

Demographic change and labour market challenges in regions with large-scale resource-based industries in the Northern Periphery and Arctic

Leneisja Jungsberg, Andrew Copus, Kjell Nilsson, Ryan Weber



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REGINA

Remote communities & resource-based industries

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Cover photo: Nanortalik in South Greenland,
by Leneisja Jungsberg

The REGINA project

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 Northern Periphery and Arctic 2014–2020

forms a cooperation between 9 programme partner countries. The NPA 2014–2020 is part of the European Territorial Cooperation Objective, supported by the European Regional Development Fund (ERDF) and ERDF equivalent funding from non EU partner countries.

Despite geographical differences, the large programme area shares a number of joint challenges and opportunities that can best be overcome and realised by transnational cooperation. It is the programme's vision is to help to generate vibrant, competitive and sustainable communities, by harnessing innovation, expanding the capacity for entrepreneurship and seizing the unique growth initiatives and opportunities of the Northern and Arctic regions in a resource efficient way.

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Stockholm, Sweden, 2017

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Executive Summary

▶ **LOW POPULATION DENSITY**, low accessibility, low economic diversification and abundant natural resources are common characteristics of Northern Periphery and Arctic (NPA) areas. At the same time, aging populations and the emigration of young people are key challenges facing many communities. The REGINA¹⁾ project provides local and regional practitioners with a deeper understanding of demographic and labour market trends and challenges in NPA regions in Finland, Greenland, Norway, Scotland and Sweden.

Alongside social impact management and increasing local benefits associated with large-scale natural resource industries, ‘demography and labour markets’ forms one of the three strategic planning pillars of the Local Smart Specialisation (LS3) concept, as developed in the REGINA project. This report describes this pillar from a planning and policy perspective. In Section One, the important concepts and issues related to demography and labour markets are introduced, followed by an analysis of the current demographic and labour market situation in the communities participating in the REGINA project in Section Two. Sections Three and Four offer tools and approaches to help practitioners further understand the local demographic and labour market situation in their communities to support evidence-based policymaking. They describe examples of policies to improve demographic trends and labour market conditions that have been applied in other NPA communities and regions.

1. Demography and the Labour Market: Concepts and Issues

Sparsely populated and remote areas such as the NPA face a distinct set of demographic and labour market challenges, which threaten their socio-economic sustainability. These regions and municipalities are characterised by a dispersed settlement pattern, a high old-age dependency ratio, lower birth rates and net outmigration. The connection between demography and the labour market is evident in the available human

capital in a local area. Structural parameters of the labour market include supply factors, such as the availability and profile of the workforce, but also demand factors, such as sudden changes caused by large-scale resource-based development projects.

Three key concepts affecting labour market supply and demand are structural unemployment, jobs or skills mismatch and labour market segmentation. **Structural unemployment** is associated with longer-term trends in technology and the sectoral structure of the workforce that cause unemployment. Traditional resource-based industries, such as fishing, agriculture and mining, have long been subject to structural unemployment caused by mechanisation and competition from cheaper, imported labour. **Job or skills mismatch** occurs when new jobs are created that require skills or training that the local unemployed persons do not possess. This means that both job vacancies and unemployment can coexist and persist within a labour market, making economic growth difficult in local communities. **Labour market segmentation** explains how labour markets are divided into segments with differentiated wage levels, contractual conditions, job security, turnover and relative valuations placed on human capital.

In practice, these three basic labour market concepts are interlinked. Structural unemployment is a long-standing issue in the NPA. There is no simple answer to it—bringing in new forms of employment will not necessarily absorb the unemployed or under-employed because of poor job matching. A municipal labour market may have both a dynamic primary segment (perhaps comprising younger, better educated locals and ‘incomers’) and a problematic secondary segment, in which older or less adaptable locals from traditional local occupations face a difficult future, perhaps involving gradual dependence upon social benefit payments.

In addition to the different types of labour market dynamics, **the location of large-scale resource-based industries** extracting natural resources is relevant when measuring local labour market impacts. There are three types of spatial structures that can be observed: 1) **enclave economies**, located remotely with a fly-in/fly-out workforce, far from an existing community; 2)

1) REGINA stands for Regional Innovation in the Nordic Arctic and Scotland, with a special focus on regions with large-scale industries. It is a three-year project supported by the NPA Programme, 2016–2020.

adjacent activities, where activities take place near a community, thus creating job opportunities for the local and regional labour forces; and 3) **integrated activities**, where the large-scale activity is integrated into the community and becomes the primary foundation for the local economy.

The educated fly-in/fly-out and commuting workers can be important when dealing with a lack of local competencies, and they can be used as a mechanism for the upskilling of local workforces, if the right training conditions are organised. There are a few examples where municipalities in the REGINA project have worked strategically to use upskilling based on training with **fly-in/fly-out workers to support skills development** among the local workforce.

Retention of well-educated young people is often an important planning priority because these groups are often under-represented in NPA communities. A classic pattern in these communities is that **young people move away to pursue education and do not return 'home'** owing to a lack of appropriate work opportunities that match their ambitions or their newly acquired education. This is part of the reason that these communities are drained of human capital. Further, the **Nordic Arctic has a deficit of women compared with the Nordic countries national averages**, which highlights the need to address gender issues in local labour market planning.

2. Demographic and Labour Market Characteristics of the REGINA Municipalities

Even if the REGINA communities have common characteristics when it comes to dependence on resource-based industries, the six municipalities differ when it comes to their demographic profile and labour market characteristics. In Storuman municipality (Sweden), Sodankylä municipality (Finland) and Kujalleq municipality (Greenland), the **populations have become smaller since 2001**. In these municipalities, there has been an increase in the number of pensioners, whereas the working age population and the proportion of children have decreased. **This has resulted in a reduced labour force and a reduced tax base, whereas the cost of social services has increased because of the larger proportion of pensioners**. In contrast, Alstahaug municipality and Brønnøy municipality, in Norway, have had stable population trends, partly because of their more diversified economies and also because of national policies to promote an even distribution of the population across the country.

The demographic patterns also appear to be stable in the Pentland, Firth and Orkney Waters (PFOW) area

of Scotland. However, PFOW is one of the larger NPA regions (with 63,000 people), and this has an impact on the demographic pattern because larger regions demonstrate more heterogeneous dynamics. An analysis of the smaller, more rural areas within PFOW demonstrates that these regions have decreasing populations. **The more accessible rural areas exhibit more positive development, whereas the smaller islands and less accessible coastal areas are showing population declines.**

Although access to natural resources is a common trait of the municipalities in the Nordic Arctic, the municipalities' key industries and their dependence upon large-scale industries vary considerably. **When comparing the municipalities' statistics with regional or national statistics, it appears that all the municipalities are experiencing various challenges in relation to economic activity, employment rates, and a low level of** r of graduates with post-secondary education.

3. Interventions to Support Labour Markets in the NPA Context

Intervention strategies can be applied by local planners and policymakers to ameliorate local or regional labour market issues in remote and sparsely populated areas. They are central to developing and implementing proactive policy responses to local labour market challenges.

It is crucial to **build human capital as part of the local planning strategy** for sustainable regional development in the Arctic. Possible intervention measures can include: 1) establishing co-operation between sectors, such as creative industries and primary/large-scale industries, 2) identifying human capital gaps and developing **a local competence-building and recruitment plan**, 3) working with network organisations to support the local capacity for analysis and skills development, 4) appointing local business ambassadors to share their stories of living and working successfully in the area, and 5) supporting network building by local and regional businesses so that they can share ideas and possibly co-operate on their shared employment needs.

The question of how to **retain and attract young people is central for the demographic sustainability** of NPA communities. Suggested interventions include: 1) establishing a **youth council** to help ensure youth perspectives are integrated into the planning of public spaces and cultural and leisure activities, 2) **ensuring good housing and work** is available for young people who have completed their education, and 3) developing a vision for the community in which **young people's voices** are a central part of the future of the local area.

Women are often the primary drivers for local development in rural tourism. Tourism and creative indus-

tries can supplement large-scale resource-based industries to help to diversify the economy. Women can play a key role because a larger share of women than men have completed tertiary education in the Nordic Arctic. Thus, a gender-balanced development strategy supports an inclusive labour market that is complementary to large-scale industry, promotes opportunities for skilled labour and supports a more diversified local economy.

4. Guide for Collecting Evidence on Local Labour Market Challenges

Today, evidence-based policy is a prerequisite for policymakers and planners in the public sector. Therefore, ensuring a **sufficient knowledge base** to identify core labour market challenges is essential to ensure that new local intervention strategies and policies have the best chance of success.

Evidence is defined as a way of systematically presenting testimony on a certain social phenomenon. The first step is to **reflect** on priorities and core themes to be studied further; the second step is to decide on the approach and construct a **tailor-made plan**; and the

third step is to choose relevant method(s) to **gather and analyse data**. The information that is gathered can then provide local policymakers with a deeper understanding based on **analysis of local social phenomena**.

The guide supports municipalities by providing a number of analytical approaches that can be used to proceed in gathering local information, **identifying knowledge gaps** and analysing previously identified issues relating to the local labour market. The guide includes the REGINA Demographic Foresight Model (DFM), which is designed to help local administrations understand the likely implications of large-scale resource-based projects for the demographic situation and trends in their area. It is designed specifically for small, sparsely populated communities, and the foresight scenario capability assesses the population effects associated with a proposed development (or closure).

Together, the reports provide an overview of key demographic and labour market issues in NPA regions, and also provide practical guidance on how to explore these issues and determine policy options in a municipal context.

Introduction

THIS REPORT HAS BEEN developed as part of the inter-regional project REGINA (Regional Innovation in the Nordic Arctic and Scotland with a special focus on regions with large-scale industries). The REGINA project is a three-year project that focuses on developing a local smart specialisation strategy (LS3) model for remote and sparsely populated areas that depend heavily on resource-based economies. Six municipalities from the Nordic Arctic and North Atlantic regions have participated in the project, and each partner municipality has implemented the strategy. Broadly speaking, each LS3 aims to identify and develop the place-based strengths of each community and mitigate potential risks and challenges. The following three strategic planning tools developed by the REGINA project form the core components of the LS3 model:

► **A demographic and labour market foresight model (DFM)**, which provides a quantitative method to assess the longer-term demographic implications of both negative employment shocks and alternative options for smart specialisation.

► **A social impact management planning tool (SIMP)**, which aims to identify, monitor and manage the social impacts of large-scale industries.

► **A local benefit analysis toolbox (LBAT)**, which supports the retention of local economic benefits through the development of local supply chains and growth of complementary or spillover opportunities presented by new industrial activities.

These three planning tools are supported by working papers, which provide both conceptual frameworks and additional information about the municipal contexts within which the project is working. These working papers are intended to provide both conceptual and empirical context for the DFM. A more specific and

technical presentation of the DFM itself is the subject of a separate paper, available for download from the REGINA website.

The purpose of this working paper is twofold:

1. First, to provide an overview of the demographic changes and labour market challenges typical of sparsely populated areas with large-scale industries. More specifically, the report features evidence of the key challenges affecting local partner communities and appropriate forms of intervention.
2. Second, to describe the kind of investigative methods that might be used by local authorities to discover how demographic and labour market challenges are affecting their areas and to support the development of mitigation policies.

Together, these resources are intended to provide practitioners and policymakers with both up-to-date perspectives on demographic changes and labour market challenges, and a variety of place-based experiences/solutions, which may provide inspiration for appropriate responses.

The paper is divided into four sections. The first section sets the scene in terms of the conceptual background, providing a broad overview of the kinds of demographic and labour market issues facing the Northern Periphery and Arctic (NPA). The second section provides an overview of the demographic and labour market profiles in REGINA's local partner areas. The third section discusses a range of appropriate interventions to address the challenges described in the first section. Finally, Section Four is a practical guide for local communities facing similar challenges, which provides ideas for developing knowledge on and policy responses to local demographic and labour market issues.

1

Demography and Labour Markets: Concepts and Issues

1.1 Distinctive Demographic Characteristics of the NPA

Seen from a broader European perspective, sparsely populated regions could be described as an almost uniquely Nordic phenomenon. The Nomenclature of Territorial Units for Statistics (NUTS) system defines regions in the European Union (EU) based on population levels. Eight out of the nine NUTS 2 level regions²⁾ that have a population of less than 12.5 inhabitants per square kilometre are in Norway, Sweden or Finland. The ninth is found in Scotland (Hansen, Rasmussen and Roto 2011: 8). In general, these regions are characterised by a dispersed settlement pattern, a high old-age dependency ratio, low birth rates and net outmigration. Map 1 (page 14) illustrates the difference at NUTS 3 level between the sparsely populated areas in the Nordic countries and a higher population density in other regions in Europe.

