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Local labour market participation in a pan-Nordic context

Gustaf Norlén
Maria Bobrinskaya
Anna Lundgren

SUSTAINABLE NORDIC REMOTE LABOUR MARKETS (SUNREM)

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1. https://www.nordforsk.org/projects/sustainable-remote-nordic-labour-markets-sunrem

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This paper is also available online in a web-accessible version at: https://pub.nordregio.org/wp-2025-4-local-labour-market-participation-in-a-pan-nordic-context

1. Introduction

The aim of this background working paper is to contextualise and map local labour markets in remote areas based on descriptive and public data, primarily from the relevant national statistical offices. The mapping is conducted at a pan-Nordic level, drawing on municipal-level data to show status and trends at a detailed geographical scale. It builds on the topics and a conceptual model (further elaborated in Section 2 of this paper) which was developed based an initial literature overview conducted within the SUNREM project.

The selection of indicators includes measures related to demography, the labour market, education and the economy. Following the collection of statistics, harmonisation was performed to ensure the comparability of data across the Nordic countries. Further details on this process can be found in Appendix 1. The indicators were analysed and visualised using maps and figures.

The SUNREM project (Sustainable Remote Nordic Labour Markets) (2023-2027) is a research project conducted by Nordregio, University of Akureyri, Fafo and Åland Statistical Offices (ÅSUB), with funding from NordForsk. The main research question in the SUNREM project is: "How can Nordic local labour markets in remote areas adapt to changes caused by global megatrends and achieve sustainable labour force participation?" (SUNREM Research Plan, 2023). This overview sets out to enhance understanding of the effects of factors influencing local labour market participation, as identified in the literature review, in the Nordic context. This overview also seeks to provide working definitions of the terms "local labour market" and "remote labour market".

The next chapters will give a background and context for the case studies examining seven local labour markets in Iceland, Norway, Sweden and Åland – with the aim of gaining in-depth insights of local labour market participation in the Nordic Region.

The next section presents an overview of the common characteristics of the Nordic labour market and the Nordic model. This is followed by a section outlining key aspects of a sustainable labour market, including labour force participation and the balance between supply and demand. Section 4 introduces a working definition of remote local labour markets, which will be applied throughout this paper and in other sections of the SUNREM project involving quantitative data. Finally, Section 5 explores megatrends affecting the labour market and assesses their potential impacts.



Map 1. SUNREM project case study areas (municipalities and regions): Norðurþing and Dalvíkurbyggð in Iceland, Stord and Hammerfest in Norway, Skellefteå and Gotland in Sweden, and Åland.

The table below is based on an initial review of the literature on sustainable labour markets in remote areas. It highlights key themes from the review and illustrates the relationship between sustainable labour markets and megatrends. These connections are further linked to the statistical indicators presented in this paper.

Topics in the literature review	
Demographic change	Ageing population
	Burdens on younger generations
	Labour shortages
	Age discrimination
	Increasing inequalities between urban and rural areas
Technological change	Labour shortages
	Urban-rural competition/ regional disparities
	Shrinking rural areas
	Job displacement
	Opportunities for remote working
Globalisation	Migration and labour mobility
	Wage pressure and job insecurity
	Rural poverty
	Increased tourism
Climate change and the green transition	Labour market disruptions and job losses / reallocation / displacement of labour
	Declining agricultural productivity
	Emergence of new jobs and economic opportunities / transition to an environmentally friendly labour market
	Skill disparities
	Job polarisation
	Gender disparities
	Regional economic gaps
	Industrial structure and regional transition

Table 1. Topics highlighted in the initial literature review on sustainable remote labour markets.

2. Characteristics of the Nordic labour market and the Nordic model

The labour markets in the Nordic countries share several characteristics associated with the Nordic model, including common values such as equality, universal access to political and social rights and a high degree of inclusion. The Nordic states are welfare societies with high living standards and a large public sector, primarily funded through taxation.

A key feature of Nordic labour markets is high labour market participation, which is essential for sustaining and financing the Nordic welfare model. Historically, participation rates have risen, driven primarily by increased female workforce participation and, more recently, by a growing number of people over the age of 65 remaining in employment.

As illustrated in Figure 1, all Nordic countries have higher employment rates than the EU average. While employment levels fluctuate due to economic cycles, the gap between Nordic countries and the EU average remains relatively stable.

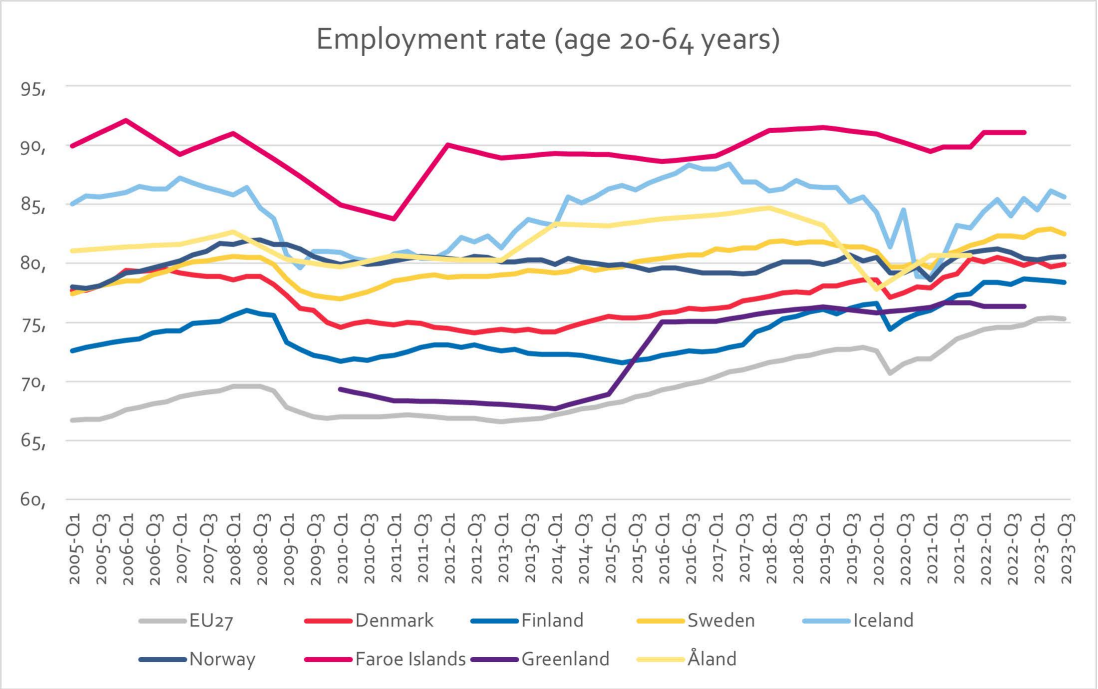


Figure 1. Employment rate (among the population aged 20-64 years). Data source: Eurostat and NSIs (Labour Force Survey, excluding GL and AX).

A strong gender balance in labour force participation is another key characteristic of the Nordic labour markets. However, gender segregation of the labour market remains a significant issue across the Nordic countries (OECD, 2018; Andréasson, Randall, & Norlén, 2020). For instance, only 17% of the workforce in Sweden, Finland and Norway is employed in occupations where the gender balance falls between 40% and 60% (Norlén, 2024).

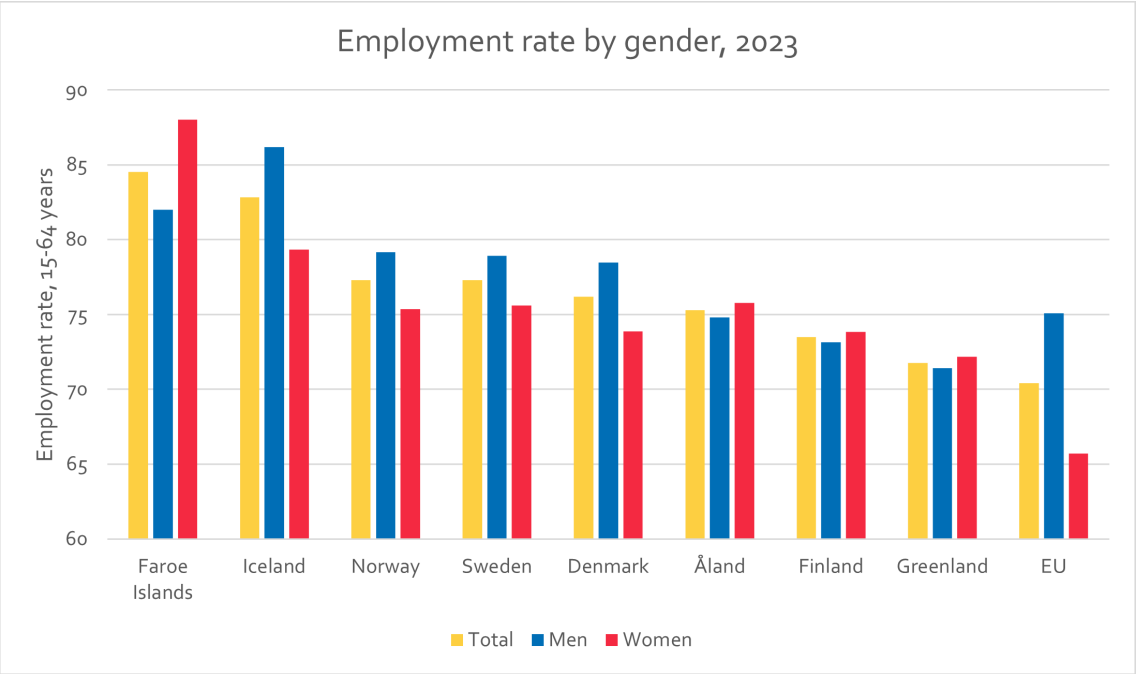
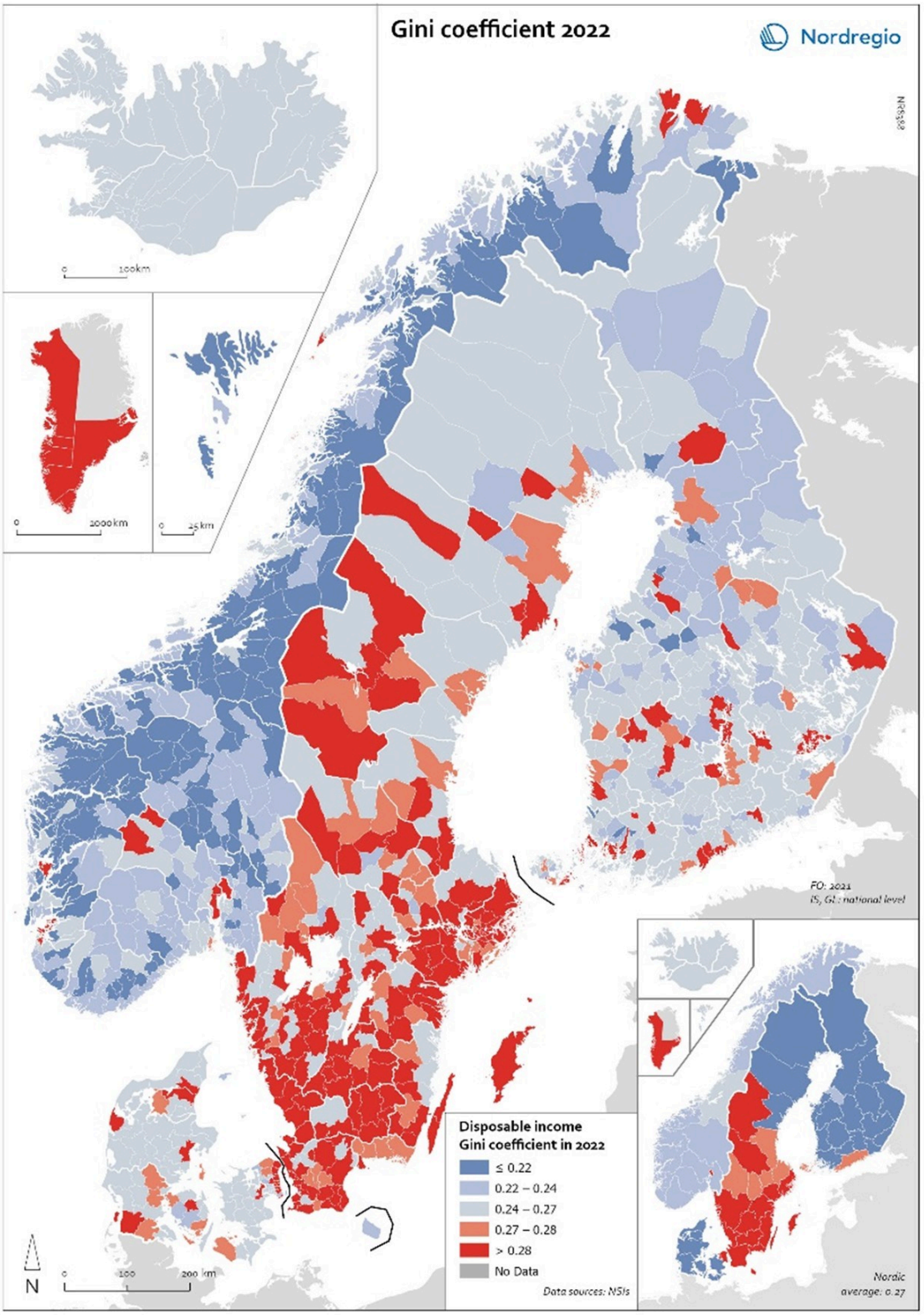


Figure 2. Employment rate by gender, 2023. Data source: Nordic Statistics; Åland: ÅSUB.

