on the opportunities linked to the use of natural resources, highlighting the importance of sustainable resource management. The strategies also present strong consensus on the importance of environmental protection in the Arctic.

Likewise, there is a shared strong emphasis on the importance of international law and the overall objective of maintaining the Arctic as a low-tension region (Magnússon 2014). Concerning the governance of the Arctic, several national strategies highlight the need to strengthen the Arctic Council; the strategies generally have high national ambitions regarding research in the Arctic and also promote international co-operation on research. Most also emphasise opportunities related to fostering Nordic expertise and know-how, e.g. in environmental management and shipbuilding technology. Several of the Nordic Arctic strategies stress the need for better and joint monitoring and preparedness, e.g. for oil spills in the vulnerable region. Finally, the strategies lay great emphasis on safeguarding and promoting the cultures and languages of the region's indigenous peoples (Łuszczuk 2012).

The national Arctic strategies differ particularly in their approaches and ambitions regarding the economic activities in the Arctic and have different economic interests in the region. They also place quite different degrees of emphasis on issues such as scientific re-

search, climate change and environmental protection. Furthermore, the strategies weigh differently security issues and co-operation with Russia, just as the Nordic countries have different perspectives on the role and involvement of NATO and the EU in Arctic issues (Łuszczuk 2012). A new shift that can be identified in the Arctic policies and strategies is the increased focus on internal regional processes (NSPA, 2014) – as the new Finnish strategy reflects – but one that also aims for more joint efforts through greater supranational co-operation (between Sweden, Norway, Finland and the EU and the OECD context).

The Norwegian Ministry of Foreign Affairs has produced the report “National Arctic Strategies” (2014), which presents the Norwegian perspective and attempts to analyse the similarities and differences between the national Nordic Arctic policies. The main points from the report are as follows.

- All strategies strive to balance economic growth and environmental protection with a focus on knowledge creation and research as the foundation for development.
- In general, the strategies build on extensive consultation across government ministries and with other societal actors.
- The strategies focus on co-operation rather than on escalating conflict scenarios.

Even if not closely linked to our subject in the foresight study, maritime boundary delimitations and continental shelf boundary issues between neighbouring states are matters that are likely to play a major role in the Arctic policies and practices of the coastal states in the future (Magnússon, 2014), which in turn will influence the conditions for some of the coastal case study regions included here.

Both the similarities and the differences described above should be seen as an expression of the differences between the Nordic countries in their positioning within the Arctic region as well as a reflection of their national Arctic interests. However, it should be noted that for many countries the Arctic context is a relatively new and demanding policy area that calls for cross-disciplinary co-operation (Rottem et al. 2014). Therefore, it is to be expected that the development of national Arctic strategies is also an evolving process in the Nordic countries.

Goals and priorities in the national Arctic strategies	
Finland	■ Promote business development and opportunities ■ Prioritise competitiveness and sustainable growth ■ Ensure the well-being and health of the population ■ Give prominence to knowledge and education ■ Focus on youth and resolving long-term unemployment ■ Pursue UN sustainable development goals
Sweden	■ Counteract the negative health and social effects of climate change ■ Maintain/increase Nordic and European co-operation on Arctic issues ■ Acknowledge the effects of global markets and social economic pressures ■ Establish long-term and relevant transport solutions
Norway	■ Include Greenland and the Faroe Islands in policy-making ■ Ensure sustainable use of living resources ■ Prioritise the culture and needs of Arctic societies ■ Increase economic incentives and opportunities ■ Emphasise the importance of the role of the Arctic Council
Kingdom of Denmark – Greenland – Faroe Islands	■ Enhance Arctic collaboration in knowledge-based industries and expertise ■ Strengthen new economic opportunities ■ Emphasise conservation and the sustainable use of living resources ■ Prioritise a West Nordic approach in Arctic co-operation
Faroe Islands	■ Work towards Iceland being recognised as an Arctic coastal state ■ Secure indigenous rights ■ Educate and increase knowledge within and about the Arctic region ■ Promote business development and collaboration ■ Emphasise the importance of the role of the Arctic Council ■ Prioritise a West Nordic approach in Arctic co-operation
Norway	■ Co-operate internationally on business and knowledge development ■ Emphasise resource industries as a knowledge-based business sector ■ Strengthen research and education in Northern Norway ■ Establish a more reliable infrastructure ■ Prioritise better environmental protection ■ Emphasise the importance of the role of the Arctic Council

Table 4. Different goals in the Arctic strategies of the Nordic Arctic countries. Goals and priorities in the national Arctic strategies

6.3.1 Comparison of the national administrative systems in the Nordic Arctic

While national and international Arctic strategies influence both national regional prioritisations and also strategic regional policies (through e.g. Interreg programmes and similar), the administration of the settlements, municipalities and regions that constitute the administrative structure of the Nordic Arctic region is more directly steered by the national administrative systems and the tasks and responsibilities that are inherent in these systems.

Sweden, Finland and Norway have a three-tiered administrative system (municipal, regional and state levels), while Iceland, Greenland and the Faroe Islands have a two-tiered system, i.e. the national (autonomous)

level and a local level. This difference in tiers of administration has some consequences for both the allocation of current tasks and responsibilities, as well as for the interplay between the different levels and particularly regarding the potential for municipalities to take initiative for strategic planning.