The dependency ratio (Map 2, page 15) measures the share of persons not of working age (i.e., children aged 0–15 and elderly persons aged 65 years and above) as a percentage of the working-age population (16–64). The highest dependency ratios in the Nordic countries are found in the Arctic. In general, the larger the settlement, the lower the dependency ratio (see, for example, Nuuk, in Greenland, Umeå in Sweden, Tromsø in Norway, and Oulu in Finland). This can be explained by the more diverse range of economic activity in the larger settlements, supported by the presence of higher education institutions (Karlsdottir et al. 2016: 14).

The geographic remoteness of many rural communities can create challenges in developing and retaining, or attracting, the competencies that are required by the local labour market. As a result, the share of the ‘core’ working age population (25–54 years) is comparatively low in many municipalities of the Nordic Arctic (see Map 3, page 15). Many of these communities have become dependent on temporary workers in both public and private sectors.

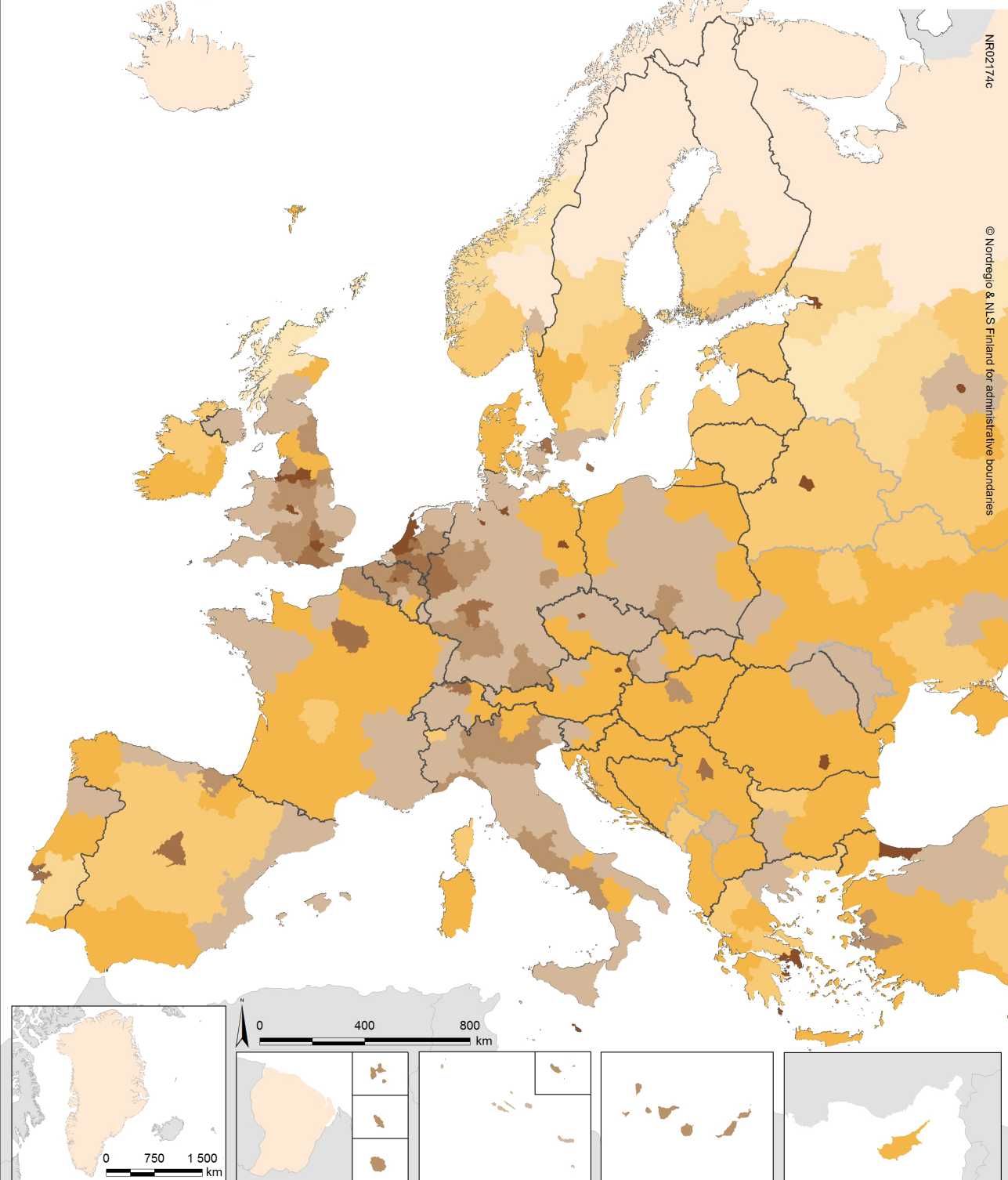
1.2 Links between Labour Markets and Demography

There is a simple yet challenging paradox facing many rural and/or remote, sparsely populated areas in the NPA. Many of these communities are characterised by an abundance of natural resources, which have the potential to become the basis for economic strength and industrial development. However, this pattern of growth often leads to local economies that are overly reliant on a single industrial sector, which makes them less resilient, more vulnerable and potentially less attractive to some labour force segments. This explains why each of the 12 Nordic Arctic communities participating in the Working Group for Sustainable Development in the Arctic stressed the importance of diversifying the labour market and reducing dependence on one economic sector (Karlsdottir et al. 2016: 59). Secondary effects of the lack of diversity often include selective outmigration, population aging and gender imbalance. Thus, the communities of sparsely populated areas in the NPA are particularly sensitive to changes in their employment base. Even relatively small adjustments can have a significant impact on the local labour market and lasting consequences for demographic sustainability.

In the NPA, perhaps more than in more densely populated and economically diverse regional contexts, there is a reciprocal relationship between demographic structures and labour markets. The available human capital (i.e., the availability and profile of the workforce) provides the baseline for the parameters of the labour market; in turn, labour market changes (such as changes in labour demand caused, for example, by large-scale resource-based developments) may have significant impacts upon local demographic structures and trends. As it is neither practicable nor socially/ethically acceptable for policymakers to intervene directly in demographic processes, labour market interventions are the customary way in which municipal or regional authorities seek to ameliorate negative population trends.

2) The NUTS classification (Nomenclature of Territorial Units for Statistics) is a hierarchical system for dividing up the economic territory of the EU.

Population Density in 2013 In Europe's NUTS 2 regions



NR02174c
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Population Density at NUTS 2 level in 2013

Average value per region as of January 1st

	< 8.0		100.0 – 250.0
	8.0 – 12.5		250.0 – 500.0
	12.5 – 25.0		500.0 – 1000.0
	25.0 – 50.0		> 1000.0
	50.0 – 100.0		No data

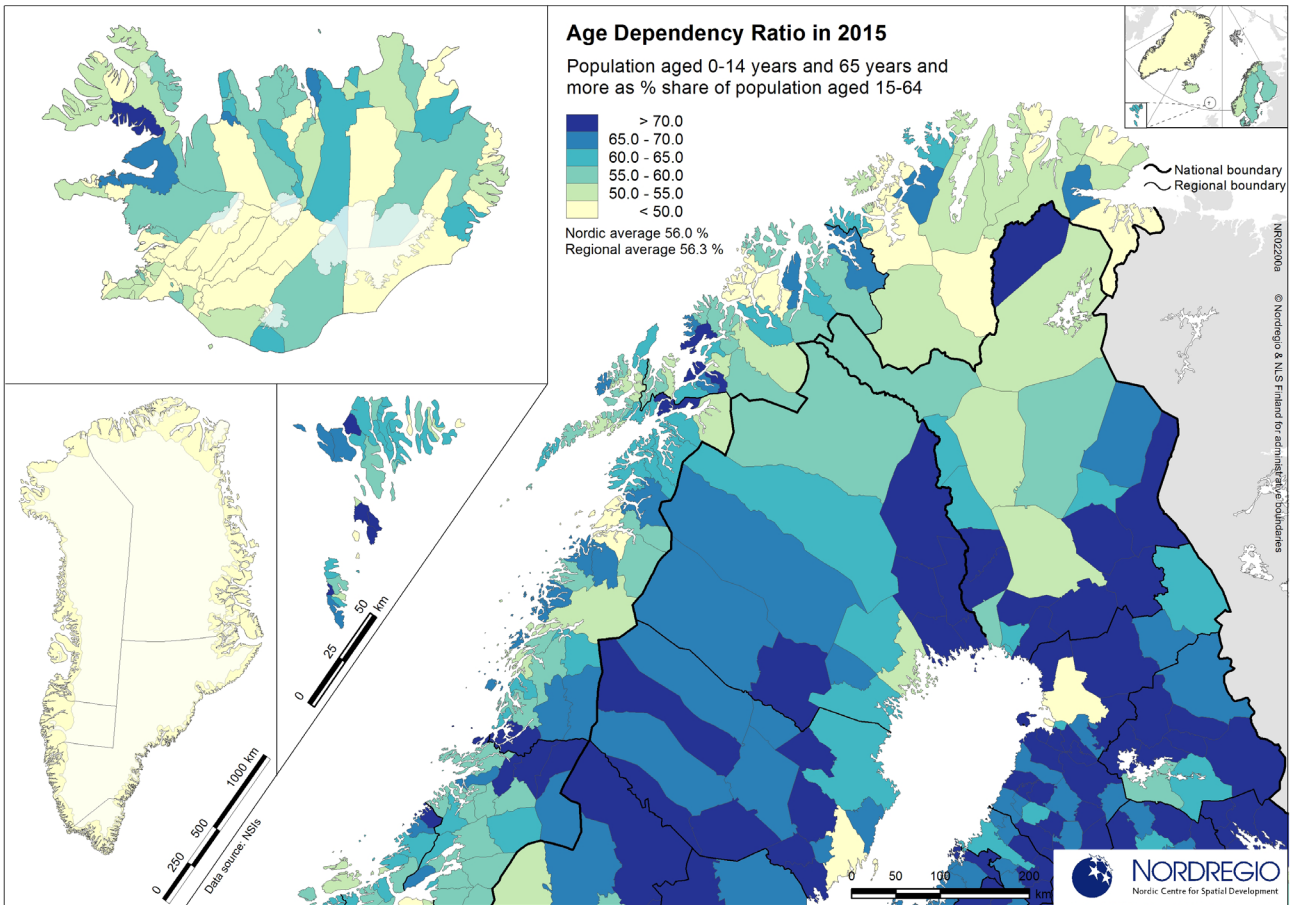
Data source: Eurostat, NSIs

Map shows inhabitants per km². Regional area (km²) estimates: AL, BA, XK. Land area used whenever possible, otherwise total area figures