Despite a strong gender balance in the labour market, inequalities between genders and various societal groups persist in Nordic economies. One way to illustrate income disparities is through the Gini coefficient of disposable income, as shown in Map 2. The Gini index ranges from 0 to 1, where 0 represents complete equality and 1 signifies total inequality. The map highlights income inequality within municipalities, with urban municipalities generally exhibiting the highest levels of disparity.



Map 2. Gini coefficient, 2022. Source: State of the Nordic Region 2024.

The Nordic labour market model encompasses macroeconomic policies aimed at achieving full employment, universal welfare systems that support re-skilling and up-skilling and a collective bargaining framework. This model has historically played a crucial role in managing structural changes and is expected to remain central to future labour market transitions (Alsos & Dølvik, 2021; Jesnes et al., 2020).

A defining feature of the Nordic model is the strong collaboration between social partners in the labour market. Trade union membership is notably high, with Nordic countries having the highest unionisation rates among OECD nations, although there is some variation between them.

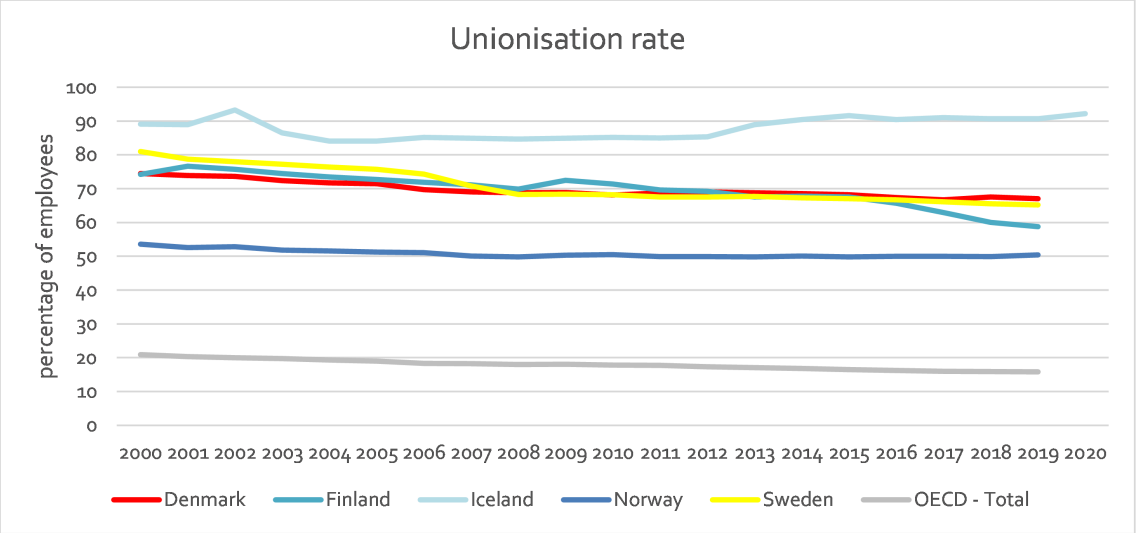


Figure 3. Unionsation rate. Data source: OECD.

As many as 80-90% of employees in the Nordic Region are covered by collective bargaining agreements (Logue, 2019). Despite high levels of unionisation and extensive coverage by such agreements, significant differences are observed within the region, particularly in the implementation of these agreements, the degree of trade union influence, dispute resolution mechanisms and the financing of unemployment insurance (Petersen, 2019; Høgedahl, Nergaard & Alsos, 2022).

Over time, the Nordic labour market model, characterised by tripartite agreements, has contributed to both stability and structural change within the labour market (Alsos & Dølvik, 2021; Rolandsson & Ilsøe, 2023), as well as to strong economic performance and high living standards (Høgedahl, Nergaard & Alsos, 2022).

From a European perspective, the Nordic approach – with collective agreements between employers' organisations and trade unions regulating wages and working conditions – differs from the legal framework-based model prevalent in continental Europe (Kristiansen, 2019).

However, EU membership and the implementation of European regulations, particularly in employment law, have increasingly influenced Nordic labour markets. This influence extends not only to EU Member States but also to Norway and Iceland, which, as part of the European Economic Area (EEA), are bound by EU legislation to the same extent as EU Member States (Kristiansen, 2019).

Social legislation covering unemployment insurance, industrial accident insurance, sickness benefits and pensions has gradually developed across the Nordic countries since the early 20th century. While these systems share many common features, they have also evolved independently in terms of institutional structures, support measures, labour market mechanisms and welfare sector financing, and at varying speeds (Petersen, 2019; Nordic Health and Welfare Statistics, n.d.). This development includes policies related to the green transition in the labour market (Lundgren et al., 2023).

In terms of unemployment support, residents of Nordic countries benefit from a comprehensive system of financial assistance and employment services aimed at facilitating re-entry into the labour market. Although social expenditures have risen over the past 50 years (Petersen, 2019), the proportion of GDP allocated to social spending varies significantly across the Nordic Region. As illustrated in Figure 4, Finland has the highest social protection expenditure as a share of GDP, while Iceland has the lowest.

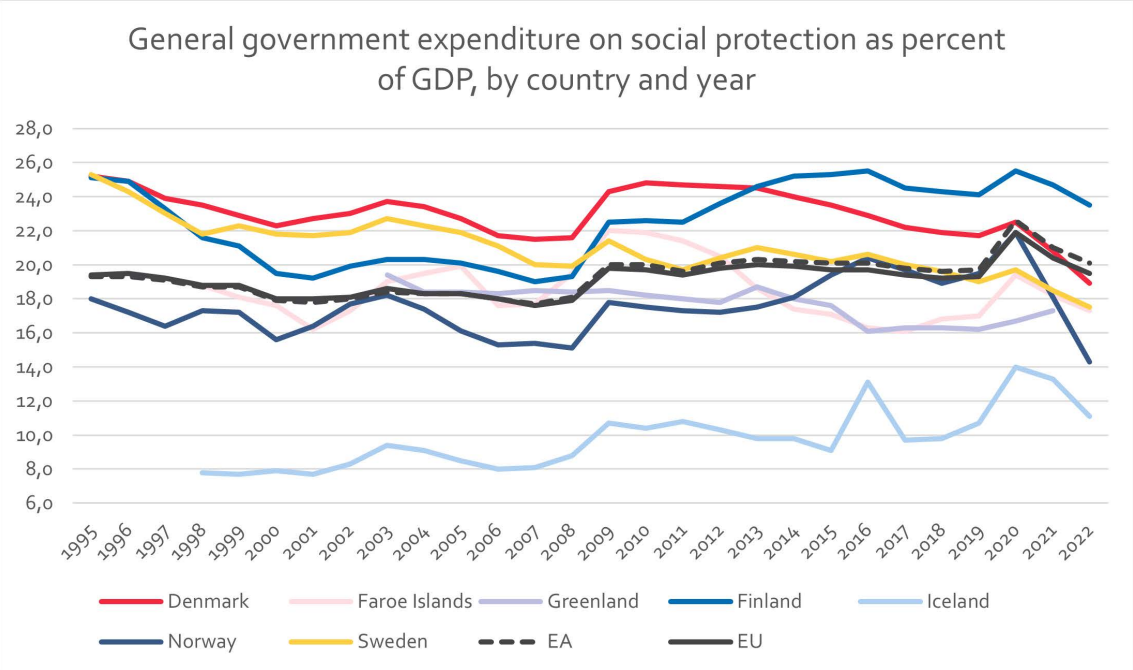


Figure 4. General government expenditure on social protection as a percentage of GDP. Source: Nordic Statistics 2024; Lundgren et al. 2024.

3. Sustainable labour markets – labour market participation in the Nordic Region

SUNREM definition of sustainable labour markets

High labour market participation is not only a fundamental prerequisite for the Nordic model but also a key characteristic of a sustainable labour market. The initial literature overview conducted in the SUNREM project examined research on sustainable labour market participation.

First, a critical aspect of sustainable labour market participation involves maintaining a balance between job supply and demand within the local labour market. According to the ILO (2015), this balance is essential to ensure that a significant proportion of the working-age population is actively engaged in the labour market, either through employment or job-seeking. It also serves as an indicator of the available labour force contributing to the production of goods and services.

Second, the ILO (2018) emphasises the importance of both the ability and willingness to work, encompassing factors such as fair wages, reasonable working hours, workplace safety, health protection, the eradication of child labour and the provision of equal treatment for all workers. This aligns with Goal 8 of the Sustainable Development Goals on Decent Work, which seeks to "promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all" (ILO, 2018). The decent work agenda includes rights at work, including social dialogue, and quality of work.

Third, a sustainable labour market should consist of high-quality jobs.

Based on the literature overview and the key dimensions outlined, the SUNREM project conceptualises sustainable labour market participation as encompassing a balance between job supply and demand, the provision of high-quality jobs and decent work, both in the present and the future.



Figure 5. Conceptualisation of sustainable labour market participation (authors' work, 2024).

The following sections of this paper examine the performance of the Nordic Region in relation to these key dimensions and features. It begins by analysing employment trends in the region, including how employment has evolved in recent years, before exploring unemployment and persons outside the labour force.

The balance between job supply and demand, a core aspect of sustainable labour market participation, will be partially addressed in this paper. However, this theme will be explored in greater depth in dashboards that provide insights into the economic structure and labour market dynamics of the case study areas. The quality of jobs will be assessed in relation to the main industries within these areas, primarily through qualitative analysis conducted as part of the case studies.

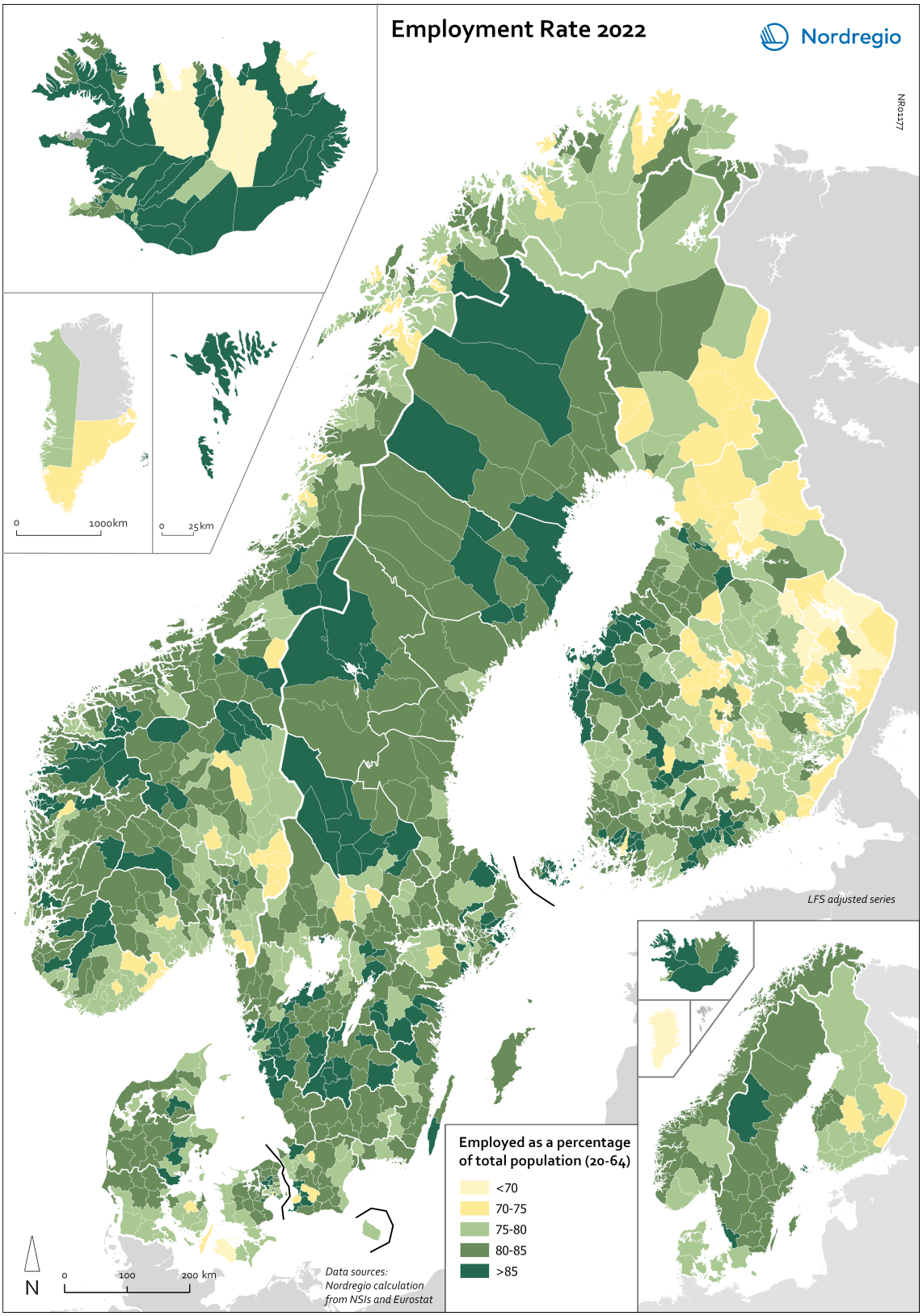
Labour force participation in the Nordic Region

There are several complementary ways of measuring labour market performance. In this section we examine data on employment and unemployment rates, as well as the share of the population outside the labour force.