Common to all six administrative systems is that the municipalities are perceived as the key administrative agency for issues related to the everyday life of their citizens. However, the tasks and scope for manoeuvre vary both between municipalities in the various countries and, due to the vast diversity in municipal sizes in some countries (FO, IS, NO), also within the countries. In addition, an increasingly heightened focus on strategic regionalisation planning means that national

and regional planning (and other administrative constellations, such as municipal co-operation networks) also play significant roles in shaping opportunities at the local level.

Although the tasks and responsibilities in the Arctic Nordic municipalities vary a great deal, one common task involves concrete land use planning, which also ties into one authority area a number of strategic development issues, of which the most common are the potential for new workplaces, the allocation of public services, new/improved housing and leisure possibilities. Another commonality is that the demand for strategic planning has increasingly been imposed on the municipalities, and is one that can be difficult to fulfil in very small and/or sparsely populated municipalities. As a consequence, the issue of administrative reforms is currently being given considerable political attention in all Nordic Arctic countries.

In the larger Nordic countries where there is a regional administrative level, the role of the regional authorities is to ensure regional strategic planning and work for coherent regional development. However, because there is a lack of consensus on how to achieve this in practice, the ideal structure for regional administration is also being discussed at the political level.

6.3.2 Concrete reform considerations

In all countries of the Nordic Arctic, reforms of the current administrative system are in different phases of progress. Greenland implemented a radical municipal reform in 2009; Iceland and the Faroe Islands have had several rounds of municipal reform negotiation in the past 20–30 years that have resulted in a number of voluntary municipal amalgamations, but without the same reform of task transfers and redistribution of authority responsibilities that the Greenlandic reform provided, for example.

In Sweden, there has been much debate about restructuring at the regional level in recent years. One early outcome was the reorganisation of the regional level in some parts of Sweden, e.g. the current Region Skåne. In the spring of 2016, a radical proposal for restructuring the regional level into fewer larger regions than the current counties was put forward. For the Arctic region of Sweden, this proposal would mean that the current Arctic counties of Norrbotten and Västerbotten, in conjunction with the more southern Jämtland and Västernorrland, would become one region. This proposal will be decided on at the end of 2017. In the meantime, the Norrbotten County Council has applied to take over responsibility for regional development from the county administrative board and to establish Region Norrbotten from 1 January, 2017.

In Finland, an extensive reform of the municipal level was politically halted in 2015; from the spring of 2016 and onwards, the Finnish Government has been proceeding with preparations for an ambitious reform of the regional authorities. If implemented to the proposed extent, this health, social services and regional government reform will result in both direct elections for regional councils, and a significant transfer of responsibility for social welfare and health care from the municipalities to these new regional administrations. By introducing a new regional level of elected government, this reform proposal implies a major change to the Finnish governance system. The goal is for these new regional authorities to be in place from the beginning of 2019.

Norway is also currently in the process of negotiating an ambitious administrative restructuring reform that entails both the municipal and regional level. The Norwegian government wants to transfer responsibilities to larger municipal entities; to this end, it has asked for studies and discussions on municipal mergers to take place between neighbouring municipalities. In parallel, the government believes that development challenges that are best met at the regional level also require a different regional structure, and the counties have been invited to consult with neighbouring counties concerning mergers. The Norwegian government intends that parliamentary decisions on municipal and regional reform will be made simultaneously in the spring of 2017. Then, elections for new municipalities and new regions could be held in the autumn of 2019, and the reform would come into full effect from January 1, 2020.

Key considerations behind all these reform and restructuring processes are attention to the most effective structure for handling the public tasks, but also for setting up an administrative structure that reflects the current urban hierarchy, the current functional labour markets and the ideal structure for public health services, education and public administration.

6.4 International Arctic strategies

In addition to the national Arctic strategies outlined above, a number of significant international actors have formulated their Arctic strategies and policies. The main ones are outlined in this final section of this chapter.

6.4.1 The Arctic Council

The work carried out under the auspices of the Arctic Council represents one of the early contributions to emphasising the need for specific Arctic strategies. Es-

tablished in 1996, the Arctic Council is an intergovernmental forum for co-operation, co-ordination and interaction between the eight Arctic states. Since its establishment, a shift in the focus of the Arctic Council can be identified, principally related to the global status of Arctic affairs with an evident turn to the Arctic being about “high politics” (Nilsson 2012), and another polarised trend that indigenous issues and more locally emerged cases from the Arctic draw attention worldwide (Arctic Human Development Report; Nyman Larsen & Fondahl, 2015). The numbers of scholars and publications on the geopolitics of the Arctic region have likewise grown (e.g. Dodds & Ingimundarson 2012, Chen 2012, Ingimundarson 2014).

The overarching reason that draws this increased attention to the Arctic as a region for targeted strategies is the climate-driven transformations in the region. The development of ice-free Arctic transportation routes, occasions of ice-free conditions at the North Pole, and the eventual complete disappearance of sea-ice in the summer season provide the general public with compelling and potent indicators of climate change. The combination of long-term planning and responding to the signals indicating changes in Arctic marine ecosystems, and how such changes are impacting the living conditions in different Arctic regions, comprise very relevant challenges now and in the future. The increasing scientific focus on the Arctic has resulted in reports on these changes as well as predictions about future environmental consequences. Parallel to this, the populations in the Arctic have been reporting their own observations, emphasising different implications and consequences. Some see the situation as a challenge to their traditional lifestyles, while others envision new opportunities.