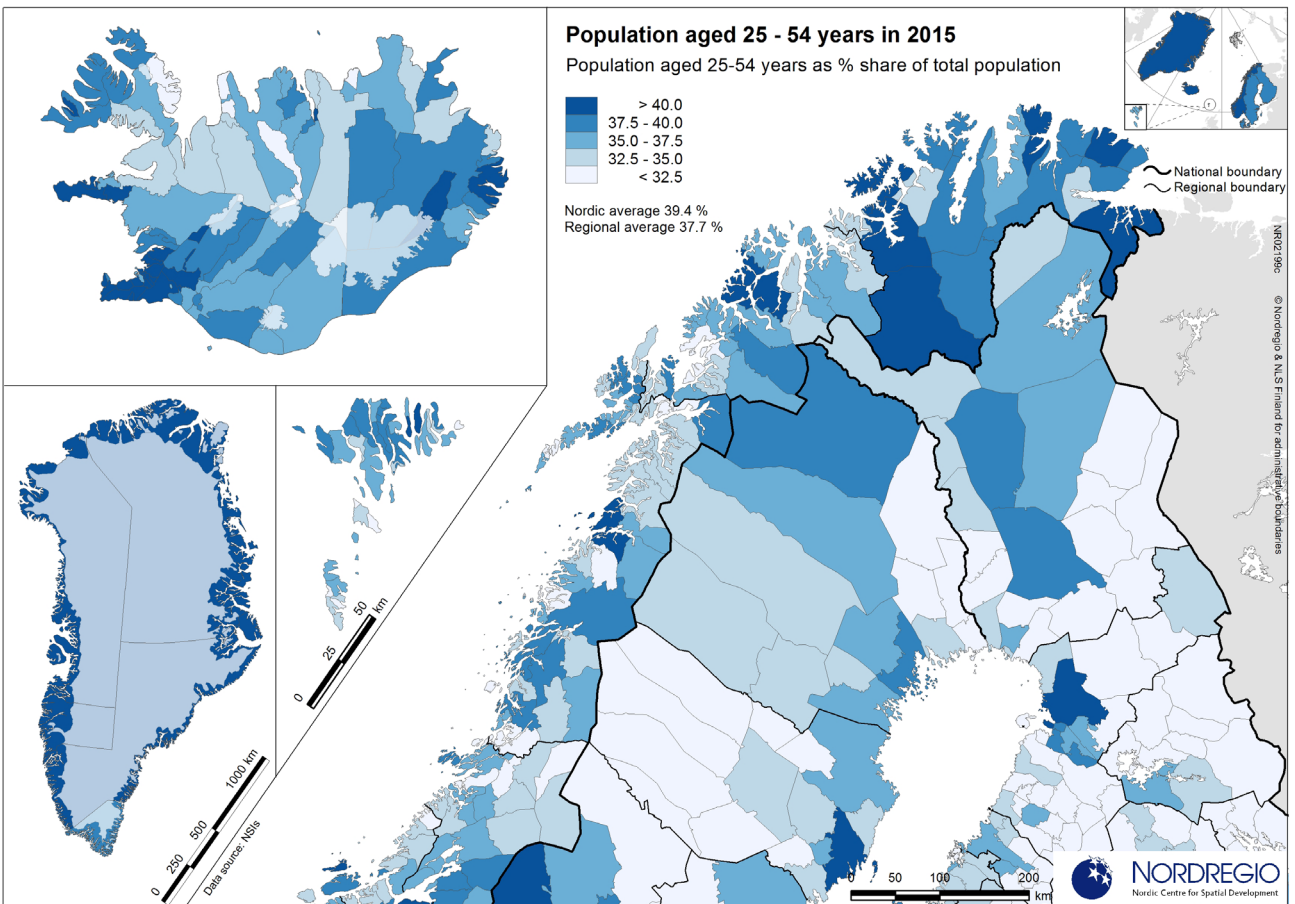
Population data for 2013, except:
2012: AL, MK, Republika Srpska (BA), RO, UK
2011: Mecklenburg-Vorpommern (DE), RS
2010: BiH Federation (BA)

NUTS 2/SNUTS 2 regions

Map 1: Population density by NUTS 3 region, 2013



Map 2: Dependency ratio in the Nordic Arctic, 2015



Map 3: Population aged 25–54 years in the Nordic Arctic, 2015

1.3 Some Key Labour Market Concepts

Before describing the more specific demographic and labour market characteristics of the NPA, it will be helpful to briefly define several concepts that are important in the academic literature and that may assist in understanding the mechanisms or processes underlying the challenges faced by the NPA. These are structural unemployment, job or skills mismatch and segmented labour markets.

Structural unemployment (Richardson et al. 2000) is a longer-term issue than cyclical unemployment. The latter is the result of a temporary reduction in demand, which forces employers to downsize their workforce. Structural unemployment is associated with longer-term trends in technology and the sectoral structure of the workforce. An example of structural unemployment is the increasing use of automation and robots in the manufacturing industry, which has reduced the demand for production line workers. Often, structural unemployment is associated with globalisation. Free trade means that goods are produced in parts of the world where labour is cheapest (e.g., China), leading to structural unemployment in the manufacturing areas of Western Europe and the US. The traditional resource-based industries of the NPA—forestry, fishing, agriculture, mining and so on—have long been subject to structural unemployment caused by mechanisation and cheap import competition.

Job or skills mismatch occurs when new jobs are created that require skills or training that the local unemployed persons do not have (Scottish Government 2005; Lindsay, Greig and McQuaid 2005; Rogerson and MacKinnon 2005). In consequence, it is commonly observed that both vacancies and unemployment coexist, and persist, within a labour market. In the short term, in-migration of suitably qualified workers will probably take place. In the longer term, it may be appropriate and feasible to ‘reskill’ the local unemployed. However, basic education levels and the age of the unemployed may limit the potential for workforce adaptation. More subtle and problematic mismatching can be based upon cultural characteristics that are features of communities rather than individuals. For example, long-established manufacturing areas may have waged employment as a cultural norm, and this may inhibit local entrepreneurship. In areas like the NPA, where outdoor manual jobs, requiring individual initiative and, often, irregular/seasonal hours are the norm, it may be more difficult for workers to adapt to sedentary indoor occupations (such as office work).

The concept of **labour market segmentation** (Taylor 1994, Mitchell et al. 2005, Fields 2005) helps us to understand why job matching is such an important

issue in areas like the NPA. Labour markets are not homogeneous. Rather, they are divided into segments, between which the quality of the jobs is differentiated in a variety of ways, such as through wage levels, contractual conditions, job security, turnover, the relative valuation placed on human capital and different kinds of job search behaviour. These segment characteristics often seem to be associated with differences in the mix of sectors/occupations and perhaps also with different labour market areas. Nevertheless, it is very important not to confuse segments with sectors.

In a simple two-segment labour market, the primary segment encompasses white collar and most blue-collar jobs and offers higher wage rates, more security and greater mobility than the secondary segment. The latter is a kind of ‘underclass’, in which low-status jobs, with low wages and little security, mingle with unemployment and inactivity. For individuals, movement between these two segments is relatively difficult.

In the primary segment, human capital (education, training and experience) is a crucial element of the employee selection process but, in the secondary segment, the key issue is wages. In the primary segment, job search is generally motivated by career advancement and a change of job is associated with promotion. In the secondary segment, job search is initiated by redundancy, or a fear of it, and moves are not closely linked to improvements in pay or conditions. Given this context, the long-term unemployed are the most disadvantaged group within the secondary segment. Even those formerly employed in primary-segment jobs risk slipping into the secondary segment if they remain unemployed too long. In the context of remote and/or economically volatile rural areas, the significance of unemployment is often masked by seasonality (which reduces the number of those registered as long-term unemployed) and under-employment.

In practice, these three basic labour market concepts are interlinked. Structural unemployment is a long-standing issue in the NPA. There is no simple answer to it—bringing in new forms of employment will not necessarily absorb the unemployed or under-employed because of poor job matching. A municipal labour market may have both a dynamic primary segment (perhaps comprising younger, better educated locals and ‘incomers’) and a problematic secondary segment, in which older or less adaptable locals from traditional local occupations face a difficult future, and may gradually become dependent upon social benefit payments. Segmentation is best tackled by mobility—both social mobility (usually associated with ‘reskilling’) and geographic mobility (migration to cities). The latter is probably not desirable if the municipality is to avoid de-

mographic shrinking. A large-scale investment in a resource-based industry, such as a mine, may not be able to find sufficient local workers to fill the most skilled and specialised jobs, resulting in in-migration.

1.4 Large-Scale Industries and Local Labour Markets

The impact from large-scale industries on the municipalities depends on the location of these industries in relation to one or several communities. Three types of spatial structures have been observed (Rasmussen and Koroleva 2003: 310–314):

► **Enclave economies** are typified by large-scale activities located in remote areas with a fly-in, fly-out (FIFO) workforce. Local benefits can include the payment of royalties and tax revenues, or increased employment. Oil and gas production is usually associated with an enclave economy, especially if it is located offshore. In this case, the end of production can trigger the disappearance of the enclave. Larger-scale mining activities located in remote areas can begin as enclave activities, but later, after the closure of the mines, they can function as free-standing communities. For example, two Canadian towns, Montagnais and Naskapi, managed to continue the local labour market with new economic opportunities after the closure of mines thanks to new tourism activities. For Longyearbyen, a Norwegian town on Svalbard, the extraction of coal has been replaced with research, which is the main activity of inhabitants today (Olsen et al. 2016: 28–29).

► **Adjacent activities** are characterised by large-scale activities taking place near population settlements. This is the most common situation for mining activities. Established examples include the Kevitsa mine, north-east of Rovaniemi in Finland, and the Ivituit, Maamorilik, Black Angel and Nalunaq gold mines in Greenland (ibid: 28–29). In these cases, there are gains for the regional labour market in terms of new employment opportunities and—especially if local authorities choose to invest in competence-building—skills development within the local labour force.

► **Integrated activities** occur when the large-scale activities become integrated with a city or a community. This is a rarer occurrence because of the intensive industrial activities associated with many large-scale industries. However, some examples do exist, including in Northern Sweden, where the inner core of Kiruna city (comprising approximately 3,000 residents) needs to be relocated because the extraction of iron-ore is taking place underneath the city. Dependence on the mine both for employment and as a tourist attraction has resulted in acceptance by the inhabitants that the city

must be moved so that the mining activities can continue.

For the municipalities in the REGINA project, large-scale industries can be characterised as adjacent activities and/or integrated activities because all municipalities experience dealing with large-scale industries as part of the planning process in the municipality. The stages of development of the large-scale industries vary from prospecting activities (Kujalleq, GL), to the planning and preparation stage (Highlands and Islands, in Scotland, SC), to having several large-scale industries operating in the area (Alstahaug, NO; Storuman, SE; Brønnøy, NO; Sodankylä, FI) and also processes of closing down industrial activities, including plans for environmental restoration.

1.5 Fly-In/Fly-Out (FIFO) Workers

FIFO describes a work arrangement for resource operations in remote areas that fly their workforce to and from their worksites (Storey 2010: 1161–1162). FIFO arrangements can have beneficial as well as adverse implications for nearby communities.

In the cases where large-scale activities with a FIFO workforce are perceived as harming the rural region, it is usually because they fail either to provide any local employment or training opportunities, or to buy services and supplies from nearby communities (Storey 2010: 1163–1164). Another challenge relates to the provision of temporary infrastructure such as housing which can lead to hasty and short-term infrastructure solutions for a community. In the Shetland Islands, where the oil and gas construction and engineering sectors, among others, are affected by the lack of accommodation. The demand for worker accommodation is likely to be maintained throughout and probably beyond the next 10 years, albeit at a lower level than the demand in the current short-term construction peak, which is being met by barges and ‘flotels’. The pressure on accommodation for operational needs, particularly for housing, is expected not to be short lived, but will continue, though varying from year to year (Westbrook Economist et al. 2015).

In some cases, a FIFO workforce is integrated with local employees from a nearby community. Such arrangements can be mutually beneficial as the FIFO workers contribute to competence development among local workers. In Nalunaq gold mine in South Greenland, ‘on the job training’ has been part of the everyday life and work in the mine. Many of the FIFO workers from Canada have helped the local Greenlandic employees to develop skills and competencies while working in the mine (Jungsberg 2014: 63–65). From the per-

spective of the large-scale industries, employees are an important resource, and the more they can employ locally, the less they need to pay for the transportation of workers (ibid 2014).

Government policies can address concerns regarding FIFO workforces by ensuring that the large-scale activities are tied to regional development strategies through involvement in Impact Benefit Agreement (IBA) negotiations, which seek to maximize local benefits from large-scale activities (Storey 2010: 1164). When conducting IBA negotiations, it is important to identify how to match the requirements for certain capabilities with the opportunities present in the adjacent community (ibid 2010).

In Australia, the mining companies extracting minerals in remote areas co-operate with the local authorities in terms of service delivery for the communities in the area, and they contribute financially to health service provision, education, Indigenous employment initiatives and sport and leisure activities. Such involvement has many positive aspects but, in several cases, it has also resulted in the local authorities withdrawing from certain social responsibilities, leaving them to private mining corporations, which increases the risk of discontinuity in social sector support if private corporations are financially constrained (Cheshire 2010).

The scale of activity and the proximity to existing communities are probably among the most important factors influencing the effects of FIFO on host region communities. Experiences from Canada show that, for many workers, a FIFO lifestyle is preferred to working continuously in a remote community with a primary industry, because of the greater choice of health, education and cultural infrastructure and services when they fly back to the larger metropolitan areas (Carson et al. 2011: 216; Storey 2010: 1177).

The need for a FIFO labour force can be reduced through local competence-building and, as noted in the examples above, FIFO workers can be part of the training programme that can eventually phase out the need for a commuting workforce. To succeed in this process, it is important that the training and competence-building process matches the aspirations of the local people and community.

1.6 Human Capital Issues

A key concept in terms of attracting and building a local labour force is human capital. Human capital can be defined as the stock of knowledge and skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic value (Damme 2009).

Human capital incorporates three components:

- ▶ general skills (literacy),
- ▶ specific skills (related to particular technologies and operations), and
- ▶ technical and scientific knowledge (mastery of specific bodies of knowledge at an advanced level).