In the official labour market statistics, the working-age population is categorised into three groups: those in employment, those who are unemployed (i.e. actively seeking a job) and those outside the labour force (see Appendix 2 for more information).

The employment rate is calculated as the proportion of individuals in employment relative to the total population within a specific age group. As previously mentioned, overall employment rates in the Nordic Region are high, with over 80% of the population aged 20-64 in employment, compared to the EU-27 average of 75% in 2022. In many Nordic countries, employment levels surged following the Covid-19 pandemic, reaching their highest levels in at least two decades (Norlén, 2024). However, as illustrated in Map 3, significant regional and municipal disparities persist.

The map highlights persistent differences in employment rates between Nordic countries, with Finland and Greenland exhibiting lower employment levels, although the gap has narrowed in recent years. A low employment rate may indicate a mismatch between labour supply and demand. However, an exceptionally high employment rate can also signal an imbalance, suggesting potential labour shortages.



Map 3. Employment rate, 2022.

Many remote labour markets report employment rates above the respective national average, including the case study areas, as shown in Table 3. Given that a portion of the population will always remain outside the labour market due to factors such as illness, education or parental leave, an employment rate exceeding 80% is considered close to "full employment" (ref.).

	Norð-urþing	Dalvík-urbyggð	Stord	Hammer-fest	Skellefteå	Gotland	Åland
Employment rate (2022)	91.5	86.1	82.2	81.4	85.7	82.8	85.8
National average	84.0		80.4		81.6		78.1
Average for remote labour markets (excl. Denmark)	81.0						
Nordic average	80.7						

Table 2. Employment rate in the case study areas. Data source: Own calculations based on LFS and register data.

Another key indicator of labour market performance is the unemployment rate. Unlike the employment rate, the unemployment rate excludes individuals who are outside the labour market [2]*. It is therefore a useful measure of those currently available for work, particularly in countries where a significant proportion of the population is not actively seeking employment, such as those caring for children.*

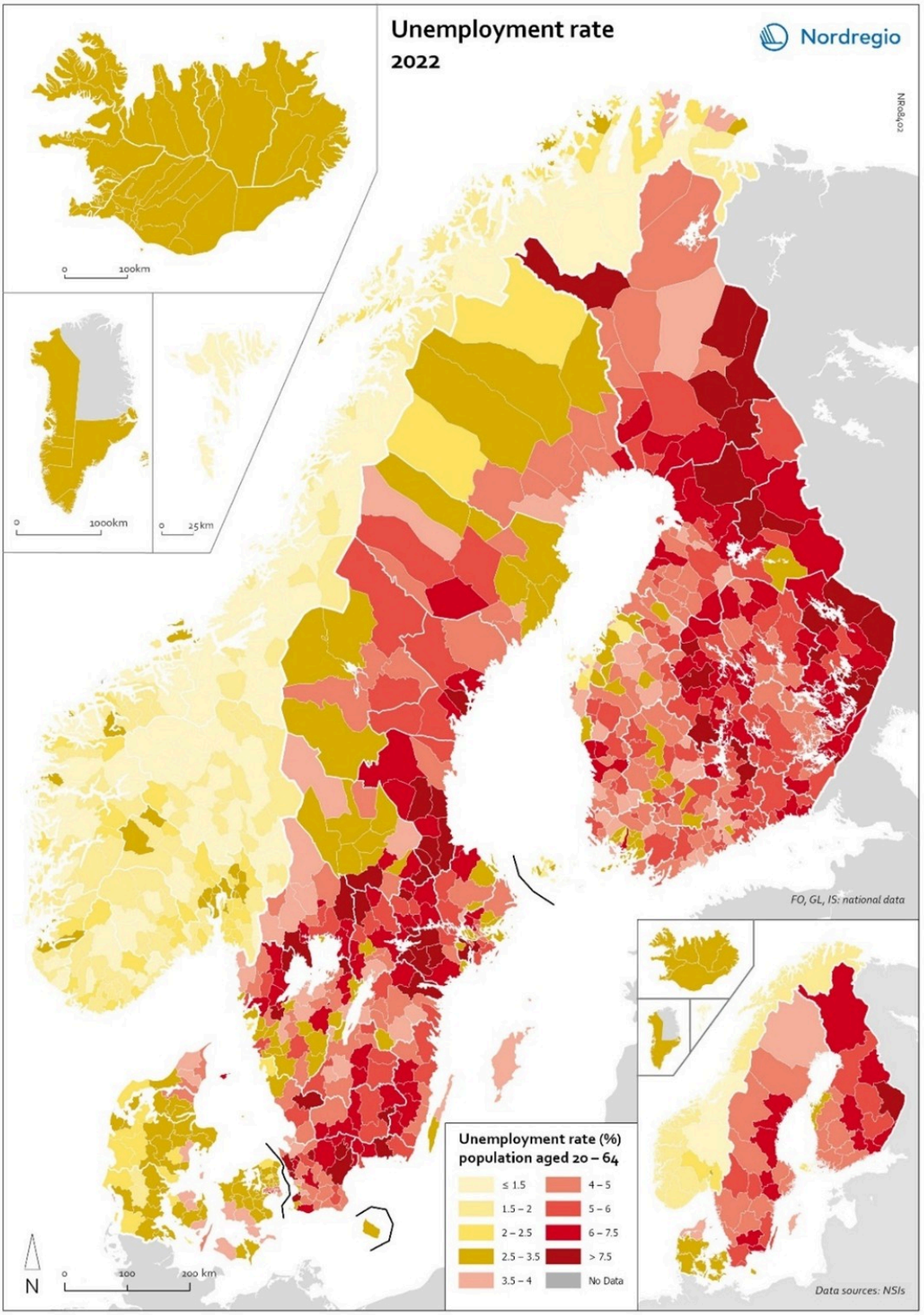
Due to varying national policies regarding individuals not in employment, unemployment rates often present a different pattern from employment rates. For example, while Sweden and Norway have similar employment rates, Norway has a significantly lower unemployment rate. This reflects the influence of social policies, such as unemployment benefits, sick leave provisions and pathways for exiting the workforce.

2. The unemployment rate is calculated as the share of unemployed persons within the total workforce (i.e. those in employment plus those who are unemployed). The data presented in the map have been harmonised with the official source for labour market statistics, the Labour Force Survey (LFS). The workforce includes both employed and unemployed individuals, while those outside the labour market are not included. According to the LFS definition, unemployed individuals are those who have actively sought a job in the last four weeks and are available to start work within the next two weeks.

At the regional level, some variations can be attributed to structural unemployment within specific groups and mismatches between labour supply and demand. In most of the case study areas, the unemployment rate is below the national average, suggesting that the available labour supply is relatively low.

	Norð-urþing	Dalvík-urbyggð	Stord	Hamm-erfest	Skellefteå	Gotland	Åland
Unemploy-ment rate 2022	3.7	3	2.1	3.0	4.6	5	5.3
National average	3.9		3.2		7.5		6.6
Average for remote labour markets (excl. Denmark)	4.8						
Nordic average	6.0						

Table 3. Unemployment rate in the case study areas. Data source: Own calculations based on LFS and register data.



Map 4. Unemployment rate, 2022.

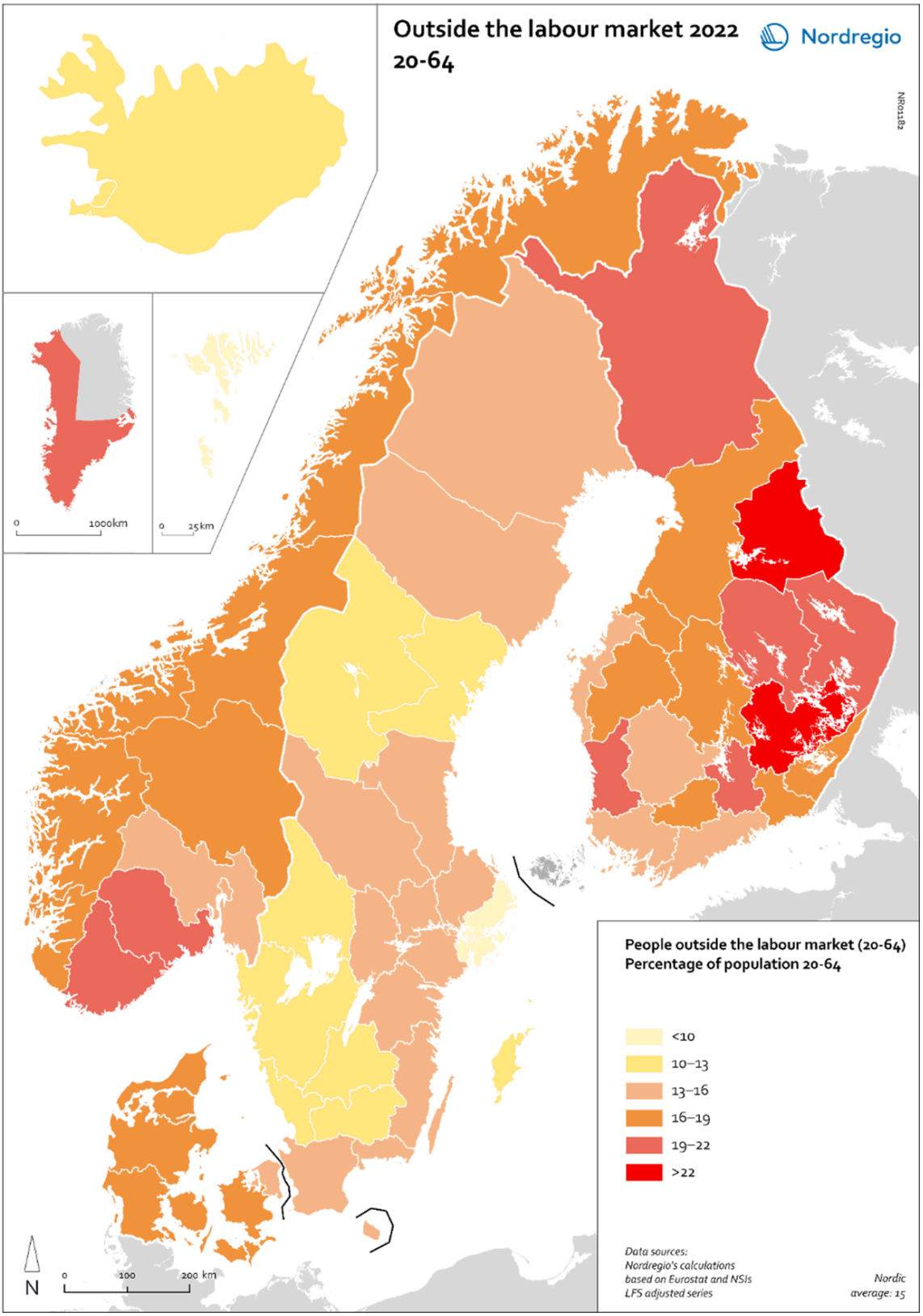
The third category in labour market statistics comprises individuals who are outside the labour market, i.e. those who are neither employed nor seeking work. While the unemployment rate covers those who are actively seeking work and immediately available to start, this group includes individuals who are not currently working or looking for work, such as students, those on long-term sick leave or individuals with other personal circumstances preventing labour market participation.