The increased interest in the Arctic – currently intensified by the economic prospects opened up by the melting of ice that previously limited accessibility – demands further attention. It is quite clear that both the economic life and the social life in the Arctic have already been, and will continue to be, exposed to market economic influences and social impacts.

Even though the need for a comprehensive vision of Arctic co-operation has been highlighted by debate in Arctic Council meetings, the work conducted in the Arctic Council needs to inform international regulations and agreements. However, the Arctic Council can only be part of the solution, since it requires national co-ordination from its members, and their administrative procedures and standards enabling transfer of knowledge differ (Rottem, 2016). Therefore each of the Nordic countries play a significant role.

6.4.2 The European Union

The EU considers the Arctic an area of growing strategic importance, and has an important role to play in supporting successful Arctic co-operation and helping to meet the challenges now facing the region. The EU is the world’s strongest proponent of greater international efforts to fight climate change. Moreover, it has three Arctic Council states amongst its members. The EU is also a major destination of resources and goods from the Arctic region and many of its policies and regulations therefore have implications for Arctic stakeholders. The EU thus wants to engage more with Arctic partners to increase its awareness of their concerns and to address shared challenges in a collaborative manner. The 2016 EU Arctic strategy “An integrated European Union policy for the Arctic” has three main policy objectives.

- Protecting and preserving the Arctic in co-operation with the people who live there.
- Promoting sustainable use of resources.
- Fostering international co-operation.

As climate change and economic development accelerate in the Arctic region, the EU intends to step up its engagement with its Arctic partners to jointly meet the challenge of safeguarding the environment while ensuring that development takes place sustainably.

The European Commission (EC) proposes that further development of the EU Arctic policy should focus on three key areas.

- Support research and channel knowledge to address environmental and climate change in the Arctic.
- Act responsibly to help ensure that economic development in the Arctic is based on sustainable use of resources and environmental expertise.
- Increase constructive engagement and dialogue with Arctic states, indigenous peoples and other partners.

The European Parliament adopted a resolution on the EU Arctic strategy where members want to see a focus on socio-economic and environmental issues. The parliamentarians are seeking freedom of research in the Arctic and stress that reliable and high-performance information networks and digital services are important to the area. It is also important to highlight the relationships between the local populations, especially with the Sami people.

While the EU acknowledges that Arctic states have primary responsibility for tackling issues within their own territories, the EC has expressed the need for more effective joint communication through regional

and multilateral co-operation. This is the main argument for the importance of the EU Arctic strategy as a response to climate change in the Arctic and goals on sustainable development (European Commission 2016). The 2016 strategy is far-reaching in establishing concrete aims for regional development, and the status of the integrated EU policy for the Arctic is one that is meant to guide the EU's action for the coming years.

As an example of this, the strategy document "An integrated European policy for the Arctic" mentions a number of EU funding possibilities: investment opportunities in the Barents Region amounting to EUR 140 billion; regional smart specialisation strategies funded by the EU to develop local models of sustainable growth and job creation; and strengthened collaboration, synergies and programmes available for funding in the region. In the integrated EU strategy, infrastructure projects are noted as being difficult to develop; national and regional authorities in the EU Arctic (i.e. Finland and Sweden) are therefore in need of co-ordinated and effective EU funding. The strategy document makes note of funds of over EUR 1 billion already allocated for Lapland and Northern Sweden in 2014–2020, which is directed for investment in jobs and growth (European Commission 2016, p. 9).

The EC recognises the need to work closely with national, regional and local authorities in the European Arctic (EU), which is a strategy that is likely to have a regional impact on Northern Sweden and Finland. The EC will set up a specific European Arctic stakeholder forum with the aim of enhancing and formalising collaboration and co-ordination between different EU funding programmes (including the Interreg Northern Periphery and Arctic programme, which will pilot activities for a network of managing authorities and stakeholders). The forum aims to identify key investment opportunities and research priorities and the process will also be open to Norway and Iceland, as well as Greenland under the EU–Greenland Joint Declaration. Chaired by the EC, the work of the forum will be completed by the end of 2017, after which the effect of the EU Arctic strategy on the involved regions will be clearer. The strategy document also includes the aims of funding and facilitating an annual Arctic stakeholder conference in the European Arctic region. Furthermore it waves a promise by Finland, that their authorities will during the country's forthcoming presidency in the Arctic Council (2017–2019) bring European ideas and initiatives to the work of Arctic Council.

Transport links in the North Calotte region (Finland, Sweden and Norway) will be included into the Trans-European Network for Transport (TEN-T), which may open up possibilities for large-scale fund-

ing for improving cross-border sections of the transport network in this region. Furthermore, the EC aims to contribute to funding the removal of transportation bottlenecks and to the promotion of sustainable transport modes. This impact will most likely be felt in the ports of Luleå, Kemi, Oulu, Narvik and Hammerfest, since they have been explicitly highlighted in the TEN-T for their importance as interlinks between maritime and land transport.

Different co-operation frameworks address many important issues at the regional level and may in the long run have a substantial impact on the lives of indigenous peoples and local communities. The EU will continue to support regional and subregional co-operation through its membership of the Barents Euro-Arctic Council and the Northern Dimension Policy. The EU will also be engaged in regional co-operation within the UN Economic Commission for Europe and in particular the UN Economic Commission for Europe (UNECE) Convention on Long-Range Transboundary Air Pollution (CLRTAP). The Nordic Council and the NCM are also seen as relevant partners for the EU, not least given their long-standing engagement with the EU and the Nordic Arctic Co-operation Programme.