The three components of human capital are closely related to schooling. General skills are acquired at primary education level, specific skills are acquired during secondary education and advanced scientific and technical knowledge is obtained through higher education (Petrov 2017: 204–205). In addition to formal education, informal education also exists, and some studies suggest that human capital in the Arctic is less tied to formal levels of schooling, and involves more informal education (ibid).

A common problem for non-metropolitan areas in the Arctic is the ‘flight’ of human capital. With an increased level of education, the ability (and desire) of local residents to find new jobs or educational opportunities elsewhere also increases. Many Arctic residents, particularly women, move away to pursue or use their education. Meanwhile, the Arctic regions also attract human capital from the south as skilled professionals take advantage of high earnings in certain industries (mining, oil and others). However, many such skilled workers only stay in the Arctic temporarily.

1.7 Retention of Young People

Many low-skilled jobs that typically employ young people tend to be highly seasonal. In a study examining youth unemployment in urban versus rural areas, it was found that young people without further education are the group at highest risk of being unemployed and/or excluded from the labour market (Cartmel and Furlong 2000).

Young people’s preferences are inspired by social media, and many of their role models live in urban settings. This influences youth from rural and sparsely populated areas in the Nordic Arctic in terms of their educational choices and future ambitions. Some express less interest in primary industries as something they are striving for when it comes to education and work. In connection to this, it is important to note that young people’s imagination of their futures is based on expectations and that, throughout life, priorities and interests tend to change (Karlsdóttir and Jungsberg 2015).

1.8 Gender Issues

From a European perspective, Nordic women have a comparatively high employment rate, although many work part time and in different sectors to men because

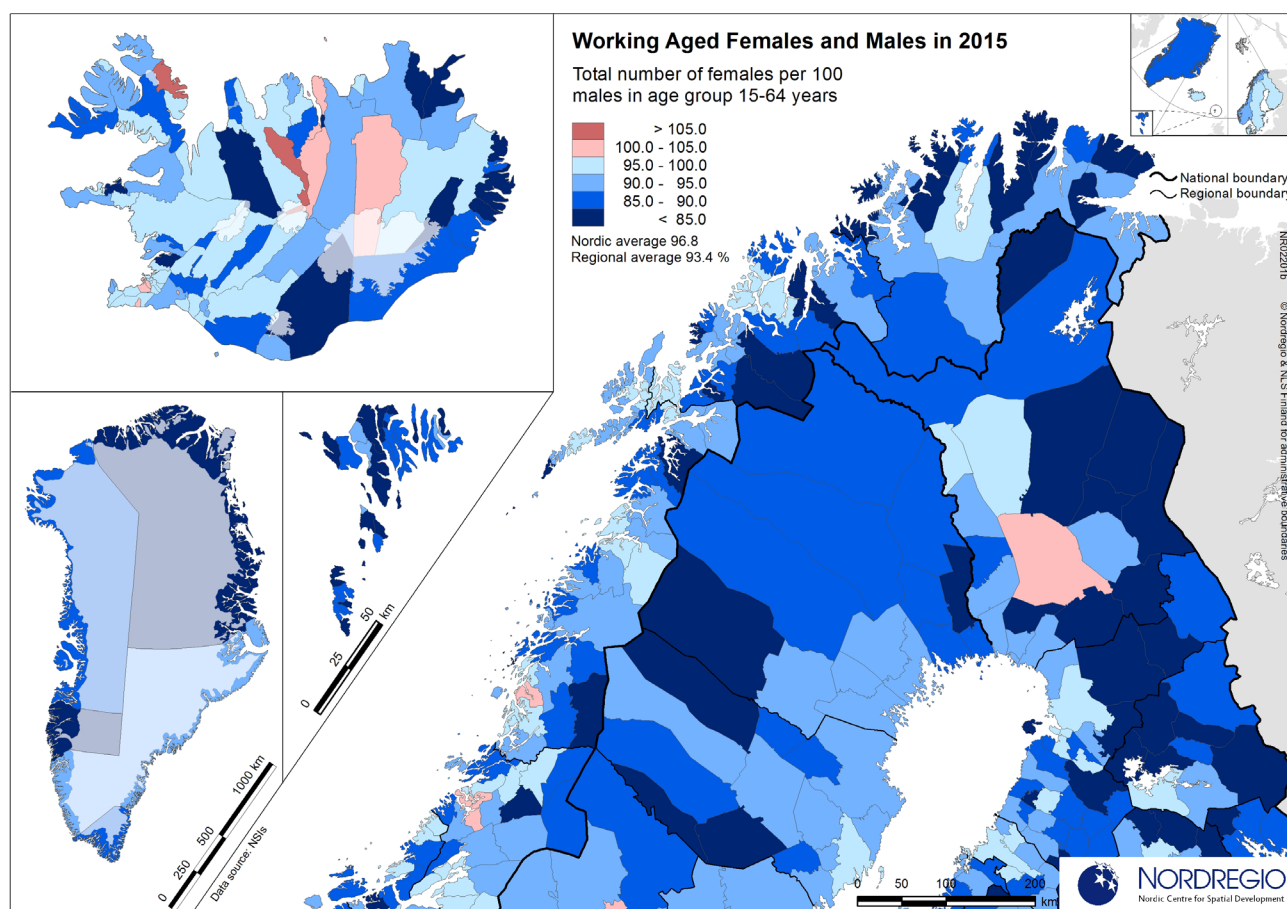
they require a flexibility that is rarely offered to them in male-dominated sectors (Lanninger and Sundström 2014).

Employment in large-scale industries is traditionally dominated by male labour but, because of gendered educational attainment patterns, whereby women represent the majority of people with a higher education degree in practically all Nordic countries (Rasmussen 2013: 48), more and more women are entering the knowledge economy. This includes engineering work relevant to large-scale industries. As a result, women are increasingly present in more senior positions in mining companies (Abrahamsen 2014: 28). At LKAB, a Swedish mining company, 20% of the workforce are women, and 17.7% of those are working as managers (LKAB 2015).

The work environment, along with norms and traditions, plays a crucial role in balancing the employment of males and females in large-scale industries. According to studies from other masculine working cultures, clear characteristics of working environments dominated by a male labour force include ‘tests’, ‘jokes’, ‘leisure drinking’ and ‘playing’ (Wilk 2007). The perception of activities such as mining as ‘men’s work’ is

difficult to change and it can influence the low proportion of women in these traditionally ‘male’ industries. Along with the perceived male-dominated working culture, settlement preferences are gendered such that women of working age tend to choose to settle in larger settlements and urban centres, such as Luleå, Umeå, Tromsø, Bodø, Torshavn, Nuuk and Oulu (Taylor et al. 2016: 110–112). A survey on mobility carried out in Greenland illustrated how women have adapted to the knowledge economy to a higher degree than men. More women see education as the foundation for their future life, and they are more likely to move to the urban centres to pursue education or find work utilising their education (Carson et al. 2011: 244–245). Despite the existence of this well-educated female population in the Nordic Arctic regions, there continues to be a lack of women with relevant technical backgrounds that suit employment in the large-scale industries dominant in these areas.

The lower number of women in communities adjacent to large-scale industrial activities constitutes a societal challenge which, in the long term, can make employment in the regions less accessible for women interested in entering the labour market. However, it can



Map 4: Working-age females and males in the Nordic Arctic, 2015

also impact the existing workforce and one example of this were in Kujalleq municipality in South Greenland where one of the teachers at the high school decided to quit his position and move elsewhere with a better possibility of meeting a life companion. As shown in Map 4, fewer women than men are active in the NPA labour market. Many rural municipalities in the Nordic Arctic have between 85–90 females per 100 males in the working-age group (15–64 years).

Larger settlements (5,000+ inhabitants) tend to have a more equal gender balance. In comparison, settlements with fewer than 200 inhabitants in the Nordic Arctic have between 84 and 90 females per 100 males. The correlation between the settlement size and the gender ratio has implications for the social sustainability of these communities (Taylor et al. 2016: 111–112).

2

Demographic and Labour Market Characteristics of the REGINA Municipalities

IN THIS SECTION, we describe the key demographic and labour market characteristics of the six municipalities participating in the REGINA project.

2.1 Demographic Profile and Trends

Figure 1 shows the demographic profile and trends for 2001–2015 for the Nordic municipalities and Scottish area that are partners in the REGINA project. In Storuman, Sodankylä and Kujalleq, the population has become smaller since 2001. In these municipalities, there has been an increase in the number of pensioners, whereas the working-age population and the share of children have decreased. This results in a reduced labour force and a reduced tax base, yet the cost of social services is increased because of the higher share of pensioners in the population.

In contrast, the two Norwegian municipalities have maintained their population levels. This seems to be the result of a more diversified economy and national policy measures to promote an even distribution of the population across the country (Hörnström and Perjo 2015). These policy measures include:

- ▶ regional differentiation of payroll taxes to stimulate employment in sparsely populated regions,
- ▶ a programme for the regional localisation of government jobs,
- ▶ specific state support to increase the attractiveness of less-advantaged regions such as Finnmark and Nord-Troms in Northern Norway (e.g., exemptions from employers' national insurance contributions and write-downs of student loans by up to 10% of the original amount, up to a maximum of 25,000 NOK/year), and
- ▶ investment and development support for small grocery stores in rural areas.

In South Greenland, the population has several unusual characteristics in terms of age and gender structure. The proportions of their populations in the 20–29

years and 30–39 years cohorts are generally small in relation to the younger and older age groups. This mainly reflects the fact that many young people move to the capital region to pursue education and vocational training. It is also clear that more men than women remain in the region.

Although the demographic patterns also appear to be stable in the Pentland Firth and Orkney Waters (PFOW) area of Scotland, the larger size of the region (63,000 people) needs to be taken into account. Generally, larger regions are more heterogeneous. This can be illustrated by an analysis of the smaller areas within PFOW. Figure 2 shows that trends in the smaller constituent areas differ, with the more accessible rural areas exhibiting more positive development, whereas the smaller islands and less accessible coastal areas show population decline. Thus, the Outer Isles of Orkney, Caithness and Sutherland, and even the two towns on Orkney, have 'shrunk'. In contrast, the rural part of the Orkney mainland has experienced a substantial population increase, which is expected to continue over the period to 2036.

2.2 Key Industries, Local Labour Markets and Human Capital

A shared trait of the municipalities in the Nordic Arctic is their access to natural resources. This is also reflected in the key industries of the REGINA municipalities, such as mining, hydroelectric power stations, wind farms, agriculture, fisheries and tourism. However, there are marked differences, as well as some similarities, in the key industries and/or resources between the municipalities; to illustrate these, the next sections will present brief descriptions of the six REGINA partner municipalities. Further, the municipalities' dependence upon large-scale industries varies, and most of the local areas also have business activities in sectors such as fishing, tourism, renewable energy and agriculture, which also provide employment.



Figure 1: Demographic profiles of six REGINA municipalities, 2001–2015. Note: WAP denotes 'working-age population'.

Storuman Municipality, Sweden

Storuman municipality is located in Västerbotten, in northern Sweden. With a land area of 7,500 km², the municipality is geographically one of the biggest in Sweden. The western part consists of mountains (*fjäll*) and the eastern part consists of forests and agricultural areas. In the western part, recreational tourism plays a great role. Companies in the eastern part are mainly occupied in energy production, small-scale engineering and private services. Forestry and the processing of

forest products is important for the municipality. There are eight hydroelectric power stations, a wind farm, one operating mine and several mining-related projects (prospecting and remediation).