According to the Labour Force Survey (LFS), labour force participation in the Nordic Region is high. Among the population aged 20-64, 82.4% are employed based on the LFS definition, while 2.6% are unemployed and 15% are outside the labour market. This indicates that unemployed individuals account for only a small proportion of those not participating in the labour market.

Statistics for individuals outside the labour market are collected at regional level. See the table below.

	Norðurþing	Dalvík-urbyggð	Stord	Hamm-erfest	Skellefteå	Gotland	Åland
Region	Outside Huvustaden		Vestland	Troms og Finnmark	Väster-botten		
Outside the labour market, aged 20-64 (2022)	11.3	11.3	16.4	17.6	15.7	12.9	No data
National average	12.2		16.9		12.3		16.3
Nordic average	15						

Table 4. Share of individuals outside the labour market in the case study areas. Data source: own calculations based on LFS and register data. Note: data are at the regional level.



Map 5. Individuals (aged 20-64) outside the labour market as share of the total population (aged 20-64), 2022.

4. Remote local labour markets in the Nordic Region

The SUNREM project focuses on sustainable labour force participation in remote local labour markets. This chapter explores and defines the concept of remote local labour markets in greater detail. The first section considers definitions of ***local*** labour markets, while the second section addresses definitions of ***remote*** labour markets.

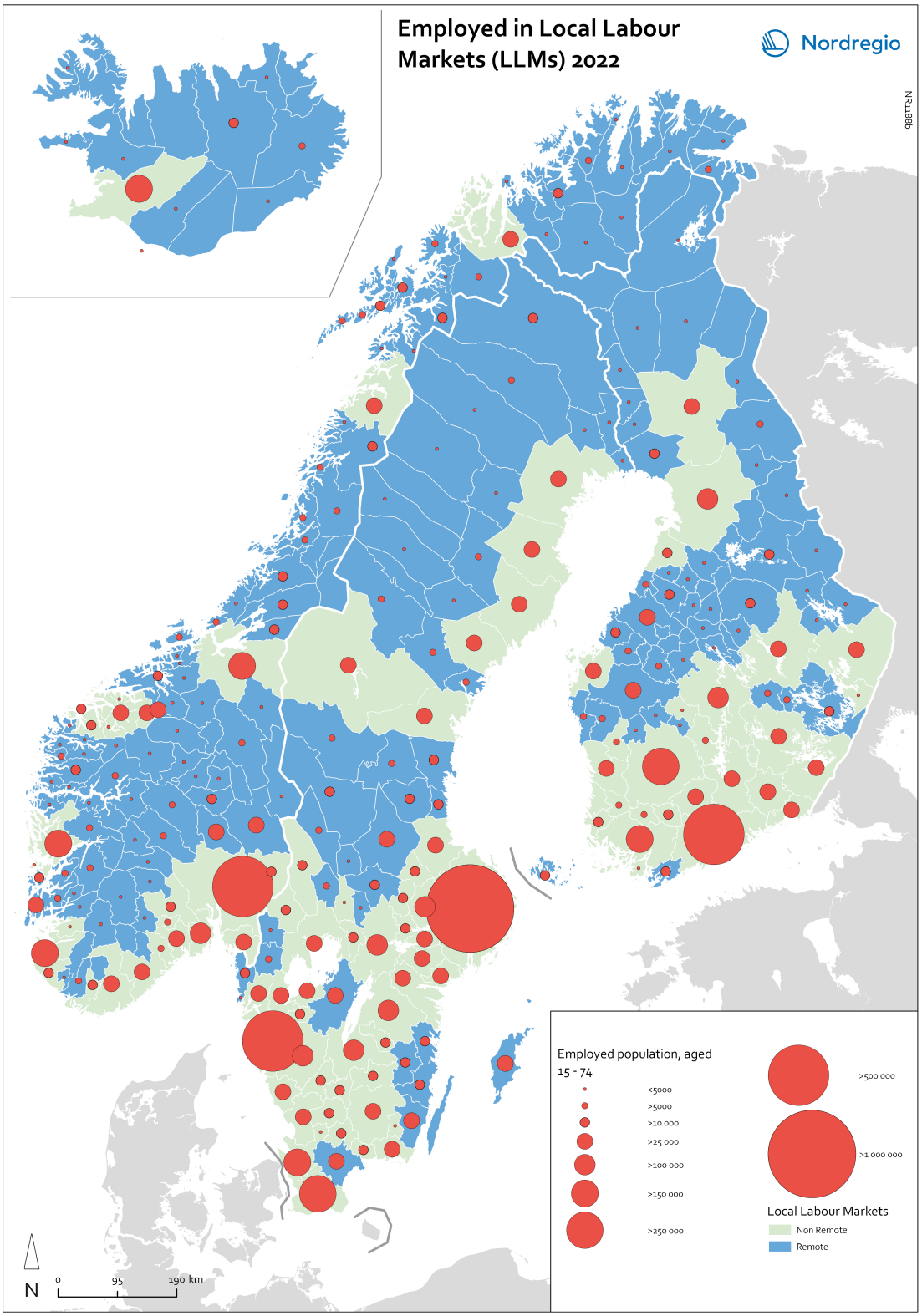
Local labour markets

First, it is important to acknowledge that all labour markets are inherently local or regional, i.e. functional areas below the national level where labour supply and demand meet. Each labour market consists of a core area (or sometimes multiple core areas) and a commuting zone (Aguiar Borges, 2020). Although it is widely recognised that the geographical area of labour markets does not neatly align with administrative boundaries, there are various ways to define local labour markets.

In this project, we use the Nordic definition of Local Labour Markets (LLMs) developed by Nordregio (Aguiar Borges, 2020). This method defines local labour markets based on employment data for both the day population (where people work) and the night population (where people live) and commuting data. Using these data, it is possible to identify local labour market centres and their commuting zone[3].

According to this definition, the Nordic Region has 365 local labour markets. These vary significantly in size, ranging from large metropolitan areas, such as Stockholm, with over 1.5 million workers, to small and more isolated labour markets comprising as few as 100 workers (Lundgren et al., 2024).

3. For more information about the definition and limitations, see https://norden.diva-portal.org/smash/get/diva2:1385537/FULLTEXT02.pdf, p. 67



Map 6. Employment in local labour markets, 2022.

According to this definition of local labour markets, most of the case study areas belong to a local labour market consisting of more than one municipality, with the only exceptions being Gotland in Sweden and Hammerfest in Norway. It should, however, be noted that the sizes of the municipalities vary across the Nordic countries. The labour markets of Stord, Norðurþing, Dalvíkurbyggð, Skellefteå and Åland consist of more than one municipality.

	Norðurþing	Dalvík-urbyggð	Stord	Hamm-erfest	Skellefteå	Gotland	Åland
Number of municipalities in the local labour market	2 Húsavik-Kópasker (Norðurþing and Tjörnesh-reppur)	7 Akureyri-Síglu-fjörður	3 Stord (plus Bømlo and Fitjar)	1 Hamm-erfest	2 Skellefteå (and Norsjö)	1	16 Mariehamn-Jomala
Persons employed in the local labour market	~1,700	~13,000	~17,000	~6,000	~40,000	~30,000	~15,000
National average employment per LLM	~9,500		~19,000		~60,000		~29,000
Nordic average	~38,000						

Table 5. Number of municipalities and persons employed in the local labour markets of the case study areas.

The size of a local labour market varies depending on factors such as geography, infrastructure and the size of municipalities. Norway has more local labour markets than Sweden and Denmark, but they tend to be smaller.

Of the case studies, the local labour markets of Gotland and Hammerfest each consist of only one municipality. Åland, with 16 municipalities, functions as a single, integrated labour market. Skellefteå's local labour market includes the municipality of Norsjö, while Stord's encompasses the municipalities of Bømlo and Fitjar. Dalvík stands out since it belongs to the local labour market of Akureyri, whereas Húsavik (Norðurþing) forms a joint labour market with the neighbouring municipality of Tjörneshreppur. Notably, Dalvík is the only case study belonging to a local labour market larger than the national average.

While all labour markets are local and are a geographical area where labour supply and demand meet, exceptions do exist. For instance, fly-in, fly-out workers commute regularly and remote workers may live in a different location from where they work. These factors can influence the dynamics of local labour markets.

Defining remote labour markets

Second, we need to define what constitutes a remote local labour market. Based on the existing literature, several key characteristics of a remote labour market emerge: they typically have small populations and are in peripheral locations, often at a considerable distance from major markets. Additionally, remote labour markets tend to have a less diverse industrial composition and are frequently reliant on a single or a limited number of industries and employers. Collectively, these factors contribute to increased vulnerability to shifts in various industry sectors, skill mismatches and greater exposure to megatrends when compared to more diversified labour markets.

A 2023 literature search on SCOPUS yielded limited results for the term "remote labour markets" or "remote areas", suggesting that studies using these concepts often imply their meaning without providing an explicit definition (e.g. Adjei, Erikson, Lundberg, 2023). Related terms include "insular," "peripheral," "sparsely populated," and "marginalised" labour markets, all of which incorporate a geographical dimension, though not exclusively. For instance, Pileček & Janačák (2011) examine the geography of peripheral and marginalised areas. Theories such as Christaller's centrality theory describe a core-periphery dynamic, where the core possesses greater capacity for intervention and adaptation, while the periphery is more constrained. This relationship exists along a continuum and evolves over time (ibid.).

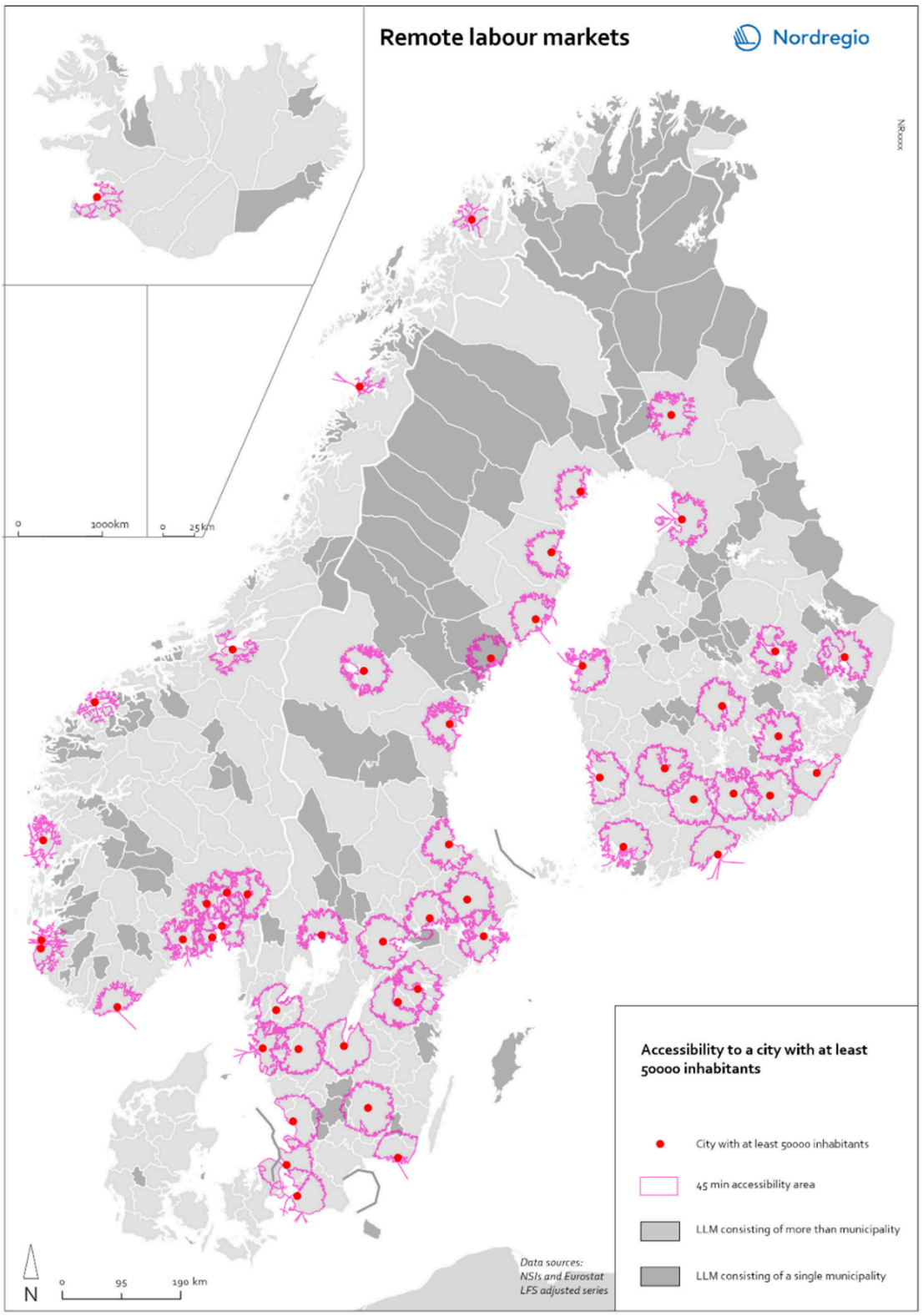
While scientific literature offers few, if any, definitions of remote labour markets, such definitions are more commonly found in grey literature. The most recognised definition comes from Dijkstra and Poelman (2008), who expanded the EU/OECD urban-rural typology by distinguishing between rural areas near cities and remote rural regions. This distinction later informed the DEGURBA classification, which categorises areas based on population size and density. It also aligns with the concept of a functional urban area as comprising a densely populated city and a surrounding commuting zone with a highly integrated labour market (Brezzi et al., 2011).