6.4.3 Other intergovernmental and cross-regional strategies

In an effort to compose a common European Arctic strategy in the North Calotte region (Norway, Sweden and Finland), a recent joint initiative was presented in the 2015 report "Growth from the North" (The Prime minister's Office Finland, 2015). Developed by an expert group set up by the Norwegian, Swedish and Finnish prime ministers, the report reflects a highly business-oriented approach with a strong emphasis on economic activity, coupled with specific expertise in the utilisation of natural resources in the Arctic region (The Prime Minister's Office Finland, 2015, European Commission: DG Maritime Affairs 2014, European Commission 2016). Four drivers of growth are identified in the report: 1) cleaner energy from liquefied natural gas (LNG) and renewables; 2) greener mining solutions; 3) increased tourism through co-ordinated marketing efforts; and 4) the Arctic regions as a world leader in ice- and cold climate solutions (Prime Minister's Office 2015). The report also highlights border obstacles in several chapters. The goal of the report is to promote growth in the Scandinavian Arctic through the formalisation of tripartite co-operation and the creation of four instruments, namely one regulatory framework, one pool of talent and labour, one long-term transport and infrastructure plan, and one voice in Arctic matters. In many ways, these co-operation ef-

forts between Norway, Sweden and Finland are a step in the direction that the EU has now taken with their new European Arctic strategy.

6.4.4 Nordic co-operation

Other actors that influence development in the Nordic Arctic region are the Nordic Council and the NCM. The Nordic Arctic Co-operation Programme is the NCM's official manifestation of its policy. The overall objective of the programme is "sustainable development" and it has four priority themes.

- The people of the Arctic
- Sustainable economic development
- Environment, nature and climate
- Education and skills enhancement

The NCM's Arctic Co-operation Programme 2015–2017 will be revised for the period 2018–2021. The programme budget for 2016 was DKK 8,864,000. Approximately DKK 6 million was allocated to an open call for funding applications for projects, studies and initiatives in line with the programme objectives.

6.4.5 The interregional and intergovernmental mark on Nordic Arctic policies

In some cases, the above-mentioned national and international strategies have been developed in collaboration with the stakeholders and populations residing in the Nordic Arctic regions, although this is not the case in all instances. The turn towards securing welfare in the Arctic region as a basis for prospering economic and societal future prospects for the region can be considered a shift that has now been raised up the political agenda by agents such as the Northern Sparsely Populated Areas network (and later the OECD), as well as the EU. An interesting symptom of this turn was reflected in the series of ministerial symposia on sustainable regional development aspects of the European Arctic, held in 2016 by the Ministries of Foreign Affairs of Norway, Sweden and Finland. This attention to the Arctic dimension in regional policies has thus become a permanent principle in EU policy fields (Nordic Council of Ministers, 2015). Other alternative networks have evolved around important future perspectives for the Arctic, not least connected with energy provision and financing opportunities for development projects (Orkustofnun et al. 2016, Gill & Seigney 2015, Nordic Investment Bank 2015, World Economic Forum 2016).

7. Conclusions and policy recommendations

The purpose of the foresight process in the Nordic Arctic has been to contribute with knowledge to the development of future sustainable regional development policy, and to advance the NCM's Arctic Co-operation Programme. The conclusions and policy recommendations are based on existing knowledge and a three-year process, which has included foresight workshops in 12 local communities in the Nordic Arctic, six workshops with national, regional and local representatives, and two transnational workshops, one for the West Nordic countries and one for the North Calotte region. Background studies have been carried out as part of the project and other relevant studies and analyses have been used in the process. This is the back-drop against which the Nordic Working Group members, based on their experiences in each of the Nordic Arctic regions, have prioritised policy recommendations within the overall themes that have been singled out throughout the process. At the initiation of the project, three key questions were identified for the foresight process.

1. What social and resource conditions can be expected to have a decisive influence on regional development in the Arctic over the next 10, 20 and 30 years?
2. How will the management of these conditions affect the living standards and future prospects for the regions?
3. What are the implications of the identified challenges and opportunities for future planning and regional policy?

Based on the special challenges and rich opportunities in the Arctic, the focus of the Foresight project has been on sustainable opportunities for socio-economic development. We have used a bottom-up approach, which involved the people living in the Arctic, and have paid special attention to youth perspectives, particularly by involving young people in the foresight analysis. The Nordic Arctic is multifaceted, a fact that is often absent in the debate on sustainable development in the Arctic. Actors outside the Arctic are mostly concerned about environmental issues, whereas this

is not necessarily the main concern for the people living in the Arctic.

The bottom-up approach adopted in this project can be seen as being in line with the contemporary notion of citizen consultations as part of planning activities. Furthermore, specific consultation with Sami stakeholders continues to be important whenever there are development and planning projects that may affect Sami interests directly.

In terms of social, environmental and economic parameters, the diversity of rural communities, towns and cities in the Nordic Arctic is notable. Most Arctic regions have particular challenges related to sparse populations, demography, cold climate, remote communities, long distances from markets, lack of venture capital and connectivity. However, the Nordic Arctic also features great opportunities, with its vibrant towns and cities comprising universities, research and innovation organisations and a rich cultural life. The range of business activities encompasses tourism, large-scale industrial operations based on forestry, mining and oil, massive fishing businesses and aquaculture, science and innovation in energy, blue growth, IT and creative industries.