Table 1 shows that Storuman has relatively low economic activity and employment rates (compared with the national average). The overall unemployment rate is not especially high, but the youth unemployment rate is well above both the regional and national averages. The percentage of the population aged 30–34 years who are

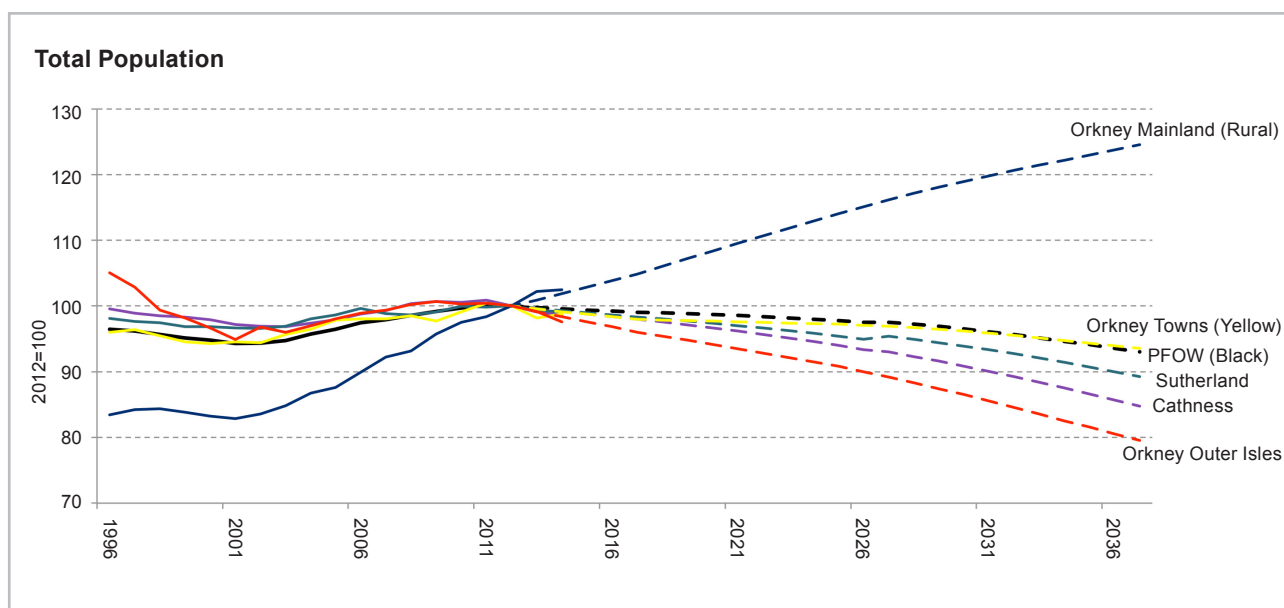


Figure 2: Population trends in the PFOW area and its sub-areas, 1996–2036

Table 1. Sturman municipality labour market and human capital indicators 2015

Indicator	Units / Definition	Municipality	Region	Country
Economic Activity Rate (total)	Economically active as % of population aged 15–64 years	81.3	82.7	85.6
Economic Activity Rate (female)	Economically active females as % of female population aged 15–64 years	81.3	78.9	81.6
Employment Rate (total)	Employed as % of population aged 15–64 years	73.8	75.5	77.7
Employment Rate (female)	Employed females as % of female population aged 15–64 years	75.3	72.8	73.9
Unemployment Rate (total)	Unemployed as % of economically active	7.5	7.2	7.9
Unemployment Rate (female)	Unemployed females as % of female economically active	6	6.1	7.7
Youth Unemployment Rate (total)	Unemployed persons aged 15–24 years as % of the labour force	28.3	21.6	23.6
Graduates (total)	% of the population aged 30–34 years with ISCED 5 or higher	35.6	52	49.8
Graduates (female)	% of the population aged 30–34 years with ISCED 5 or higher (female)	47.8	61.8	57.7

graduates is substantially below the national average.

Of the total the workforce, 14.4% of those in Sturman are working in large-scale or resource-based industries. Breaking this down further, wind power and energy production, including hydroelectric energy pro-

duction, employ 2.8% of the workforce; infrastructure, road and railroad construction, 2.0%; metal works (e.g. mining, metal ore processing, metal parts fabrication, etc.), 1.5%; mining machinery, 0.1%; technical probing and analysis, 0.7%; ground construction, 2.8%; elec-

tricity installation, 0.8%; other installation, 1.4%; and transport traders, 2.3% (Statistics from Region Västerbotten).

The municipal employment rate for women is higher than the total employment rate and the unemployment rate is generally lower than in many other parts of Sweden (Jimmi Lindberg 2014). However, the unemployment rate among young people is excessively high and seen as a big challenge locally.

International Standard Classification of Education (ISCED) illustrate the share of population with a completed education of ISCED 5 or higher is noticeable lower than in other parts of Sweden. A noticeable difference between the number of total graduates 36.6 pct. is remarkable lower than the

In Storuman, the proportion of persons with pre-university/vocational education and university education has increased and the proportion of persons with only primary education has decreased from 2003 to 2014. Even small changes in the labour market for specialised employees can cause a dramatic change locally. For example, the planned closure of the local operation centre for wind power in Storuman will lead to 11 employees losing their job. From a municipal perspective, this is a critical issue because of the difficulty of replacing these types of specialist positions.

Pentland, Firth and Orkney Waters (PFOW), Scotland

In the PFOW area of the Highlands and Islands region of Scotland, economic activity and employment rates are above the regional and national (Scottish) average. Unemployment rates are less than half those of Scotland as a whole. Unfortunately, it is not possible to calculate youth unemployment rates for the PFOW area, but those for the Highlands and Islands region are below the Scottish average. The proportion of the population aged 30–34 years who are graduates in the region is close to the Scottish average.

The Dounreay nuclear power plant and research centre in the PFOW area, which was built in the 1950s and employs 1,500 people, is in the process of being decommissioned. The local authorities in the PFOW area are working to support the labour force to transition from a focus on nuclear production to complementary activities, such as renewable energy from wave and tidal sources. The decommissioning process has been taking place for 19 years and is not expected to be completed until 2025 at the earliest. The local government’s strategy is to transition the workforce of skilled engineers from Dounreay by investing in infrastructure and research facilities to develop an innovation hub of people with expertise to build equipment for tidal and wave power production.

Table 2: PFOW labour market and human capital indicators 2015

Indicator	Units / Definition	Municipality	Region	Country
Economic Activity Rate (total)	Economically active as % of population aged 15–64 years	86.55	83.01	77.7
Economic Activity Rate (female)	Economically active females as % of female population aged 15–64 years	83.7	79.17	74.0
Employment Rate (total)	Employed as % of population aged 15–64 years	83.95	80.32	73.1
Employment Rate (female)	Employed females as % of female population aged 15–64 years	80.55	78.03	70.2
Unemployment Rate (total)	Unemployed as % of economically active	2.8	3.48	5.8
Unemployment Rate (female)	Unemployed females as % of female economically active	4.9	4.4	5.1
Youth Unemployment Rate 2013 (total)	Unemployed persons aged 15–24 years as % of the labour force	–	3.6	5.4
Graduates (total)	% of the population aged 30–34 years with ISCED 5 or higher	–	25.8	26.1

Note: ‘–’ indicates that it was not possible to calculate these indicators for the PFOW area.

Sodankylä Municipality, Finland

Key labour market and human capital indicators for the Sodankylä municipality in Finnish Lapland are shown in Table 3 below. Sodankylä municipality shows economic activity rates and employment rates below the Finnish average, although its unemployment rates are not particularly high. The share of graduates as a proportion of the population aged 30–34 years is relatively low.

The municipality has several mining projects in different phases. Many private companies are carrying out prospecting activities or applying for permits for mining exploration in Lapland. During the planning and operational phases of mining projects, Sodankylä municipality facilitates co-operation and communication with large companies to obtain information for planning purposes (land use, services and so on), as well as to support local business development to ensure mutual benefits for large-scale industries and the local economy.

There are several public services available for competence-building or upskilling to enable the unemployed to become part of the mining labour market in Sodankylä. For example, Sodankylä municipality has established the Seitäsäätiö foundation to build competency and rehabilitation services for long-term unemployed people or those facing special challenges to becoming employed.

Kujalleq Municipality, Greenland

Labour market and human capital indicators are provided in Table 4 for Kujalleq in South Greenland. In Kujalleq, the economic activity rate is close to the national average, but employment rates are on the low side, especially for females. Unemployment rates (especially for youths) are above the Greenland average. The proportion of graduates in the population aged 30–34 years is less than half the Greenland average.

Fishing is considered to be a sector with continued development potential in South Greenland, and this fits well with the national food policy aiming at greater self-sufficiency. The municipality aims to build new skills among the people engaged in food production and to generate growth through innovative processing techniques. In addition to the fishing sector, agriculture and farming are important activities in South Greenland.

Tourism is another growth industry expected to prosper in the coming years, and there are also many untapped opportunities in the IT sector now that the region is better linked to the world through a submarine cable providing better and faster internet connections.

Perhaps most importantly in the context of the REGINA project, mining exploration and negotiations with mining companies are ongoing, and future mineral extraction is a major potential growth industry.

Table 3: Sodankylä municipality labour market and human capital indicators 2015

Indicator	Units / Definition	Municipality	Region	Country
Economic Activity Rate (total) 2014	Economically active as % of population aged 15–64 years	73.2	76	78.8
Economic Activity Rate (female) 2014	Economically active females as % of female population aged 15–64 years	75.2	75	76.1
Employment Rate (total) 2014	Employed as % of population aged 15–64 years	64.5	65.1	70.1
Employment Rate (female) 2014	Employed females as % of female population aged 15–64 years	67.9	65.7	68.2
Unemployment Rate (total) 2014	Unemployed as % of economically active	8.7	10.9	8.7
Unemployment Rate (female) 2014	Unemployed females as % of female economically active	7.3	9.3	7.9
Youth Unemployment Rate 2013 (total)	Unemployed persons aged 15–24 years as % of the labour force	18.1	24.2	19.9
Graduates (total) 2014	% of the population aged 30–34 years with ISCED 5 or higher	33.9	37.5	45.3
Graduates (female) 2014	% of female population aged 30–34 years with ISCED 5 or higher	41.4	47.5	52.6

Table 4: Kujalleq municipality labour market and human capital indicators 2015

Indicator	Units / Definition	Municipality	Country
Economic Activity Rate (total)	Economically active as % of population aged 15–64 years	71.4	72.5
Economic Activity Rate (female)	Economically active females as % of female population aged 15–64 years	68.5	70.1
Employment Rate (total)	Employed as % of population aged 15–64 years	58.7	62.8
Employment Rate (female)	Employed females as % of female population aged 15–64 years	57.6	60.3
Unemployment Rate (total)	Unemployed as % of economically active	12.7	9.7
Unemployment Rate (female)	Unemployed females as % of economically active females	10.9	
Youth Unemployment Rate (total)	Unemployed persons aged 15–24 years as % of the labour force	21.9	17
Graduates (total)	% of the population aged 30–34 years with ISCED 5 or higher	8.4	18.5

Note: The region column is omitted here, because regions do not exist as official entities in Greenland.

This includes mining activities but also employment within the mining supply chain, service development and complementary employment activities.

Alstahaug and Brønnøy Municipalities, Norway

Tables 5 and 6 summarise labour market and human capital indicators for Alstahaug and Brønnøy in Northern Norway. In Alstahaug, all the labour market indicators are weaker than the regional and national averages, and the proportion of graduates in the population is relatively low (see Table 5). In Brønnøy (Table 6), the indicators suggest a slightly better-performing labour market, except that the youth unemployment rate is relatively high and the proportion of graduates is significantly lower than in Alstahaug.

In recent years, Alstahaug municipality has focused on developing a supply base for oil and gas. Today, the industrial area measures about 85 acres and is owned and developed by Helgelandsbase Ejendom A/S and rented out to relevant actors.

In Brønnøy municipality, economic activities include forestry, an active mining industry and fishing and tourism activities in the coastal areas. Brønnøy municipality is historically an agriculture- and fishery-based society, with a favourable climate and a relatively long growing season. The fjords and coastal areas with large fishing grounds have been important for the fishing industry for generations. For mining activity, fish

farming, the reindeer industry, hydroelectric power, tourism, forestry and agriculture, the natural resources of Brønnøy are the core of the business opportunities prevalent in the municipality.

In Northern Norway, including Alstahaug and Brønnøy, the continuing challenge is to interest young people in education. These municipalities are located in a fishing district, so young people, especially boys, have long had the opportunity to obtain fishing jobs without the need for any form of vocational training. However, the establishment of the oil industry in the region is changing these patterns, because jobs in the oil industry are highly coveted but will also be limited—with no guarantees that the industry (mostly comprising multinational companies) will employ local workers. If it does employ local workers, the oil industry—and any other any other industries that may be established in the region—will be seeking fully trained personnel. Therefore, motivations to increase educational attainments are increasing from the municipality’s point of view. The aim is to supply traditional industries and the newly established oil business with a sufficient number of skilled and unskilled workers. Because many workplaces will become more and more mechanised in the future, it is expected that demands will primarily be for a skilled workforce. Therefore, it is vital for the municipality to communicate this message to motivate young people to pursue an education.