Dijkstra and Poelman (2008) define remoteness based on distance and access to jobs and services. A region is considered close to a city if over half its residents can drive to a city centre with at least 50,000 inhabitants within 45 minutes; otherwise, it is classified as remote. The 50,000-inhabitant threshold is meaningful in sparsely populated countries, where such cities typically provide essential services and may host universities. The 45-minute drive time was chosen based on commuting

surveys. This definition was later adopted by the OECD (Brezzi et al., 2011) and incorporated into Sweden's urban-rural typology (Tillväxtanalys, 2014). It also serves as our starting point for defining local labour markets in remote areas in the Nordic Region.

As a first step, we applied the Dijkstra and Poelman definition to the Nordic Region based on the finer-grained data available to us. The results are displayed in Map 7, which shows cities with at least 50,000 inhabitants and the surrounding areas where at least half of the population can reach each city centre within a 45-minute drive (taking into account existing road networks, including ferries). The map shows that, even disregarding population density, a vast part of the Nordic Region can be considered remote.

The map shows that both the Icelandic and Norwegian case study areas, as well as the islands of Gotland and Åland, lie outside of a 45-minute radius around a city with at least 50,000 inhabitants, while the municipality of Skellefteå is partially accessible (not all parts of Skellefteå municipality can reach the city within a 45-minute drive).



Map 7. Application of Dijkstra and Poelman's definition (2008) to Nordic local labour markets (LLM): areas within a 45-minute drive of cities with at least 50,000 inhabitants.

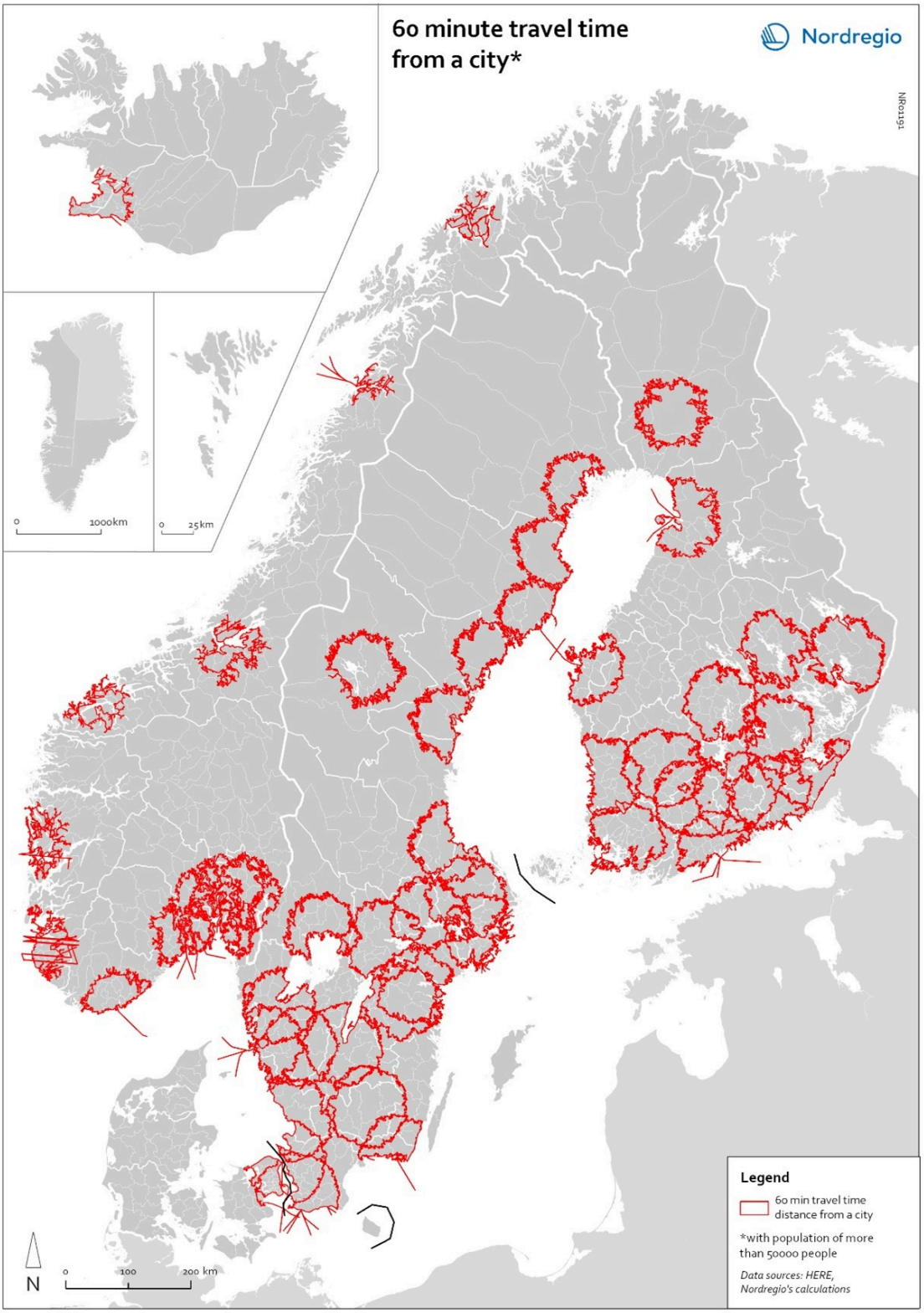
As a very large part of the Nordic Region would be considered remote according to this definition and because residents of sparsely populated areas may be more tolerant of longer driving distances, we tested how the results change when allowing for a longer driving time. We ran the same analysis applying a 90-minute and a 60-minute drive time from the city centre.

A 90-minute drive time yields a big overlap of labour market areas in the southern parts of Finland and Sweden and was deemed too long even in sparsely populated areas[4]. A 60-minute threshold produced more reasonable results and is also a more intuitive maximum drive time.

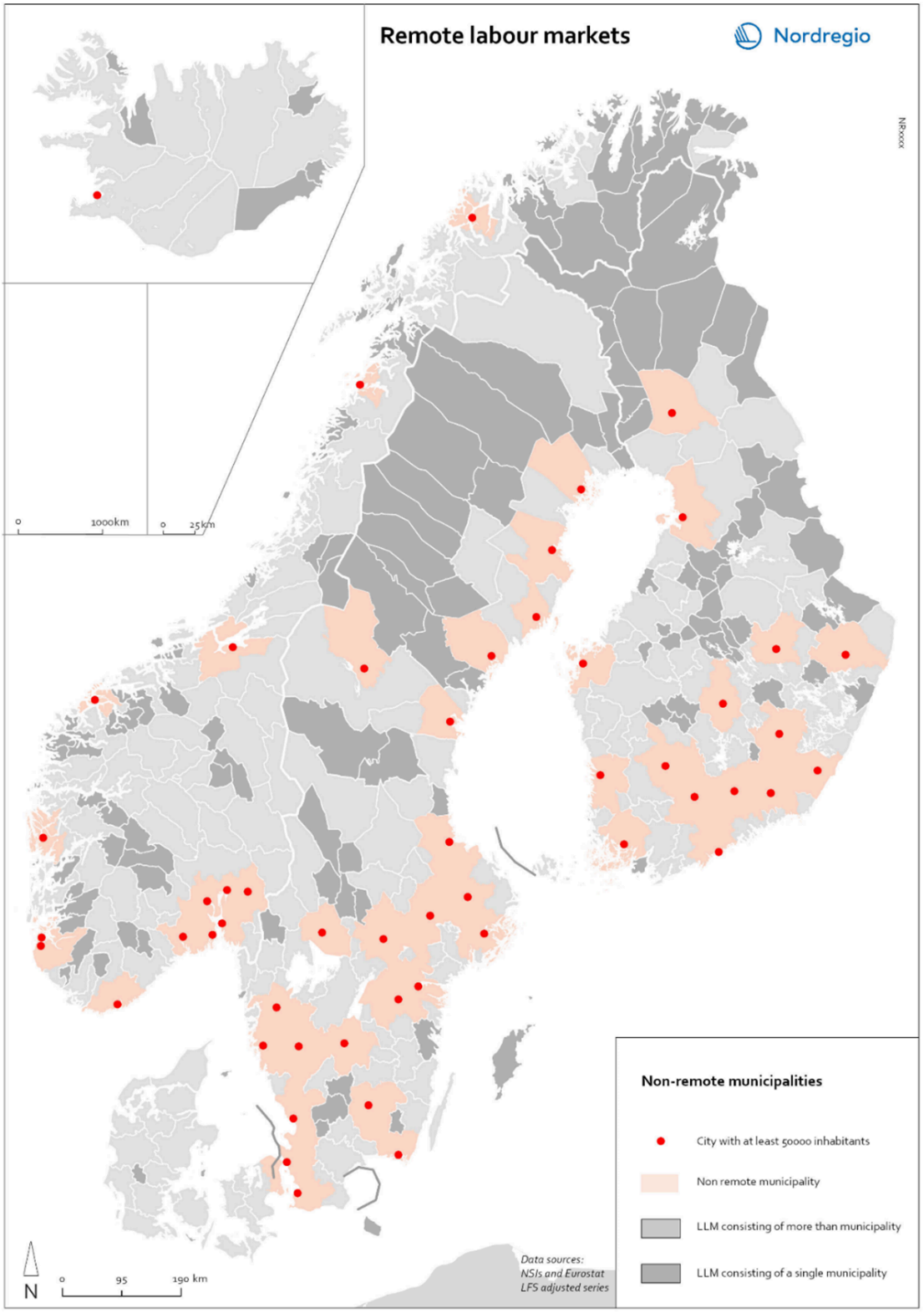
To identify more precisely which municipalities fall under Dijkstra and Poelman's definition of remote, the percentage of municipalities' inhabitants living within access to a city was calculated using 1x1 km grid population data. Municipalities that overlap with the 45-minute access area were classified by the percentage of their population living within this area. Municipalities with more than 50% of the population living within the 45-minute zone are considered non-remote[5].

The final results, based on a 60-minute drive time, can be found in Maps 8a and 8b. Map 8b shows cities with more than 50,000 inhabitants (points) and municipalities where a majority of the population can reach a city with 50,000 inhabitants within 60 minutes. All the areas except those in pink/red hues are considered remote. This yields a total of 507 remote municipalities in the Nordic Region (excluding Denmark). When zooming in on our case study areas, this map shows that Dalvíkurbyggð, Norðurþing, Hammerfest, Gotland and Åland are still considered remote, while Skellefteå is considered non-remote. It should be noted, however, that remoteness also encompasses other aspects, such as distance to the capital.

4. See Appendix 3 for the results with a 90-minute drive.
5. A visualisation of this step, for a 45-minute drive time, can be found in Appendix 3



Map 8a. Application of Dijkstra and Poelman's definition (2008) to Nordic local labour markets (LLM): areas within a 60-minute drive of cities with at least 50,000 inhabitants.



Map 8b. Application of Dijkstra and Poelman's definition (2008) to Nordic local labour markets.