The main challenges identified in our study involve future accessibility to social services of general interest in the Nordic Arctic, securing a qualified labour force for services of general interest and advanced business sectors, and promoting a diversified labour market, including more entrepreneurship, and improved interconnectivity and conditions for future local development.

We can conclude that future social and resource conditions will be affected by the demographic composition of the population and population centres in the Nordic Arctic, which are expected to have a decisive influence on regional development in the Arctic over the next 10, 20 and 30 years. Future long-term planning will depend on population development, because it is evident that human capital residing in the Nordic Arctic regions will determine to a significant extent future business and occupation development.

However, uncertainties that limit theoretical preconditions and thus result in demographic projections, especially for smaller populations (micro level), need to

be taken into account. Regime shifts, climate change and other drivers can change conditions and highlight that humanity is often taken by unexpected surprises (Stockholm Environmental Institute 2016).

It is important to acknowledge that the extent and speed of population growth or decline differ across scenarios. In the case of Inari, for instance, projection results suggest that the population will decline slowly and reach 5,800–6,500 in 2040. In contrast, Sveitarfélagið Árborg and Fjarðabyggð in Iceland and Runavík in the Faroe Islands are likely to have larger populations in 2040 than today.

The proportion of young population needs to be considered and will vary significantly between settlements and regions. The active age group in the workforce (20–59 years) is likely to shrink to a relatively smaller proportion of the population in our case study regions (with the exception of Pajala). In the Finnish cases, almost half of the population in 2040 is likely to be aged 60–80+ years. The greatest differences between the 12 towns and municipalities appear when comparing the relative size of the youngest age group (0–19 years), which will depend not only on how future fertility rates develop, but also on how the size of older population groups will change due to migration or mortality. In some places such as Suðuroy in the Faroe Islands and Sveitarfélagið Árborg in Iceland, even comparatively high fertility rates cannot prevent a decline in the relative size of the youngest age group. In contrast, in places like Jokkmokk or Kemijärvi, the relative size of the youngest age group will increase.

The situation in 2040 will depend much on the development of migration and immigration. The likelihood that newcomers from foreign countries will continue to become a major contributor to the labour force in the Nordic Arctic is high. Given the natural resource conditions and possibilities associated with the regions, changes in migration and immigration patterns are likely to be very important for the labour markets in the Arctic regions.

The demographic future of Suðuroy (Faroe Islands) and Kautokeino (Norway) appears uncertain. Here, both future increases and declines in population size appear possible, depending on which scenario is considered. In Hasvik, Inari and Qaqortoq, for instance, small changes in fertility rates will have the largest impact on projected population sizes. However, given that fertility rates have generally become lower in the Nordic countries, the patterns and differences between rural and urban rates are likely to become less distinct.

Taken together with insights gained from the youth study and the foresight workshops, these findings indicate that some of the larger settlements will be more

thriving than smaller ones. However, population dynamics will also depend on uncertainties, sudden migration changes, risks and constraints that to a certain extent can be prevented by sustainable regional policies, and various opportunities enabled in the more remote regions of the Nordic Arctic.

There is still the possibility to counteract the most negative scenarios through the different types of actions we discuss in our findings and recommendations below.

The Nordic Arctic regions are characterised by being rich in natural resources. While this is a strength for the region, it is also a challenge particularly with regard to large-scale industries of iron ore and mineral extraction, where large multinational corporations extract the resources and the developed skills and turnover do not stay in the region. These are also the types of raw materials that are most sensitive to global price fluctuations, which can lead to boom-and-bust effects and negatively impact communities that have come to depend on large-scale industries. Ways in which better systems for local involvement can be developed as part of large-scale projects have been discussed as part of the Foresight project. For example, in 2014, the Nordic Working Group organised a seminar bringing together stakeholders to exchange experiences concerning skills development and local labour markets (see Rasmussen and Jungsberg, 2015). A recurrent theme at foresight workshops was the need to ensure a more diversified labour market, thereby reducing dependence on one economic sector. Highlighted as key opportunities were initiatives to build human capital, promote interconnectivity and improve broadband connections and a diversified business structure, and not least to utilise new opportunities in the bioeconomy and natural resources. This also includes promoting cross-border collaboration and building on different and complementary skills, knowledge, experiences and opportunities.

In the following sections, we present the policy recommendations based on four overall themes: infrastructure; job creation and business development; education and skills development; and social and cultural activities. To a large extent, the policy recommendations prioritised by the Nordic Working Group aim to develop and better adapt public policy to meet the specific challenges and opportunities of the Nordic Arctic. National governments can play an important role in providing framework conditions for the local and regional governance of infrastructure, job creation and business development, education and skills development, and social and cultural activities. The process has also highlighted the need for regional and local civil societies to take an active part in this policy development process.

7.1 Policy recommendations: Infrastructure

A well-functioning infrastructure can be seen as the main precondition for regional development: connection to markets, business development, R&D, education, social life, commuting, energy supplies and local society attractiveness. Remote and sparsely populated areas in the Arctic region imply specific challenges with regard to infrastructure. Building physical infrastructure such as roads, railways, airports, harbours, energy supply systems and telecommunications involves high-cost, long-term investments. ICT is essential for business development, education and communities in general. This also applies for more densely populated areas in the Nordic Arctic that need well-functioning infrastructure connecting them to markets. The Nordic Working Group wishes to highlight the need to develop more effective, affordable collective transport forms (air, sea and land) for local populations. New partnerships and business models need to be developed to investigate solutions.