Table 5: Alstahaug municipality labour market and human capital indicators 2015

Indicator	Units / Definition	Municipality	Region	Country
Economic Activity Rate (total) 2014	Economically active as % of population aged 15–64 years	75	79.3	81.2
Economic Activity Rate (female) 2014	Economically active females as % of female population aged 15–64 years	76.7	76.4	77.1
Employment Rate (total) 2014	Employed as % of population aged 15–64 years	70.9	75.7	77.7
Employment Rate (female) 2014	Employed females as % of female population aged 15–64 years	73.1	73.3	73.8
Unemployment Rate (total) 2014	Unemployed as % of economically active	4.1	3.6	3.5
Unemployment Rate (female) 2014	Unemployed females as % of economically active females	3.6	3.1	3.3
Youth Unemployment Rate (total) 2013	Unemployed persons aged 15–24 years as % of the labour force	9.7	10.7	9.1
Graduates (total) 2014	% of the population aged 30–34 years with ISCED 5 or higher	43	41.2	51.9
Graduates (female) 2014	% of female population aged 30–34 years with ISCED 5 or higher	56.7	52.8	61.8

Table 6: Brønnøy municipality labour market and human capital indicators 2015

Indicator	Units / Definition	Municipality	Region	Country
Economic Activity Rate (total) 2014	Economically active as % of population aged 15–64 years	77.1	79.3	81.2
Economic Activity Rate (female) 2014	Economically active females as % of female population aged 15–64 years	77.5	76.4	77.1
Employment Rate (total) 2014	Employed as % of population aged 15–64 years	73.6	75.7	77.7
Employment Rate (female) 2014	Employed females as % of female population aged 15–64 years	74.3	73.3	73.8
Unemployment Rate (total) 2014	Unemployed as % of economically active	3.5	3.6	3.5
Unemployment Rate (female) 2014	Unemployed females as % of female economically active	3.2	3.1	3.3
Youth Unemployment Rate (total) 2013	Unemployed persons aged 15–24 years as % of the labour force	14.8	10.7	9.1
Graduates (total) 2014	% of the population aged 30–34 years with ISCED 5 or higher	38.3	41.2	51.9
Graduates (female) 2014	% of female population aged 30–34 years with ISCED 5 or higher	48.9	52.8	61.8

There is a need for skilled workers in Alstahaug and Brønnøy for a wide variety of industrial jobs, from building and construction work to fish farms and tourism. Large resources have been made available from the Nordland County to interest young people in trade work. In addition, unskilled labourers are being given the opportunity to become apprentices without the tra-

ditional learning required at a technical college. This is an initiative providing upskilling to the local labour market, and the efforts seem to have had some success to date. However, there are still too few people to meet the demand for skilled labour in Alstahaug and Brønnøy municipalities.

3

Interventions to Support Labour Markets in the NPA

THIS SECTION WILL REVIEW the literature on policy options that may be used to ameliorate the types of local or regional labour market issues in remote and sparsely populated areas described in the preceding sections.

3.1 Building Human Capital

Building human capital as part of the local planning strategy is important for sustainable regional development in the Arctic (Karlsdottir et al. 2016). The need for qualified labour in rural and remote regions is a societal issue that requires a coordinated effort by many different local actors to facilitate a sustainable ‘recruit and retain’ strategy. Educational planning to offer short- and long-term courses is one way to build human capital. Investment in upskilling and education can be combined with policies targeting human capital. It has been shown that a top-down approach to regional planning does not work, and a place-based approach for remote and rural regions is more likely to accommodate and address the needs, goals and aspirations of local regional populations (Taylor et al. 2016: 125–147). It is important to understand local needs and behaviour to plan for interventions to alter the current situation. Much public planning theory focuses on how to deliver plans and regulatory frameworks that improve the overall public interest. The notion of a place-based approach is central because planning takes into account future activities undertaken by residents to manage local change.

The challenge of competency supply is considered vital for the Nordic Arctic regions. Suggested measures to build local competencies and enhance recruitment of the local labour force include:

- ▶ establishing new co-operation between sectors, e.g., between creative and large-scale industries, which can support retaining and recruiting a labour force with different profiles, which in turn promotes local economic development;
- ▶ identifying the largest gaps and developing a local competence-building and recruitment plan (potential

benefits such as extra support for people bringing their family or financial support during adult education can be considered);

- ▶ engaging in the work with network organisations, such as REGLAB Sweden and their ‘regional skills matching indicators’, which is a system of educational indicators designed to provide a basis for assessing the labour market outlook of approximately 100 educational groups for the population aged 20–64 years;
- ▶ appointing ambassadors of the local area to be ‘lighthouses’, promoting their success stories of living and working in their home municipality through local, regional and/or national media; and
- ▶ supporting local businesses to enhance their business networks by organising network meetings, such as business breakfasts, and including more regional and national business agents to potentially recruit through these networks.

Development of the local human resource base will be a goal for any municipality or region when a large-scale industrial project commences. However, it can be a challenge to match the local labour market to the initial requirements of the industry, especially when a large-scale industry begins operating in a region that lacks any pre-existing industrial activities of the same scale. The literature has extensively examined competence gaps, job-matching and structural unemployment in rural and sparsely populated areas (Borovnik 2005; Scottish Government 2005; Lindsay, Greig and McQuaid 2005; Rogerson and MacKinnon 2005). There are numerous approaches to capacity-building and upskilling of the local labour force, and the next sections will discuss the strategies that have been pursued by different local authorities.

In North Scotland’s Highlands and Islands region, there is a continuing deficit of skilled people in the core working age group of 15–39 years. Scotland’s economic strategy acknowledged the need to address issues related to young people, inequality and infrastructure, particularly in rural areas. Investment in education, skills and health is one of the four main priority ar-

areas highlighted by the Scottish government, with the other three areas being infrastructure and digital business investment; natural capital resource efficiency and low carbon; and communities, local assets and housing (Highlands and Islands 2015: 7).

In a recent review of education and training provision, the Västerbotten region in North Sweden established a goal to maintain the number of vocational graduates in all study fields and to increase those in arts, media and design, and environmental conservation and protection to meet the skills needs of the region (Myndighet för yrkeshögskolan). There are also several examples of educational programmes in Storuman municipality that provide locally relevant development of skills and competencies. These include Luspengymnasiet, which offers several pre-university and vocational study options, and Storuman Lärcentrum, which provides a vocational geologist programme, after an early focus on education for wind technicians operating in cold climates. In addition, Akademi Norr offers distance university education. Such vocational education programmes are intended to lead directly to various forms of employment. In addition, the local employment office in Storuman provides opportunities for the unemployed to attend labour market training. Examples from Iceland and Greenland illustrate how the regional authorities have taken responsibility for strengthening the competence base of their local workforces. One approach undertaken is for large-scale industrial activities to co-operate with educational institutions, which can offer short and long courses to the unemployed and to employees from related sectors, such as contractors working on the construction of buildings.

At Asturbrú Fjardal Industrial School in Iceland, the local authorities and Alcoa began co-operating to support the skill development of the local labour force for a local aluminium plant. Asturbrú Fjardal Industrial School was established in 2011, with the purpose of supporting people living and working in East Iceland to pursue an education while still working. The topics offered as part-time education suitable for working people include mathematics, informatics and computer science, physics, environmental assessment, chemistry, health and safety, quality assurance and development of administrative routines. The opportunities for educational attainment and up-qualification of the local labour force have played an important role in the co-operation and satisfaction of the local communities in East Iceland with the large-scale aluminium production occurring there (Johannesson, Heidarsson and Sigurbjarnarson 2010; Rasmussen and Jungsberg 2015: 9–10).

In Greenland, there has been an effort by the national and regional public authorities to provide the local workforce with a basic mining education so that they can participate in mining projects operating in Greenland. However, some challenges have been encountered with regard to timing the preparedness of the workforce and misunderstanding of the capacity of the mining company to employ locals. While Nalunaq gold mine operated in South Greenland (2004–2013), 15.1% of the workforce in the nearest city of Nanortalik attended the ‘Common Core’ mining training. However, more people completed the mining course than the mine could provide work for. Recruitment to the mining course took place either on the initiative of individuals, or as a result of referral by the labour market office for unemployed people (Jungsberg 2014: 39–40; Rasmussen and Jungsberg 2015: 11–15). Consequently, the educational institution Piareersarfik in Greenland found that several of the young people who attended the mining course were disappointed not to find jobs. This illustrates the challenge in terms of timing and planning the upskilling of a local labour force in relation to large-scale activities (ibid 2015: 11–15).

The University of the Highlands and Islands (UHI) in Northern Scotland has offered appropriate higher education for young people within the region, with a view to discouraging them from leaving the highlands and moving to the central belt of Scotland. Many UHI courses and research centres are vocationally appropriate to the needs of local industries such as fishing, aquaculture, tourism and forestry. Extensive surveys have been carried out to attempt to understand the attitudes and aspirations of the region’s youth and find ways to retain the younger generations in the highlands and islands area. One of the conclusions is that young people perceive their peers as leaving the area not because of a lack of opportunities, but because they do not value the local opportunities. Nevertheless, there is a recognition that many do leave to pursue education and employment opportunities available in other regions (Highlands and Islands 2015: 32).

In the Nordic countries, competence-building and up-qualification services are often organised by state-owned authorities, and education is offered by publicly funded regional and local schools/institutions. In Sodankylä municipality, it is possible to pursue vocational-level (www.lao.fi) education focusing on the mining sector. The municipality co-operated with the state authority (ELY-keskus, TE-toimisto) and several mining companies to develop tailor-made courses for unemployed local people for the purposes of upskilling or basic, vocational-level competence-building.

3.2 Encouraging Young People to Stay

To get young people of working age to move to Kujalleq municipality in South Greenland, there is a focus on creating favourable framework conditions for entire families—in terms of jobs, homes, day care institutions, schools and leisure and cultural facilities—so that it becomes an attractive area to settle. Access to long-term housing is also important for retaining young people with an education, and new housing opportunities is developed in locations where employment growth is greatest, in the larger settlements within Kujalleq municipality.

Many organisations work on involving young people. There is growing evidence that, in places where the youth are involved in planning issues through a youth council, they are more satisfied with being a young person in these areas and, thus, more likely to return there after finishing their education. Suggested activities to make the community attractive for young people include:

- ▶ establishing a youth council and bringing youth perspectives into planning, e.g., the planning of public places, cultural and leisure activities and support mechanisms for the elderly and new arrivals to the communities;
- ▶ co-operating with national organisations working on youth issues, such as the Swedish Agency (<https://www.mucof.se/> or <http://ungdom.com/>) or regional actors coordinating youth activities;
- ▶ ensuring good housing and job opportunities for young people who have finished their education; and
- ▶ developing a vision for the community where the young people's voices are a central part of the future of the local area.

3.3 Addressing Gender Issues

Today, it is common for mining companies to strategically promote gender equality. In recent years, companies such as LKAB and Boliden have implemented ambitious gender initiatives, including gender awareness training programmes, and made efforts to recruit women to higher positions, including as technology experts. Mining programmes are run at upper secondary school level, with the aim of achieving a female participation rate of 50%. Despite such initiatives, it continues to be a challenge for mining companies to break the industry's male-oriented gender patterns (LKAB 2015: 30).

Strategies addressing this challenge are part of diversifying the local labour market, and include activities such as targeted support for female entrepreneurs. Women account for between a third and a quarter of all entrepreneurs. Research comparing male and female entrepreneurs has explored several explanations for the

gender differences in entrepreneurship. Explanations include arguments that women have a greater fear of failure than men and that they are less growth oriented, which limits their ability to access external financing (Pettersson 2012: 15–16). When examining the differences in businesses established, there are gendered preferences regarding the types of businesses in which female entrepreneurs are involved.