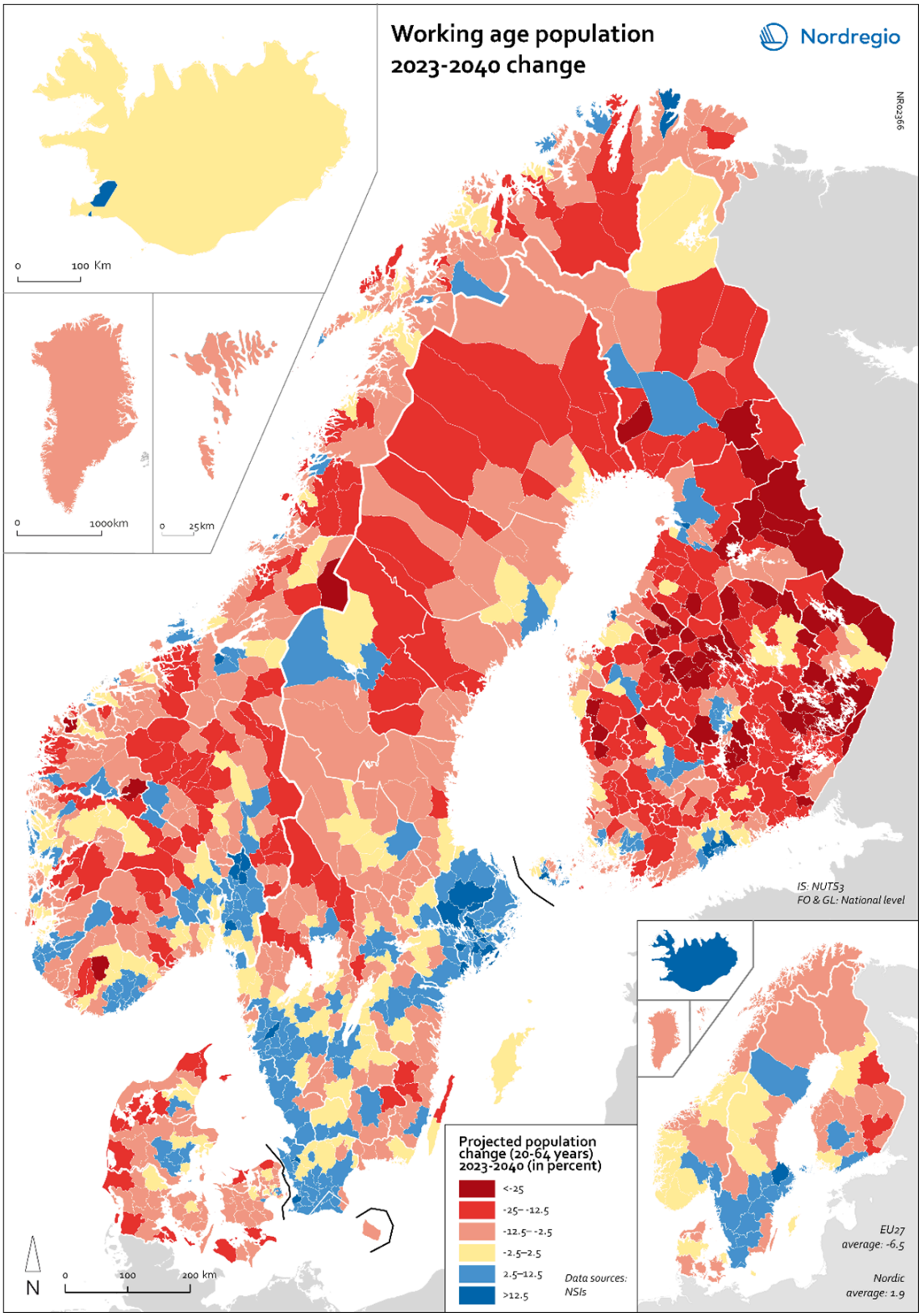
5. Megatrends and their impact on labour market participation in the Nordic Region

Within the SUNREM project, four key megatrends have been identified that, according to the literature, have a particularly strong influence on the labour market: demographic change, technological change, globalisation and climate change/the green transition. This chapter explores the impact of these megatrends on the labour market in the Nordic Region, supported by spatial statistical data.

Megatrend 1: Demography and the labour market

The Nordic Region is facing the challenge of an ageing population, leading to a rising share of older people, which is expected to have significant implications for the Nordic labour market. As the population is ageing, the number of people of working age is decreasing in many local labour markets. Map 9 shows the projected change in the working-age population (here defined as those aged 20-64 years) between 2023 and 2040. The areas in red are expected to see a decrease in the working-age population, while the areas in blue are expected to see an increase. The map is based on projections made by the national statistical offices (Maersk & Norlén, 2024).

A declining working-age population is a common trend across much of the Western world. While the EU average working-age population is projected to decrease by 6.5% between 2023 and 2040, the Nordic Region as a whole is expected to experience a slight increase of 1.9%. As the map illustrates, however, there are significant differences both between countries and within them. Iceland is projected to see the largest increase in its working-age population (28%), followed by Sweden (5.8%), Åland (3.9%) and Norway (0.6%). Conversely, a decline is anticipated in Finland (-0.5%), the Faroe Islands (-2.6%), Denmark (-3.2%) and Greenland (-11.4%). Additionally, there are marked regional variations within countries, with urban areas generally expected to grow, while most rural areas are projected to experience a decrease. (Maersk & Norlén, 2024).



Map 9. Projected change in the working-age population (aged 20-64 years), 2023-2040.

Overall, the trend of population growth in urban areas and decline in rural areas is expected to persist. Across the Nordic Region, rural municipalities are projected to experience a 5.8% decline in population, while urban municipalities are expected to grow by 7.3% and intermediate municipalities are anticipated to maintain a stable labour supply (Maersk & Norlén, 2024). While the working-age population in remote areas is anticipated to decline by an average of 7.2% by 2040, several case study regions are projected to experience growth.

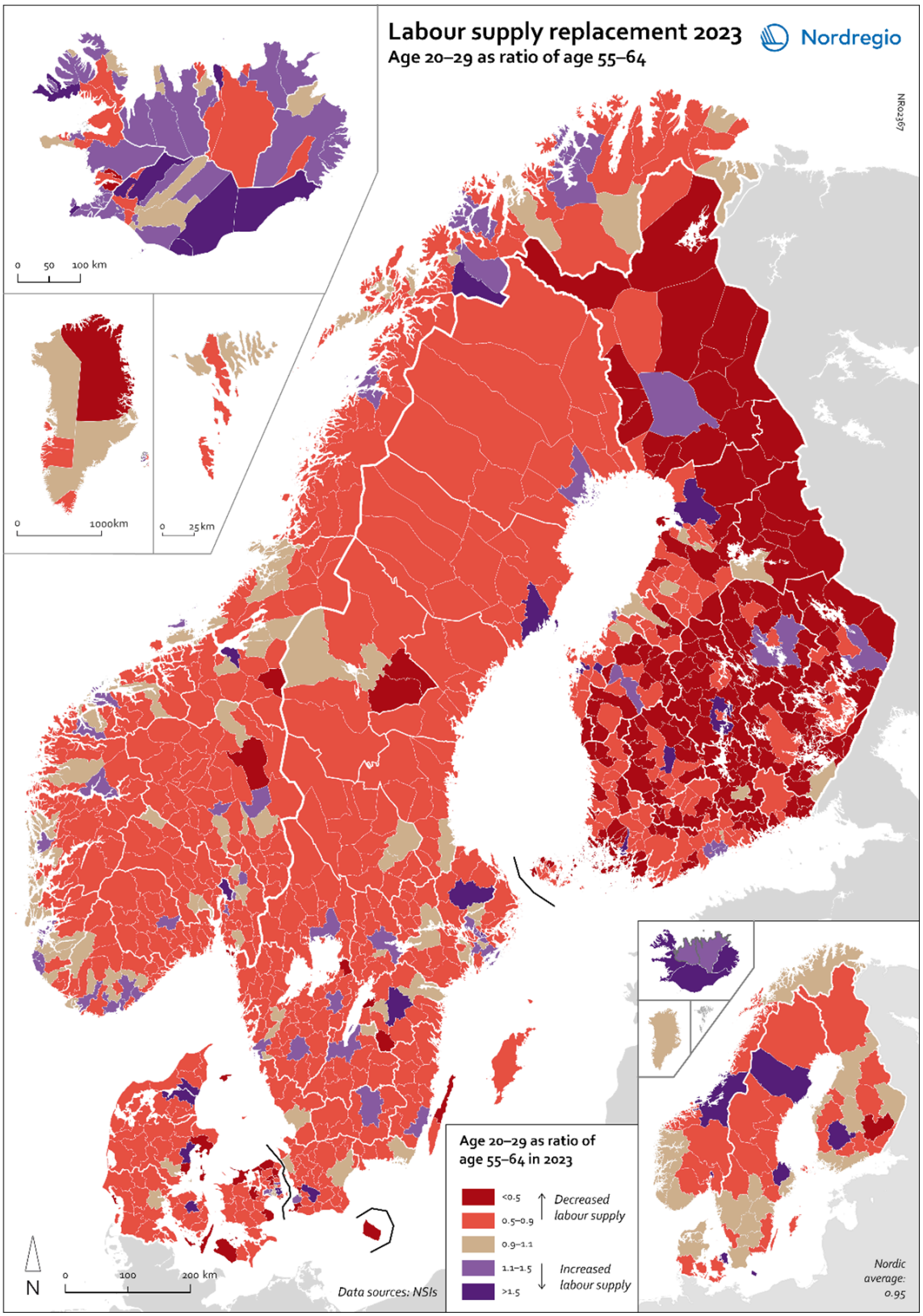
Notably, both Icelandic case study areas, as well as Gotland and Åland, are expected to see an increase in their working-age populations. Although earlier projections by Statistics Sweden indicated a decrease in Skellefteå's working-age population, these forecasts were the subject of debate and have recently been revised, with an increase now projected.

<table>
<tr><th></th><th>Norð-urþing*</th><th>Dalvík-urbyggð*</th><th>Stord</th><th>Hamm-erfest</th><th>Skellefteå</th><th>Gotland</th><th>Åland</th></tr>
<tr><td>Projected population change 2023-2040</td><td>1.4%</td><td>1.4%</td><td>-4.4%</td><td>-7.4%</td><td>-4.0%</td><td>1.3%</td><td>3.9%</td></tr>
<tr><td>National average</td><td colspan="2">28.0%</td><td colspan="2">0.6%</td><td colspan="2">5.8%</td><td>-0.5%</td></tr>
<tr><td>Average for remote labour markets (excl. Denmark)</td><td colspan="7">-7.2%</td></tr>
<tr><td>Nordic average</td><td colspan="7">1.9%</td></tr>
</table>

Table 6. Population growth projections.

**Note: Data for Iceland are collected at the NUTS3 level; the value provided refers to IS002 Landsbyggð (rest of the country). It should be noted that population projections for small regions and municipalities may be unreliable..*

Another approach to examining the effects of a changing labour market considers labour supply replacement (Map 10), represented here as the ratio of individuals aged 20-29 entering the labour market to those aged 55-64 who are approaching retirement. The map highlights significant regional and municipal variations, with pink areas indicating a lower number of younger people entering the labour market relative than those nearing retirement.



Map 10. Labour supply replacement, ratio of individuals aged 20-29 to those aged 55-64, 2023.

A ratio of 1 indicates an equal number of people in the younger and older age groups, whereas a ratio below 1 means that there are fewer people in the younger age group than in the older age group and a ratio above 1 indicates that there are more people in the younger age group. With the exception of Norðurþing and Hammerfest, all of the case study areas have a ratio under 1, meaning fewer people entering the labour market than exiting it. The lowest numbers are observed in Åland and Gotland, which will therefore need to rely on migration to sustain a stable labour force.

<table>
<tr><th></th><th>Norð-urþing</th><th>Dalvík-urbyggð</th><th>Stord</th><th>Hamm-erfest</th><th>Skellefteå</th><th>Gotland</th><th>Åland</th></tr>
<tr><td>Labour supply replacement</td><td>1.11</td><td>0.98</td><td>0.98</td><td>1.13</td><td>0.87</td><td>0.76</td><td>0.63</td></tr>
<tr><td>National average</td><td colspan="2">1.28</td><td colspan="2">0.95</td><td colspan="2">0.93</td><td>0.94</td></tr>
<tr><td>Average for remote labour markets (excl. Denmark)</td><td colspan="7">0.77</td></tr>
<tr><td>Nordic average</td><td colspan="7">0.95</td></tr>
</table>

Table 7. Ratio of individuals aged 20-20 to those aged 55-64. Data source: NSIs.

The megatrend of demographic change manifests very differently across urban and rural regions. While urban areas are projected to grow, most rural and remote areas are projected to have a decreasing working-age population. This means that measures need to be taken to ensure a sustainable workforce, such as attracting new residents to these areas.