The Nordic countries are at the forefront of utilising IT in everyday life, i.e. broadband and Internet connections, knowledge of IT and IT investments. So far, this has created a good basis for the Nordic countries to make better use of ICT for development in a number of areas and has raised the profile of the Nordic region for its high levels of skills in the field of IT. Nordunet and similar Nordic initiatives working on research infrastructure have already been in place for a number of years in Nordic co-operation. However, the smaller economies in the Arctic vary with regard to broadband connection and ICT skills. Priorities need to be set at the national level, even the question of co-ordinated efforts, to realise regional collaboration goals across governance levels and across borders to improve ICT and transport infrastructure.

The Foresight project has confirmed the need to improve the physical infrastructure connecting the North Calotte region and the West Nordic countries. This applies to ways of increasing frequency and travel time speed. Such initiatives can work in various ways and one opportunity could be to establish a service contract with private and/or public companies operating in these areas. Some Interreg projects are piloting different models of service delivery in remote areas involving health, social services etc. State authorities and Norrbotten, Lapland and the three northernmost county councils in Norway can benefit from the inclusion of Finland, Sweden and Norway in TEN-T, as this would substantially facilitate investment with the effect of connecting population hubs and spokes across

boundaries through improved infrastructure.

Future planning and regional policy will be faced with new possibilities in energy provision (in remote areas) based on technology development, more extensive grid networks and more decentralised energy solutions. Regional policy will inevitably have to reflect that energy and digital infrastructure are the preconditions for any community to build its businesses on, for its populations and its future prospects. Thus, planning perspectives need to envision energy and digital infrastructure as basic conditions for regional and local development.

Recommendations to the Nordic Council of Ministers/ transnational collaboration

- Joint promotion on development of Nordic Arctic infrastructure priorities for digital and transport networks to strengthen the (physical) transport infrastructure and the digital infrastructure in the Nordic Arctic.

- Enhance cross-border connections (east–west) and improve the main infrastructure for flights, trains, roads, and broadband.

- New partnerships and business models for concrete infrastructure solutions should be developed.

- (NCM and) the North Calotte council can build further on the Joint Barents Transport Plan. NCM and/ or the North Calotte and West Nordic Council should emphasise the need for higher capacity, high-speed Internet infrastructure, also enabled by the EU joint strategy for Arctic development through new funding schemes.

- With the increased complexity of new financing possibilities for development, there is a need to co-ordinate information, helping actors to benefit and potentially gain synergies from the many recently established possibilities. Ways to provide systematic exchange of knowledge and experiences (of planning, implementation and financing) need to be developed.

Recommendations to national parliaments, governments and authorities

- Regional authorities should aim to work together with the national authorities and regional (in some cases cross-border) associations to investigate joint model(s) and lay out a future-oriented plan including means of follow-up and implementation. New models of collaborations and new possibilities for funding should be explored.

- Develop tools for rural regional development to promote SMART goals adapted to rural, sparsely populated, remote, harsh weather areas in the Nordic Arctic to provide for efficient and well-connected infra-

structure to secure the well-being and functionality of communities.

Recommendations to regional and local authorities

■ Municipalities and regional authorities with poor infrastructure should recognise and promote digital infrastructure development as crucial for creating conditions for distance learning, educational opportunities and also as a necessity for entrepreneurs working to start new businesses, create new software programmes and apps, business parks, office hotelling, etc.

7.2 Policy recommendations: Job creation and business development

Traditionally, primary industries have been the main foundation of the Nordic Arctic economy. Still today, compared with the Nordic region as a whole, the importance of resource-extractive industries such as fishing, forestry and mining is higher for the regional economy in the Nordic Arctic. The relative weight of primary industries varies between regions and between town and periphery. Overall challenges for the Nordic Arctic include a lack of diversity in economic activities, investments and educated human resources. Natural resources form the basis for many of the more recent business development opportunities arising in the region in the bioeconomy; in the more knowledge-intensive side of research, development and innovation; in the growing tourism industry; and in developments in the creative industries, which are all based to a large extent on the attraction of the vast natural resources of the region. Examples have been identified where local communities face severe consequences when global market fluctuations entail closure or down-sizing of large-scale industries on which they have become dependent. Stakeholder discussions at foresight workshops centred on the need to support diversified labour markets, entrepreneurship and measures to facilitate cross-sectoral collaboration, and North Calotte/West Nordic exchange of experiences for business development.

To promote diversified job creation, the Nordic Working Group wishes to highlight two visions for future business development in the Nordic Arctic. These are in line with visions and recommendations presented by stakeholders throughout the foresight process. They are also areas in which the particular potential for Nordic collaboration can be identified.

A sustainable bioeconomy: The Nordic Arctic region is established internationally as a forerunner for sustainable business development, innovation and research

Because of the long coastline and access to the sea, the marine sector naturally plays a crucial role in the bioeconomy of Iceland, Greenland, the Faroe Islands and the coastal regions of Norway. There is a high demand for Arctic seafood particularly because of the clean Arctic waters and the high quality of the catch. In addition to fisheries and aquaculture, the Arctic blue economy includes a variety of activities, including whaling in Norway, Greenland and Iceland, and seal hunting in Greenland, as well as the development of an innovative marine industry, based on algae and bioprospecting. The potential for a land-based bioeconomy (especially forestry) is prevalent in Northern Sweden and Northern Finland. Other traditional subsistence activities, such as reindeer herding, gathering and family/small-scale local resource production also continue to play an important role in parts of the Nordic Arctic. If combined with R&D, technological change, an innovative approach and political support, the Nordic Arctic has the potential to benefit more from the valuable knowledge and experience accumulated today from activities associated with the primary industries (Olsen et al. 2016).