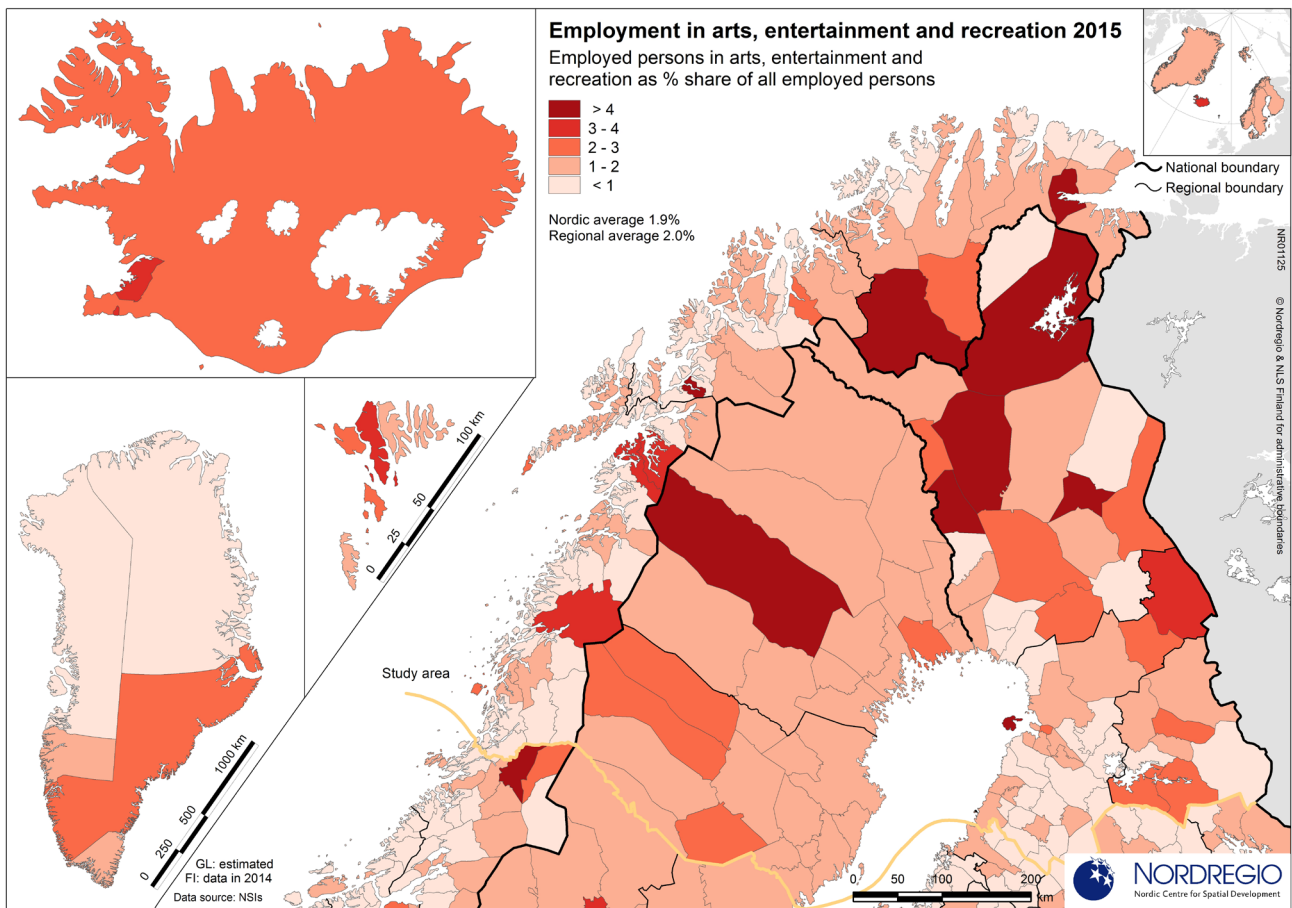
Women are the primary drivers of local development in the rural tourism sector, with female entrepreneurs being responsible for establishing holiday accommodation such as bed-and-breakfasts (B&Bs) and businesses based on homemade delicacies, arts and handicrafts. Tourism is increasingly becoming a vital part of the economy in the NPA area. Many rural communities are being transformed from production economies to economies based on experiences and consumption. Since 2000, the number of tourist visits in Sweden has increased by more than 80%, and many entrepreneurs in this sector have developed farm-based activities, including B&Bs, cafés, display gardens, shops selling local handicrafts and horse-riding facilities (Pettersson 2015).

In the process of creating policy measures to attract and recruit female employees, it is important to consider the motivation and any specific gaps before deciding on relevant activities. Examples of potential measures include:

- ▶ establishing strategic targets and/or quotas for female recruitment or representation;
- ▶ implementing initiatives to change the institutional culture;
- ▶ providing economic support for female entrepreneurs; and
- ▶ establishing various social networks for women in different sectors to become part of the labour market in rural areas.

3.4 Combining the Natural Resource Industry with Tourism and the Creative Industries

Combining sectors that are not normally associated—for example, combining the natural resource industry with tourism and the creative industries—may represent an opportunity for regional competence-building. Many NPA regions have experienced an increase in foreign visitors in recent years and, as Map 3 shows, there are several municipalities where more than 4% of the population is occupied in arts, entertainment or recreation activities. The opportunities for combining the creative sector with large-scale resource-based industries is, of course, contingent upon the geographical context and local opportunities of each area.



Map 5: Employments in arts, entertainment and recreation in the Nordic Arctic, 2015

An example of natural resource and creative industries combining occurred in Brønnøy municipality, where the local project leader proposed bringing together the Kulturcompaniet and the mining company extracting chalk in the region. The extraction sites are suitable in many ways for heavy metal rock concerts because of their large size and amphitheatre-style acoustics, and hosting well-known bands could result in new business opportunities in the local area.

Combinations of tourism and natural resource industries have also occurred. For example, in Kiruna,

the iron-ore mine owned by LKAB facilitates a small tourist centre and organises guided tours for tourists interested in its historical development and the mining operations carried out today. The mine opened in 1898 and has produced over 950 million tonnes of ore since then. On guided tours, tourists can visit the mountain by bus and go to a visitor centre located 540 meters below the surface, and also learn about the plans to move the entire town centre of 3,000 people to a safe distance from the expanding mining operations.

4

Guide for Collecting Additional Evidence on Local Labour Market Challenges

THIS CHAPTER PRESENTS a guide for collecting additional evidence on local labour market challenges. The purpose of this guide is to support municipalities to proceed in gathering information, identifying knowledge gaps and further analysing the previously identified issues relating to their local labour market. Because each municipality has specific local challenges, this guide will present a broad approach for working with locally relevant issues.

For this study, evidence is defined as a way of systematically presenting testimony on a certain social phenomenon. In qualitative research, the analysis is based on text rather than numbers (Schutt 2012). To conduct such qualitative analysis, each municipality needs to prepare a tailor-made plan to gather and analyse data to present evidence on their relevant local labour market issues. This plan can provide inputs to local policymakers by deepening their understanding and analysis of particular social phenomena. Specific methods should be chosen by the municipalities to ensure that their plans are relevant for their specific local labour market challenges.

4.1 Preparation and Local Reflections on Core Themes

Several themes tend to be particularly relevant when working with labour market issues in the sparsely populated areas with large-scale industries that characterise the NPA region:

- ▶ The demographic situation is characterised by a high old-age dependency ratio, outmigration and dispersed settlement, and this has impacts on human resources in the local area.
- ▶ Different locations for large-scale industries can result in different impacts. Municipalities should consider the implications of the location of their own particular large-scale industries.
- ▶ Competence-building and the current role of Fly-in/Fly-out (FIFO) labour. Here, municipalities can plan

strategically for on the job-training of a local workforce with FIFO employees.

- ▶ The percentage of job recruitment that occurs through social networks in large-scale activities and complimentary activities in the municipality affects whether certain groups are more likely to be excluded from the labour market, e.g., youth, women or newly arrived migrants.

The points described above can act as a general checklist for municipalities to identify what should be included in a more in-depth study and policy analysis. As an example of the work carried out within the REGINA project, some local partner municipalities have already identified local themes that need to be addressed. A summary is provided in table 7 (see next page):

4.2 Approach

Based on the preliminary identification of key issues, each municipality is encouraged to develop a detailed plan tailored to local needs, which would involve the following steps:

1. Identify existing knowledge by reviewing consultancy reports, academic papers and other relevant literature.
2. Identify persons, companies or organisations who have been involved in working with similar issues previously and ask about their experiences and knowledge on these issues. Such persons could include stakeholders in the local community or stakeholders from other communities who can describe their experiences.
3. Identify specific methods to gather further knowledge on the locally relevant issues (see the inspirational catalogue in Section 4.3 below).
4. Identify a *resource person* who can carry out the study and report back when the new knowledge is gathered. A *resource person* could be the project manager writing the LS3, nearby research partners in the project, master's degree students co-operating with the

Table 7: Summary of REGINA municipalities key labour market challenges

Municipality	Issue
Sodankylä municipality, Finland	<ul style="list-style-type: none"> ▶ Social challenges for mothers in families where the male partner works in a mine. Due to alternating work schemes women are often taking care of the family alone (with the partner working in the mine). Lack of well-being of the young women in Sodankylä can impact their ability to becoming a member of the community and it is essential for the vitality of the region. ▶ Long-distance commuters, including taxation rules and the impacts resulting from a large share of the mine workers coming from outside the community, the region or even the country. By understanding the motivations of the long-distance commuters, there are opportunities for Sodankylä to attract new inhabitants, which will in turn improve the local tax base, resulting in local multiplier effects and spillover economic activities.
Storuman municipality, Sweden	<ul style="list-style-type: none"> ▶ Motivations behind migration decisions for people arriving and leaving and for those considering whether to move or stay. ▶ How to give seasonal labour migrants in the ski tourism industry the opportunity to stay all year, by examining what type of employment activities this group sees as relevant for the remaining parts of the year.
Kujalleq municipality, Greenland	<ul style="list-style-type: none"> ▶ How to help marginalised groups, e.g., vulnerable families, re-enter the labour market. ▶ A high share of local population without tertiary education.
Brønnøy and Alstahaug municipality, Norway	<ul style="list-style-type: none"> ▶ The low incentives and motivation to obtain an education when significant incomes can be earned in the oil industry after a three-month vocational training course, which creates a deficit of the skilled workers need to promote innovation and entrepreneurship. ▶ Integration of labour market immigrants in the local communities

project leader to gather the new knowledge, or other options determined by the municipality.

5. Disseminate the report—a crucial last step to ensure that all stakeholders, local and regional politicians and council members are informed about the outcome of the study, so they can follow up on transitioning the knowledge into policies.

In addition to these five steps for carrying out the study on local labour market challenges, it is important to set up a timeline for the study. It is recommended that the study be carried out over six to seven months, to enable the project managers to incorporate the results into LS3 planning.

4.3 Inspirational Catalogue and Methods for In-Depth Studies

The inspirational catalogue in this section provides an overview of methods that could be applied by municipalities to carry out in-depth demographic and labour market studies. In particular, it includes the Demographic Foresight Model (DFM), which has been developed within the REGINA project, as well as other qualitative methods that build on the REGINA working paper ‘Tools for monitoring social impacts of large-scale industries’ (Suopajarvi and Jungsberg 2016).

The Demographic Foresight Model (DFM) as a Tool for Exploring the Population Implications of Employment Changes

Most national statistics agencies produce population projections, which are simply exercises in estimating future population trends on the assumption that the trajectory of the recent past (driven by fertility, mortality and migration) continues unchanged into the future. Foresight differs from projection in that future trends are estimated on the basis of assumptions about how mortality, fertility and (especially) migration may *change* in the future. Foresight may take account of long-term trends, such as increasing life expectancy, or lifestyle choices relating to the age at which couples begin a family. It can also take account of more sudden, one-off changes, such as the opening or closing of a mine and the associated tendency for in- or outmigration of workers and their families.

All of these future changes in trends are, to some extent at least, a function of local or place-based processes, which national statistical offices cannot be expected to know much about. However, in the context of a municipality, or equivalent local area, it is much more interesting, and probably much easier, to investigate and to envisage scenarios about how demographic processes may differ in the future from those of the re-

cent past. Thus, moving beyond projections and into foresight makes good sense at the local level.

The REGINA DFM is a specific tool to help local administrations understand the likely implications of a large-scale resource-based investment (or disinvestment) for the demographic situation and trends in their area. It is based upon the adaptation of demographic projection methods to handle the small populations of

sparsely populated communities, and includes the addition of a foresight scenario capability to assess the population effects associated with a proposed development (or closure).