One contributing factor to this trend is the limited availability of educational opportunities in remote labour markets. Research indicates that a significant number of young individuals who relocate to urban centres for education tend to remain there after graduation, leading to a "brain drain" from rural communities. This pattern exacerbates the challenges faced by rural areas in maintaining a robust working-age demographic. (Slätmo et al., 2024).

Additionally, rural and remote regions have a higher proportion of older residents. While an ageing population is not inherently problematic, it does lead to increased demand for healthcare and social care services over time. Consequently, there is a growing need for workers in these sectors to support the ageing rural population. (Norlén et al., 2024).

Megatrend 2: Technological change and the labour market

Technological advancements have historically played a significant role in driving structural changes in the labour market and are expected to continue shaping the Nordic labour markets in the future. The current wave of technological transformation, which is largely driven by automation and artificial intelligence (AI), has a broader impact than previous industrial revolutions, extending beyond the industrial sector (Frey & Osborne, 2017).

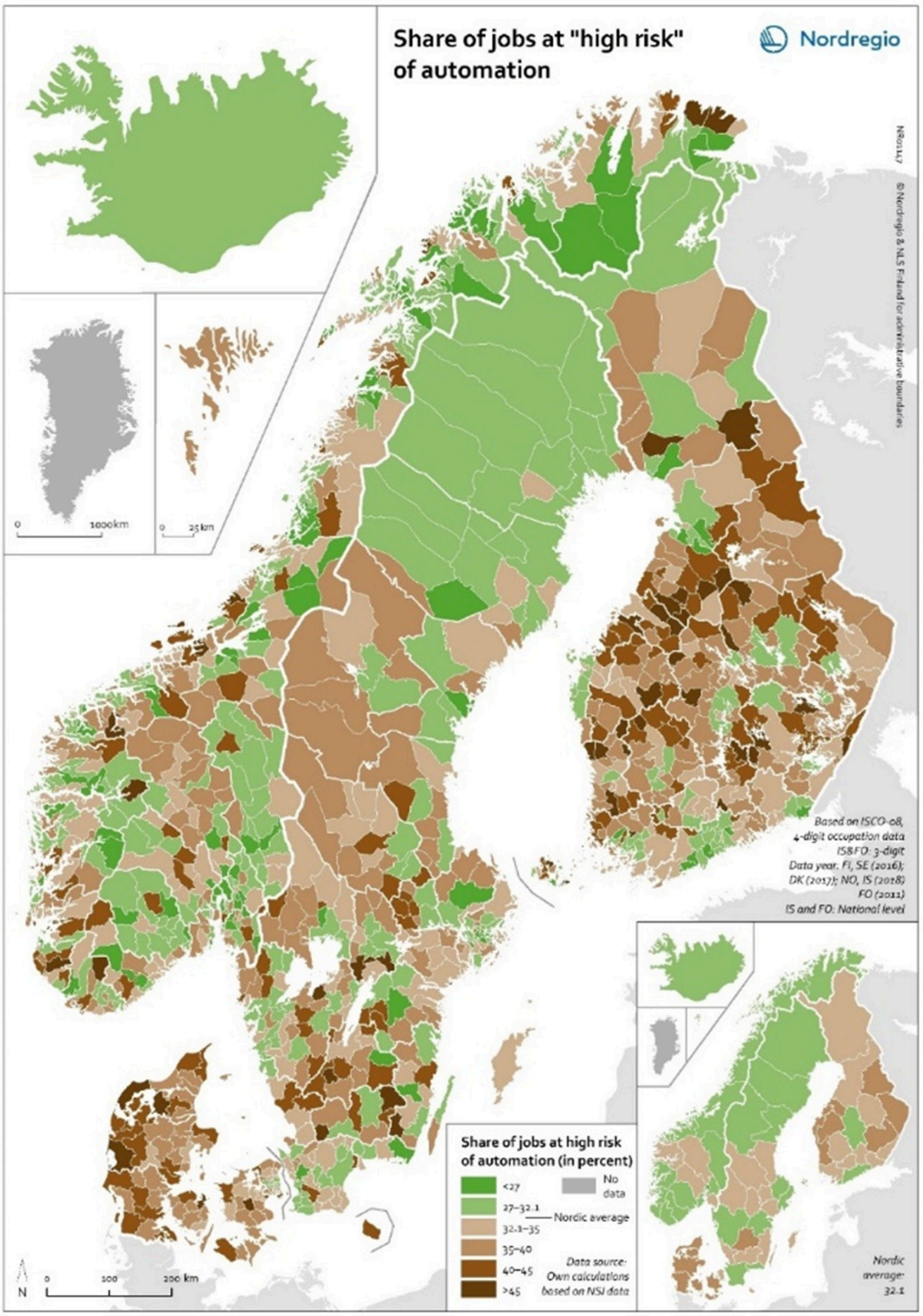
Map 11 applies Frey and Osborne's (2017) methodology to assess the proportion of jobs at risk of automation or AI. The methodology calculates the potential of work tasks within specific professions to classify if jobs are at high, medium or low risk of automation. Using this method, over 400 occupational categories were evaluated to determine whether the tasks associated with each role could be automated. According to this approach, around one-third of jobs in the Nordic Region were classified as being at "high risk" of automation in the coming decades. As the map shows, this trend is unevenly distributed, with rural areas generally facing a higher proportion of at-risk jobs. (Norlén & Randall, 2020).

However, while certain jobs may, in theory, be automated, this does not necessarily mean that they will be replaced in the immediate future. Employment structures will continue to evolve as individuals retire and job roles may adapt as tasks within specific occupations change. Additionally, technological advancements may also create new employment opportunities. Automation and AI can also be tools for keeping production or services in a location where labour is scarce. (Frey & Osborne, 2017; Norlén & Randall, 2020).

A high share of jobs at risk of automation might also indicate the presence of numerous industries. The share of jobs at "high risk" of automation is higher than the national average in all case study areas except in Stord. However, only Åland shows a share higher than the average for remote labour markets.

	Norð-urþing	Dalvík-urbyggð	Stord	Hamm-erfest	Skellefteå	Gotland	Åland
Share of jobs at "high risk" of automation	No data	No data	26.03%	31.09%	31.5%	32.5%	36.3%
National average	32.0%		29.9%		30.9%		31.9%
Average for remote labour markets (excl. Denmark)	33.3%						
Nordic average	32.1%						

Table 8. Share of jobs at high risk of automation, 2020.



Map 11. Share of jobs at high risk of automation, 2020. Calculations by Nordregio based on Frey and Osborne (2013) and NSI data.

Note: the brown shades indicate areas with a higher share of jobs at high risk of automation.

Although AI and automation are expected to impact a wide range of occupations, including middle-class "white-collar" jobs, demand for individuals with higher education continues to grow (Norlén & Randall, 2020). Projections by the European Centre for the Development of Vocational Training (CEDEFOP) indicate that workforce educational levels are set to rise across all Nordic countries by 2035 (Figure 5).

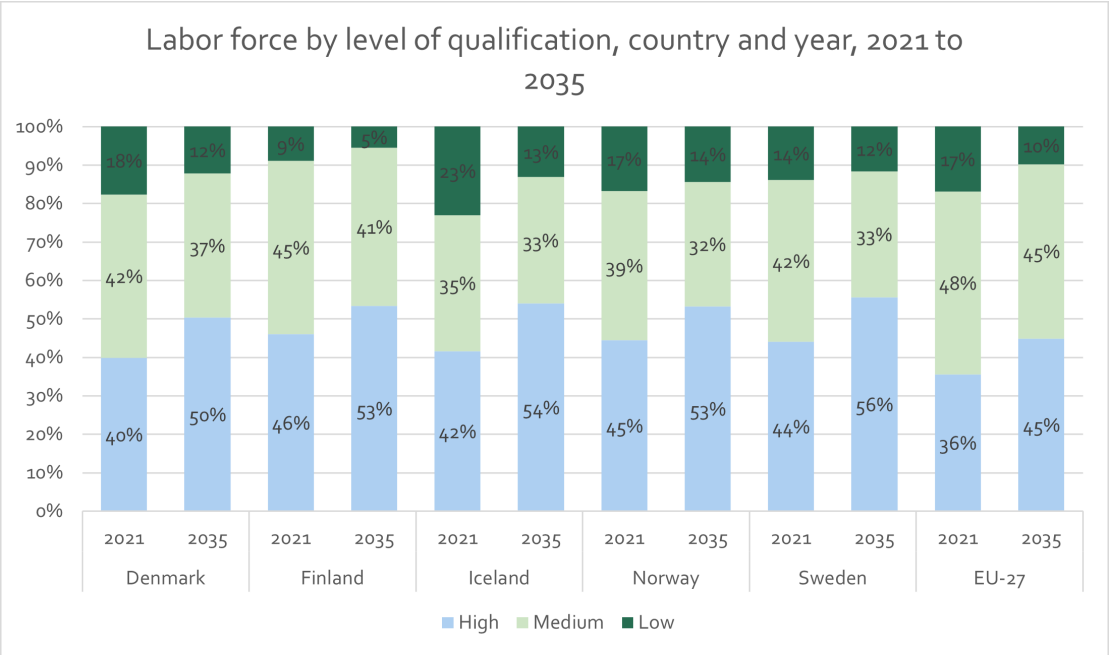
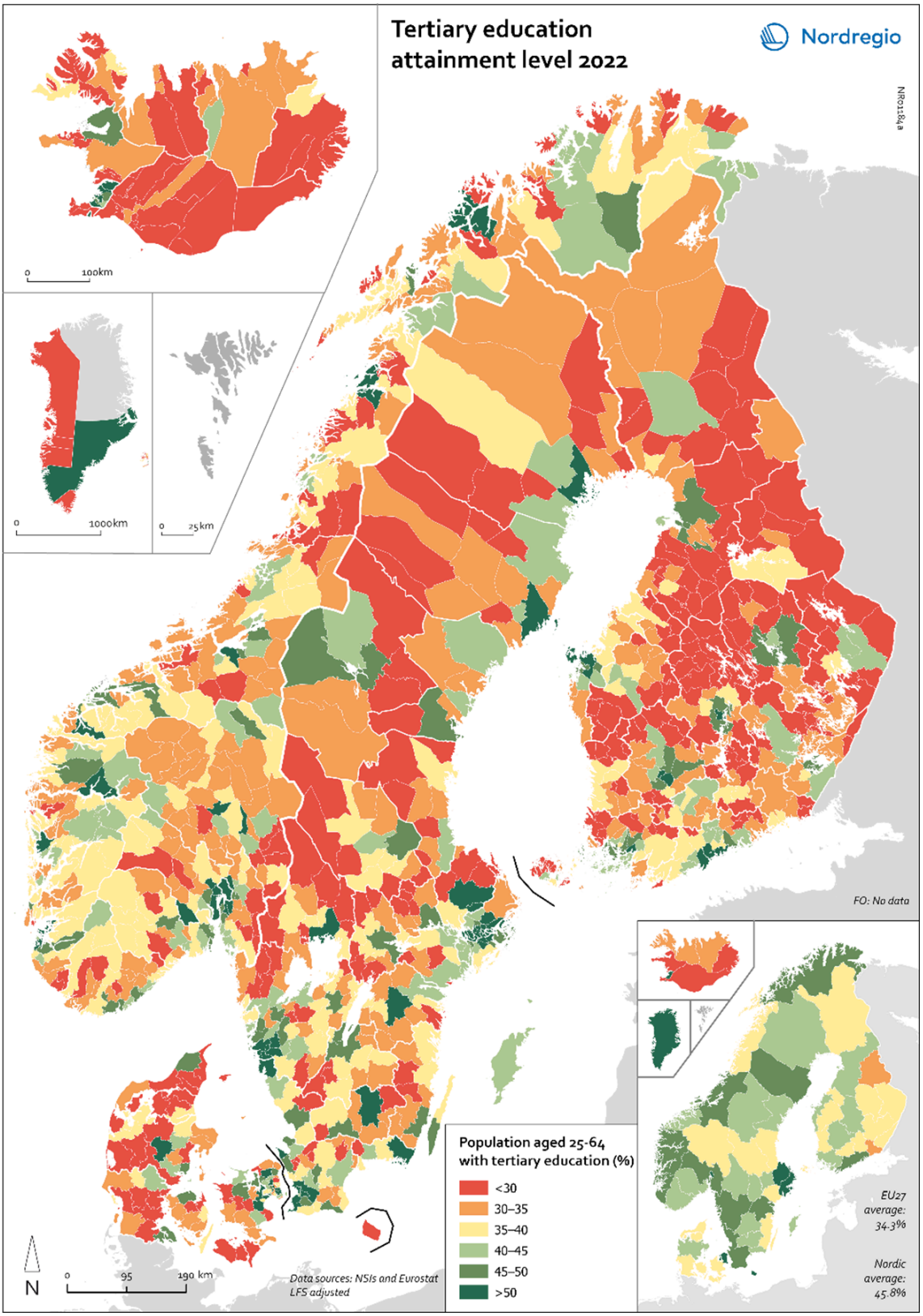


Figure 6. Labour force by level of qualification, country and year, 2021 to 2035. Based on CEDEFOP data. Source: Lundgren et al. 2024.