Recommendations to the Nordic Council of Ministers/transnational collaboration

■ Promote Nordic Arctic or West Nordic and North Calotte branding of the sustainable bioeconomy to enhance attractiveness for investments and the establishment of companies in the region. This should encourage more processing and R&D activities and attract educated human resources.

■ Exchange knowledge and experiences in higher education and research between relevant national authorities to promote R&D and education programmes to match bioeconomy-related business development.

■ National authorities should exchange experiences on issues concerning the regulative framework and collaborate on lobbying for needed improvements at the level of the EU.

Recommendations to national parliaments, governments and authorities

■ Promote structures for local food production, e.g. address regulative barriers for utilising all of the reindeer in slaughter-houses.

■ National R&D funds can be earmarked to a greater

extent to address Arctic-specific socio-economic development issues. Develop unique Arctic R&D and skills in areas with particular potential such as bioenergy, blue-green resources and ice tech.

- The regional and local level in some cases needs a clearer mandate to develop their region, as well as to co-operate with neighbouring countries/regions.

- Develop models/tools to learn from clusters and other types of collaborative ventures to promote the bioeconomy.

Recommendations to regional and local authorities

- Facilitate the development of an innovative and entrepreneurial environment. Activate and support collaboration between education and knowledge institutions, incubator environments, business support organisations and other relevant actors.

Tourism, culture and food: The Nordic Arctic is an international destination recognised for sustainable business approaches to nature and culture-based experiences and products

In the Nordic Arctic, various types of tourism activity exist, ranging from mass tourism, e.g. in the form of cruise tourism, to niche tourism, e.g. in the form of Sami tourism experiences and consumptive wildlife tourism. Northern Lights tourism is another popular attraction in the Arctic. The level of tourism development in terms of visitor numbers also varies; Iceland in particular has experienced a dramatic increase in overnight stays in recent years. Maintaining balanced development in terms of economic, socio-cultural and environmental sustainability is challenging, and needs to be considered in regional development and planning policy (Olsen et al. 2016). With growing tourism numbers, the experience of the local population in popular destinations may become increasingly negative. They should therefore be involved as closely as possible in tourism infrastructure and strategy development. This involvement also relates to ensuring local employment and ownership of tourism enterprises. Today, there are signs of external operators reaping the benefits from tourism without leaving much profit in the region. This trend is especially evident in Greenland.

The tourism industry has close links to cultural/creative industries and to local food/the bioeconomy. For example, locally produced food, the organising of festivals and other events, the production of handicrafts and art, and the attractiveness of the Nordic Arctic for film production are part of making the Nordic Arctic an attractive destination for international visitors.

Recommendations to the Nordic Council of Ministers/transnational collaboration

- Promote more permanent structures for exchange of knowledge and experiences, common destination branding and tourism development initiatives in the North Calotte and West Nordic regions.

- Consider the potential of supporting the expansion of quality certification for reindeer meat (e.g. Renlycka) and Sami ecotourism businesses (e.g. Sápmi Experience) developed in Sweden to Norway and Finland. The purpose of this would be to support Sami tourism development, as well as to support dialogue and learning between indigenous stakeholders and visitors to the region about traditional and contemporary Sami culture.

Recommendations to national parliaments, governments and authorities

- Develop strategies to promote skills development, higher education and tourism research and to co-ordinate and exchange experiences in the Nordic Arctic region (as relevant). Digitalisation as a tool for tourism development is one issue that is highly relevant with regard to education and research.

- Address Arctic-specific issues in national R&D funds in collaboration with regional authorities.

- National authorities should exchange experiences about how to modernise planning laws to promote tourism development.

- Securing the sustainability and good condition of the most-visited natural attractions, through maintenance and sustainable wildlife management, needs to be incorporated into tourism strategies and practices to avoid the degradation of the attractions on which the tourism economy potential rests in the future.

- Activate and educate the regional/local planning departments to understand better the role of planning and the tools that are available to them to promote tourism development.

- Assess the potential and the support structures for creative and cultural industries, e.g. the Nordic Arctic as an attractive region for film production.

Recommendations to regional and local authorities

- Promote regional and local awareness of the role of tourism for the local economy, e.g. the service sector, and the potential role of tourism for continued access to services of general interest. This should promote a positive attitude towards tourism and entrepreneurship.

- Promote structures for cross-border/Nordic and cross-sectoral collaboration, e.g. by supporting net-

work initiatives and offering courses and seminars that demonstrate the potential benefits of collaboration between local food producers, restaurants and hotels, retail, and experience companies.

7.3 Policy recommendations: Education and skills development

Effective national, regional and local skills systems connect skills with jobs and productivity to deliver prosperity and social cohesion in the communities. Sparsely populated areas and an ageing population are major concerns for a better match between the supply of skilled human resources and labour market demand. Access to vocational and higher education opportunities, as well as lifelong learning, is fundamental for individual development and for the competitiveness of companies. Although some opportunities are in place, there is a lack of distance education opportunities in many places in the Nordic Arctic. The education programmes offered are not sufficiently adapted to the needs of the labour market, or the resource base of the region. A further issue here involves the lack of good, systematic contact between the young people who move to pursue education and the local environment/local business community and education system in their home region.