A basic description of the REGINA DFM is given below; full details and step-by-step instructions on how to implement it are provided in the REGINA DFM Handbook.³⁾

REGINA

Remote communities & resource-based industries

Demographic Foresight Model: NORTOPIA

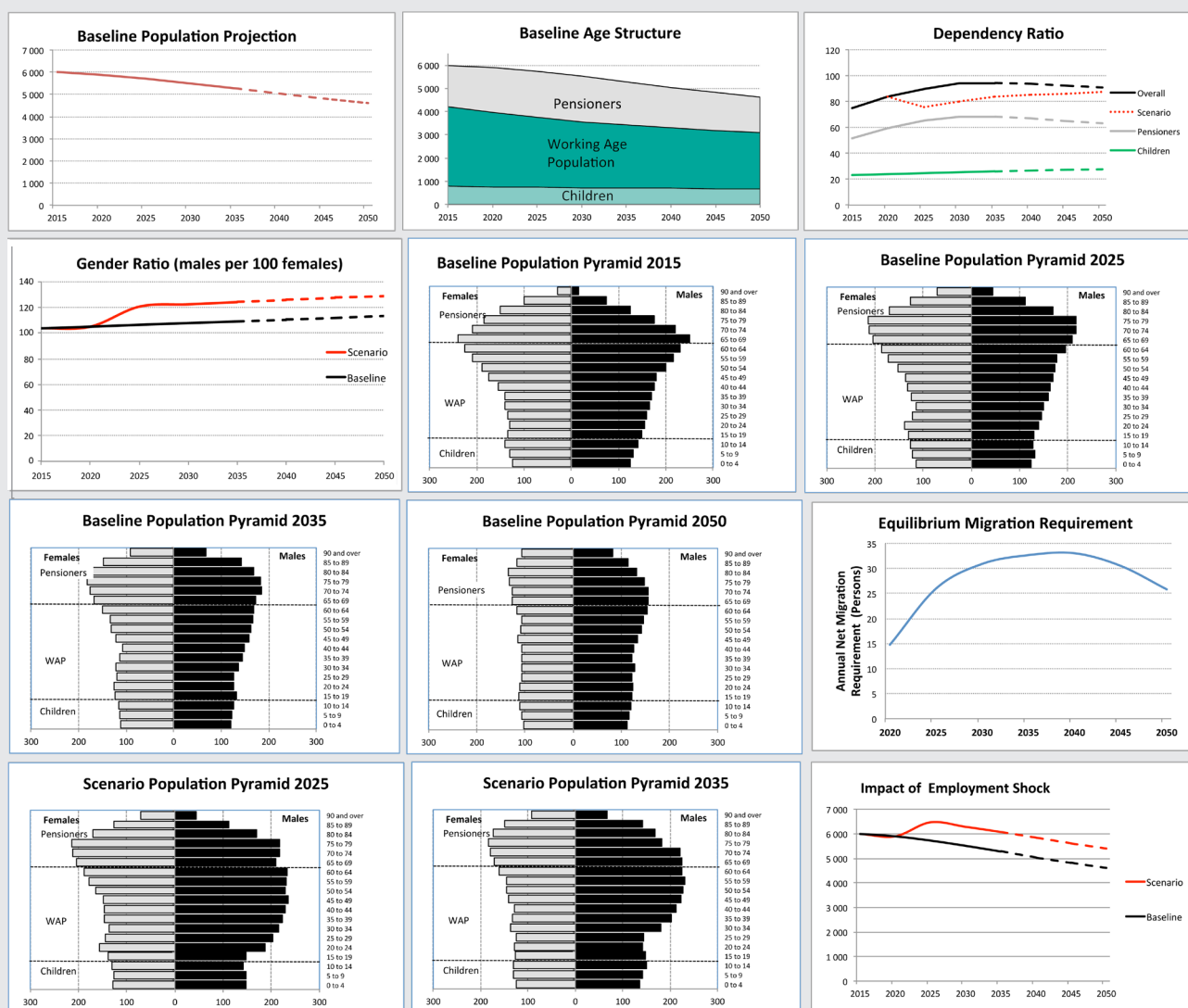


Figure 3: The DFM Graphical Dashboard



3) <http://www.reginaproject.eu/resourcecentre/>

The REGINA DFM is implemented in an Excel spreadsheet and is therefore readily accessible to the majority of potential users. Its data requirements are as follows:

1. base year (male and female) populations for five-year cohorts;
2. average annual fertility rates (per 1,000) for each female cohort from 15–19 years up to 45–49 years of age;
3. average annual mortality rates (per 1,000) for all cohorts, male and female; and
4. average annual migration rates—for each cohort, distinguishing males and females, and in-migration from outmigration.

The model also requires ‘guestimates’ of how fertility and mortality rates are likely to change in each successive projection period. The best source for these will probably be the documentation of national or regional population projections, where such data are usually provided in the descriptions of the assumptions.

Prior to exploring the implications of different assumptions about how demography may change in the future, it is very helpful to be able to ‘calibrate’ the DFM by comparing it with official projections for the same area (where they exist).

The ‘employment shock scenario’ part of the DFM is designed to make the model more directly relevant to the planning process of municipalities in the NPA, where it is not unusual to be confronted with a potentially sudden and substantial change in local employment prospects because of inward investment—or disinvestment—by multinational companies engaged in the extractive industries. It is perhaps worth pointing out here that the DFM is designed to deal with the direct demographic implications of the employment associated with the inward investment/disinvestment alone, not with indirect or induced multiplier effects upon the local economy. To assess the latter, another kind of model (input–output, general equilibrium or social accounting matrix) would be required. This is beyond the scope of REGINA.

The employment shock scenario module assumes that the operator has information about a specific inward investment or disinvestment and, in particular, its likely employment impacts. More specifically, it is necessary to have an estimate of the number of jobs that will be created or lost and their likely age and gender structure. It will then be necessary to make assumptions about the proportion of these jobs that will be taken up by in-migrants or, in the case of disinvestment and redundancy, which will result in outmigration. Finally, it will be necessary to make some assumptions

about how many household members are likely to migrate with the employees.

The output from the REGINA DFM takes the form of either detailed population tables (five-year cohorts x male/female) for every fifth year through to 2050 or a graphical ‘dashboard’ (see Figure 3). The dashboard includes simple line graphs of the projected population, population pyramids and graphs of dependency rates, the working-age population and gender ratios. Together, these provide a fairly comprehensive picture of the way in which the human resources of the municipality will evolve and how the local labour market may be affected by employment shocks. As such, it can act as a very important tool to support planning for housing and services, especially education and elderly care services.

Questionnaires

Questionnaires are useful when it is necessary to reach a large audience, such as the residents of the municipality. Questionnaires can be delivered to informants by post or online (e.g., Webropol). One challenge with questionnaires can be a low response rate; nowadays, the rates are around 15–30% in postal surveys. If the survey is conducted using the Internet, it can be difficult to reach all segments of the community (e.g., elderly people).

The questions asked in a questionnaire can be open questions or closed questions:

▶ Open format questions or open-ended questions give the audience an opportunity to express their opinions, because respondents are not given a predetermined set of responses and they are free to answer however they feel is right. An advantage of including open format questions in questionnaires is that true, insightful and even unexpected suggestions can be obtained. A disadvantage is that the answers are difficult to code, and it is difficult to analyse results from the diverse range of answers provided in the questionnaire.

▶ Closed-format questions limit the answers of the respondents to the response options provided in the questionnaire. An advantage of this is time efficiency, because responses are easy to code and interpret, and it is ideal for quantitative research. A disadvantage is that respondents are required to choose a response that may not exactly reflect their preferred answer, and the researcher cannot further explore the meaning of the responses. Some examples of closed questions are:

- ▶ dichotomous or two-point questions (e.g., yes or no, unsatisfied or satisfied),
- ▶ multiple-choice questions (e.g., A, B, C or D), and
- ▶ scaled questions that use rating scales such as the Likert scale (a five-point scale), three-point scales, semantic differential scales and seven-point scales.

Thematic Interviews

A qualitative approach is useful in a situation where the aim of the research is to obtain information about more profound dilemmas or local conflicts, where it is necessary to understand people's experiences in more depth. Thematic interviews can also serve as preparation for designing a questionnaire to ensure all relevant questions for the local inhabitants are included. It can be difficult for the researcher to create a questionnaire without having prior knowledge about the issues at stake in the municipality.

An example of a qualitative study carried out as a part of the REGINA project was a study about mothers who had recently moved to Sodankylä because of their own or their husbands' work in mining. In Sodankylä—and in northern sparsely populated areas in general, as noted in the REGINA project—the main demographic challenge is the outmigration of young women. Hence, if new female residents and families are moving to the area, e.g., because of mining, it is important to pay attention to their well-being to increase the likelihood that they will stay.

In the Sodankylä case study, the researcher contacted mothers with the help of the local maternity clinic and was able to reach 10 mothers with small children. Four group interviews were carried out with mothers aged 28–38 years, discussing Sodankylä as a place to live, the mothers' well-being and that of their families. The interview structure was thematic and was based on the scientific literature, particularly sociologist Erik Allardt's dimensions of well-being: 'having', 'loving' and 'being'. In this context, 'having' refers to the economic and material aspects of life; 'loving', to social relations; and 'being', to self-realisation (Allardt 1976). Interviews were recorded, transcribed and analysed, based on the research literature.

Interviews are a very popular way of collecting data in social sciences but they are quite time consuming: finding informants, interviewing them, transcribing their speech to text and then analysing often a large amount of data takes a great deal of time. In some cases, interviews can be done in a journalistic way, i.e., involving a few exact questions, with phone interviews then being conducted among stakeholders.

Written Stories

Written stories can be used as a tool to monitor social impacts, and this is a particularly efficient way to reach certain groups, such as the young. This method was used as part of an attempt to understand young people's perceptions regarding mining in Kittilä, where the Kittilä gold mine is located. A group of young people aged 15–16 years, who were about to leave middle school in Kittilä, shared their present-day experiences of everyday life and also imagined their own and their commu-

nity's future. On the first page, they were asked to write about their gender, place of residence and place of birth. Then, they were asked to describe the three best and three worst things about their localities. On the second page, they were asked to imagine their lives 10 years into the future, and to write a story about their life in that situation. The idea was to see how many of them planned to stay in Kittilä, and how many planned to have a career in the mining industry.

SWOT Model

The SWOT model examines strengths, weaknesses, opportunities and threats (SWOT). Hence, the model includes present-day situations as well as future prospects. It can be used for planning as well as for evaluations. It is a useful way to elicit participants' ideas retrospectively on what have been the strengths and weaknesses of an intervention or a learning process, or for identifying priorities with due considerations to threats (controllable or uncontrollable conditions) in a given context. Writing statements on cards and sorting these under common headings can be very participatory and entertaining.

Thus, the SWOT model can be used as a starting point for collaborative planning. In a workshop, different views and visions can be grouped, and then the participants vote on what are the most important positive/negative impacts and opportunities/threats. After voting, the next round of the workshop concentrates on actual steps and practical measures by answering questions regarding how positive impacts could be strengthened and negative impacts mitigated, how to make use of opportunities and how to avoid possible threats.

Appreciate–Influence–Control (AIC)

Appreciate–influence–control (AIC) is a workshop-based method that can bring interest groups together. AIC typically involves the following three phases (Mikkelsen 2005):

1. looking at present realities and the reasons for present issues and problems;
2. brainstorming as many ideas as possible about what the ideal situation would look like; and
3. discussing strategies for progressing from the present reality to the ideal vision, prioritising different options, setting action plans that participants can commit to implementing, and determining how these would be implemented, including who would be responsible for what and when.

Most Significant Change Model

The most significant change model simply involves asking people what has been or what they expect to be the most important result of a change that their community is facing. For example, respondents could be asked: if a mine is opened in your municipality, what will be the most significant change in (1) social and health care, (2) schooling and education, (3) the economy of the municipality and (4) community life in general? One A4 sheet is sufficient for answers, and this method can be used in settings such as municipal council meetings or in any other meetings where people are gathered together.

Recommendations on Methods for In-Depth Study

It is not necessary to apply all methods outlined above to collect evidence on local labour market challenges. Each municipality can decide which method(s) would

be the most relevant for gathering insights about the local labour market issues that they wish to address. In some cases, there may be benefits from choosing more than one method to explore and analyse the social phenomenon of interest, but generally, one method/approach would be sufficient to gather knowledge on a particular labour market issue.

The qualitative analysis suggested here is, in many ways, complementary to the quantitative output of the DFM, because it depicts the future and the potential or current need for labour in the local area, e.g., in the shock scenarios. Considering the qualitative analysis of current labour market challenges can assist in assessing the validity of future projections by the DFM regarding an overall employment increase and general opportunities for labour market development.

A Final Word

SPARSELY POPULATED AND remote areas such as the NPA face a distinct set of demographic and labour market challenges, which threaten their socio-economic sustainability. The longer-term viability and well-being of communities in these regions depend on key local actors and agencies being well informed and able to carry out appropriate foresight analysis. Demographic change is fairly predictable, and the REGINA DFM provides an easy-to-use tool adapted specially for small communities, which can find conventional projection tools problematic because of their small populations.

However, although the DFM allows prediction of the quantitative impacts of employment shocks, there remains a need for a deeper understanding of the many cultural and behavioural aspects of demographic and labour market processes that cannot be quantified. These are crucial, because they are often the basis of much-needed creative and imaginative policy responses. This report has attempted to provide an overview of such issues and some practical guidance on how to explore them in a municipality context.

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