A challenge in the Nordic Arctic (with the exception of the urban centres) is that the educational attainment is lower than the Nordic average. The potential for the creation of knowledge-intensive jobs is limited, as is the attractiveness for young people (who have left the region) who pursue higher education elsewhere to return. More young women than men pursue higher education, and more women than men leave the Nordic Arctic. Currently, conditions to pursue distance education opportunities are limited. This issue was discussed at foresight workshops in the context of placing more focus on gender awareness issues in the education system, and introducing improved approaches to matching the education system with the needs of the local and regional labour market. The implementation of such considerations in the education system was also highlighted, to support diversified job creation and utilise opportunities arising from the natural and cultural specificities of the region.

Key initiatives to improve the skills system include more effective horizontal co-ordination between national and local authorities; well-functioning vertical co-ordination across national, regional and municipal levels; ensuring local flexibility and adaptation for na-

tionally designed policies; and building broad-based partnerships between stakeholders to develop common initiatives, goals and actions to meet skills challenges.

The Nordic Working Group gives the following recommendations for future regional development in the Nordic Arctic based on the overall need to ensure a better match between educated human resources and the labour market needs for a skilled workforce.

Skills matching issues are addressed through organised stakeholder collaboration

Recommendations to the Nordic Council of Ministers/transnational collaboration

■ Step 1: The NCM Committee of Senior Officials for Regional Policy should organise a conference bringing together Nordic local, regional and national representatives from the relevant sectors such as education, the labour market, business development and regional development to share experiences and good practice in tackling skills challenges in the Arctic.

■ Step 2: Establish a Nordic network of representatives of local, regional and national officials to exchange knowledge and experiences and highlight relevant initiatives to Arctic skills issues concerning: 1) enhancing distance education; 2) matching education systems with the needs of the labour markets and the interests of young people; 3) establishing collaboration structures linking education institutions (primary to tertiary) and the business community; and 4) establishing systems for training and skills development for adults who have left the school system without a leaving certificate.

■ Promote initiatives like “Nordjob” to foster more student and youth exchanges between the Arctic regions.

Recommendations to national parliaments, governments and authorities

■ Prepare and introduce study materials about Nordic Arctic themes in the school curriculum (distinguish between the North Calotte and West Nordic regions as appropriate).

■ Give more autonomy to regional/local authorities to plan for education and entrepreneurship, and to try new methods for improving educational attainment and avoiding high drop-out rates.

■ Give more autonomy to regional/local authorities and stakeholder partnerships to support the development of organised transnational Arctic collaboration between secondary and tertiary education institutions to promote knowledge about education programmes and experiences from other countries, and to promote teacher and student exchanges.

Recommendations to regional and local authorities

- The high drop-out rates among young people, and especially among boys/young men, require flexible solutions, which can be difficult to plan from the national level. Educational supervision and following individual students are possible measures that can be introduced regionally and locally.
- Assess and introduce improved measures for distance learning opportunities, which requires a good digital infrastructure, and which can also be facilitated by having in place a physical study centre for students to meet and to study.

7.4 Policy recommendations: Social and cultural activities

The organising of cultural events and a more diverse supply of local cultural and leisure activities were particularly highlighted at foresight workshops as being important for community development and attractiveness. An active civil society depends to a large extent on driven individuals and active local sports and cultural associations. However, there are a number of ways in which public policy initiatives can facilitate positive civil society development. The Nordic Working Group highlights the following recommendations.

7.4.1 Social and cultural activities are essential and constitute the “glue” in local societies

Recommendations to the Nordic Council of Ministers/ transnational collaboration

- The NCM should provide substantive support to cultural events, but the conditions for obtaining financing do not favour sparsely populated areas such as the Nordic Arctic where distances are long and travelling requires both time and money. The region would benefit from a funding scheme that takes into consideration the special conditions of the Nordic Arctic. This would facilitate a more balanced geographical division of Nordic culture grants compared with the current situation.

Recommendations to national parliaments, governments and authorities

- Enhance flexible support systems for the organising of social and cultural activities taking into consideration the characteristics of sparsely populated and remote areas.

Recommendations to regional and local authorities

- Consider allowing public buildings such as schools and sports centres to be used for multifunctional purposes such as organising courses, handicrafts, painting, storytelling, theatre and other activities in places where spaces for leisure activities are limited.
 - Make better use of social media to communicate more effectively about what is happening in the area in terms of events and other social activities. This should also allow young people who have moved away for educational and/or work purposes to keep up with what is happening in their home region and enhance the attractiveness for them to return.
 - Work strategically and systematically to attract new inhabitants and businesses to the area. Collaborate with local associations and businesses for this purpose and advertise good examples of young people who have returned or moved to the area to enhance its attractiveness. Utilise social media and other relevant communication platforms as tools.
 - Facilitate the establishment of active youth organisations, defined and established on their own conditions and ensure organised dialogue between the young people, the local authority and other relevant stakeholders in the area. A fixed contact person at the local authority who can work with issues related to young people will be useful in this regard.
 - Encourage political engagement and measures to stimulate regional and local pride, identity and community.
 - Facilitate participation of the young people in local and regional development initiatives.
- Strengthen the collective picture of the Nordic Arctic area as a region with great potential and common traits, co-operating on common opportunities with mutual support.
- Local government needs to show the way in supporting local co-operation.

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ISBN 978-91-87295-45-4
ISSN 1403-2503

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