A well-educated workforce is a significant asset to a local labour market. However, educational attainment levels are generally lower in rural and remote areas than in urban centres. Map 12 illustrates that, on average, over 45.8% of the Nordic population holds a higher education qualification, exceeding the EU27 average of 34.3%. It also highlights that urban and university regions tend to have higher levels of education compared to rural areas. (Maersk & Norlén, 2024).

Table 9 illustrates the percentages of the population with tertiary educational attainment across the case study areas. In all cases, these regions exhibit a lower proportion of individuals with tertiary qualifications than the respective national average. This disparity is largely attributable to the concentration of higher education institutions in major urban centres, which naturally raises educational attainment levels in those locations. Nonetheless, certain case study areas, namely Stord, Hammerfest, Skellefteå and Gotland, demonstrate a higher share of tertiary-educated individuals than the average for remote regions. This suggests the presence of employment opportunities requiring advanced qualifications, which may contribute to retaining or attracting a more educated workforce in these areas.



Map 12. Percentages of the population with tertiary educational attainment, 2022.

	Norð-urþing	Dalvík-urbyggð	Stord	Hamm-erfest	Skellefteå	Gotland	Åland
Percentage of population with tertiary educational attainment (2022)	32.7%	25.1%	43.2%	42.4%	48.3%	40.8%	33.5%
National average	42.9%		47.8%		48.6%		42.7%
Average for remote labour markets (excl. Denmark)	36.6%						
Nordic average	45.8%						

Table 9. Percentages of the population with tertiary educational attainment in the case study areas in 2022.

Note: Åland's educational statistics have some limitations, since it is common to study in Sweden, but the official statistics do not necessarily capture studies abroad. The data are based on the day population and do not include those individuals who work in these areas but live elsewhere.

The ongoing wave of automation, artificial intelligence (AI) and digitalisation is fundamentally reshaping the nature of work, presenting both significant opportunities and notable challenges. Jobs in rural and remote areas are slightly more susceptible to automation than jobs in urban areas since there is a higher share of industries there. While this may present a challenge, it could also be viewed as an opportunity to maintain production with fewer workers.

Digitalisation also represents an opportunity for remote areas, as the possibility of remote work may make it possible to recruit workers with specialised skills that it would otherwise be difficult to attract. This requires strong digital infrastructure and digital skills, which may pose a challenge to older workers. The availability of a well-educated workforce is important for labour markets to adapt to new demands.

Megatrend 3: Globalisation and the labour market

In international comparison, the Nordic Region demonstrates a strong economic performance, with all Nordic countries exceeding the EU average in terms of GDP per capita (Norlén et al., 2024). Economic growth in the Nordic Region has remained stable over time, particularly following the 2008-2009 financial crisis. From an economic perspective, the Nordic countries also experienced a relatively swift recovery after the Covid-19 pandemic. (Norlén et al., 2022).

The Nordic economies are highly export-driven, with exports accounting for more than 50% of GDP – with this figure reaching as high as 70% in Denmark. Among key trading partners, the Nordic countries and Germany consistently rank among the most significant (SCB, 2025).

One way to illustrate the globalisation of the economy is through the inflow of foreign direct investment (FDI). Figure 6 presents the accumulated value of foreign direct investments made by foreign countries into the Nordic countries, expressed as a percentage of GDP, by country and over time. While Sweden has the highest accumulated value of inward foreign investments, the table also reflects shifts associated with major changes in the global economy, such as the financial crisis.

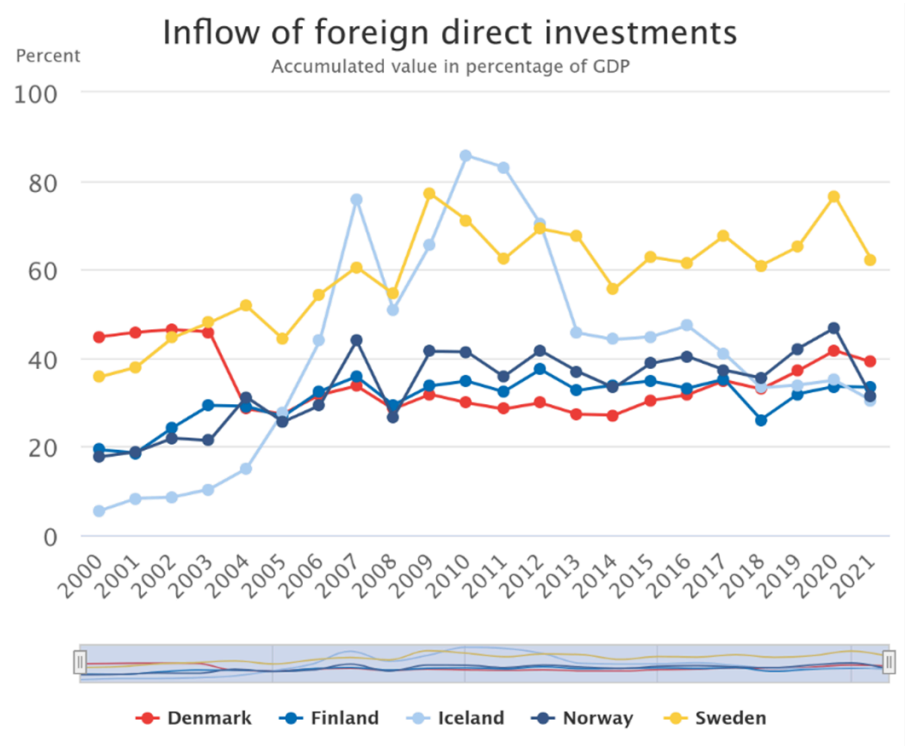


Figure 7. Inflow of foreign direct investments as a percentage of GDP. Source: Nordic statistics database, FODI01.

Another way to examine the relationship between globalisation and the labour market is through migration. Since 1990, net migration has risen across the Nordic countries, with Sweden recording the highest figures, while Norway and Finland have shown upward trends in recent years.

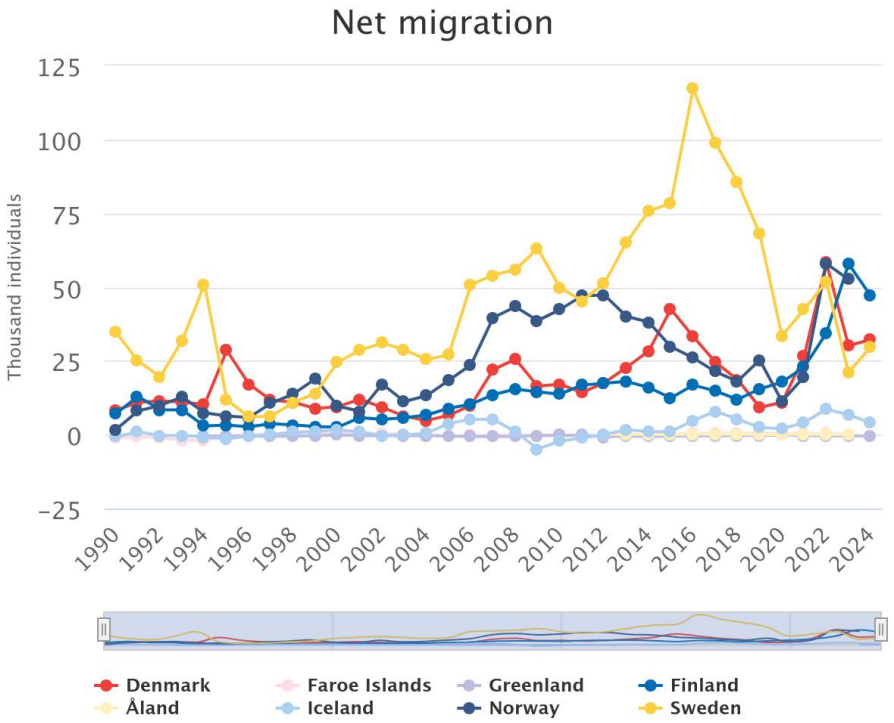


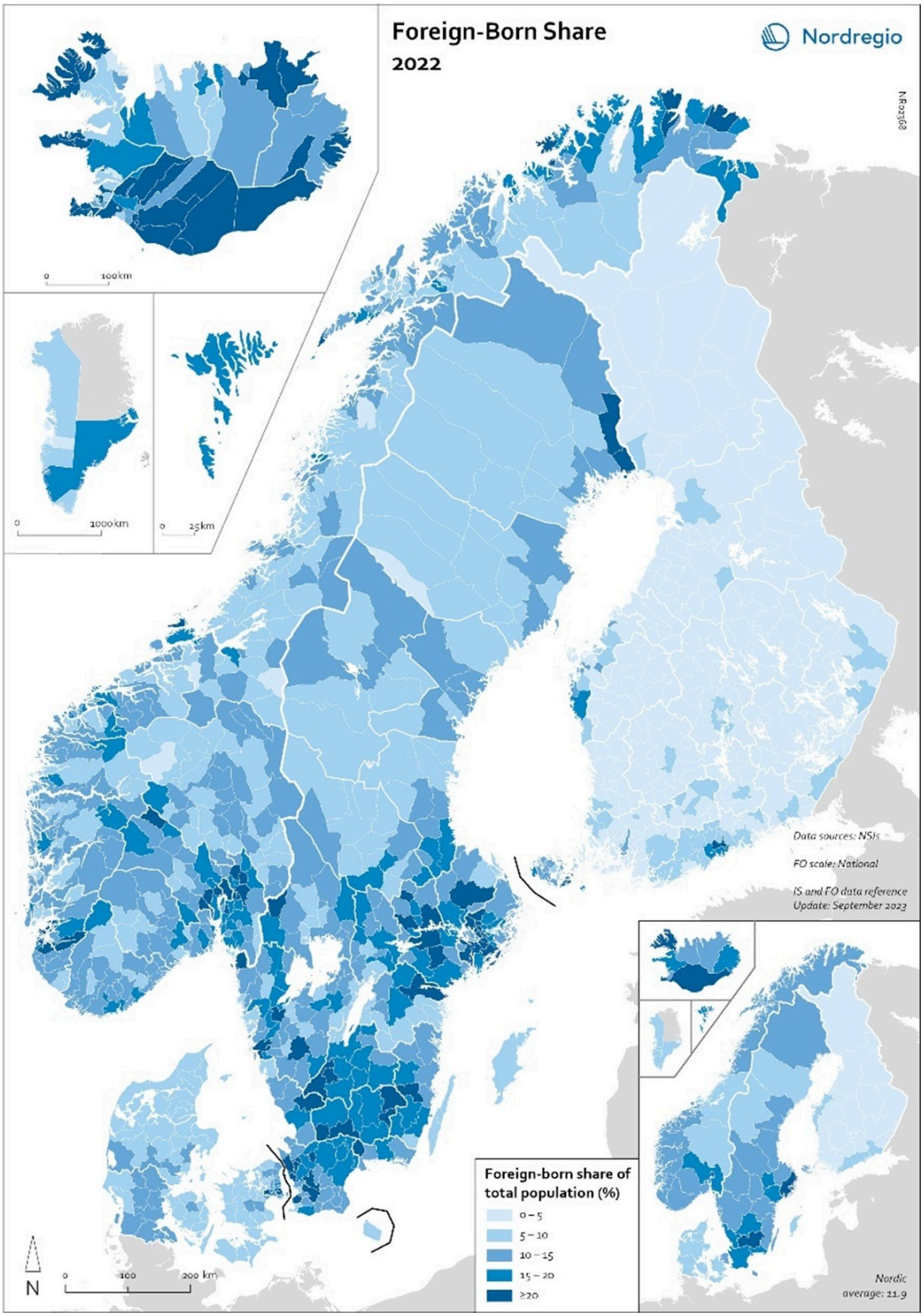
Figure 8. Net migration per thousand individuals. Source: Nordic statistics database, MIGR03.

However, there are also pronounced differences between the Nordic countries, regions and municipalities, with some areas attracting more migration than others. Map 13 shows the foreign-born population as a share of the total population. While cities and some border regions tend to have higher shares of foreign-born residents, rural areas typically have lower shares. For some remote labour markets, the influx of people from abroad is an important strategy to address labour shortages.

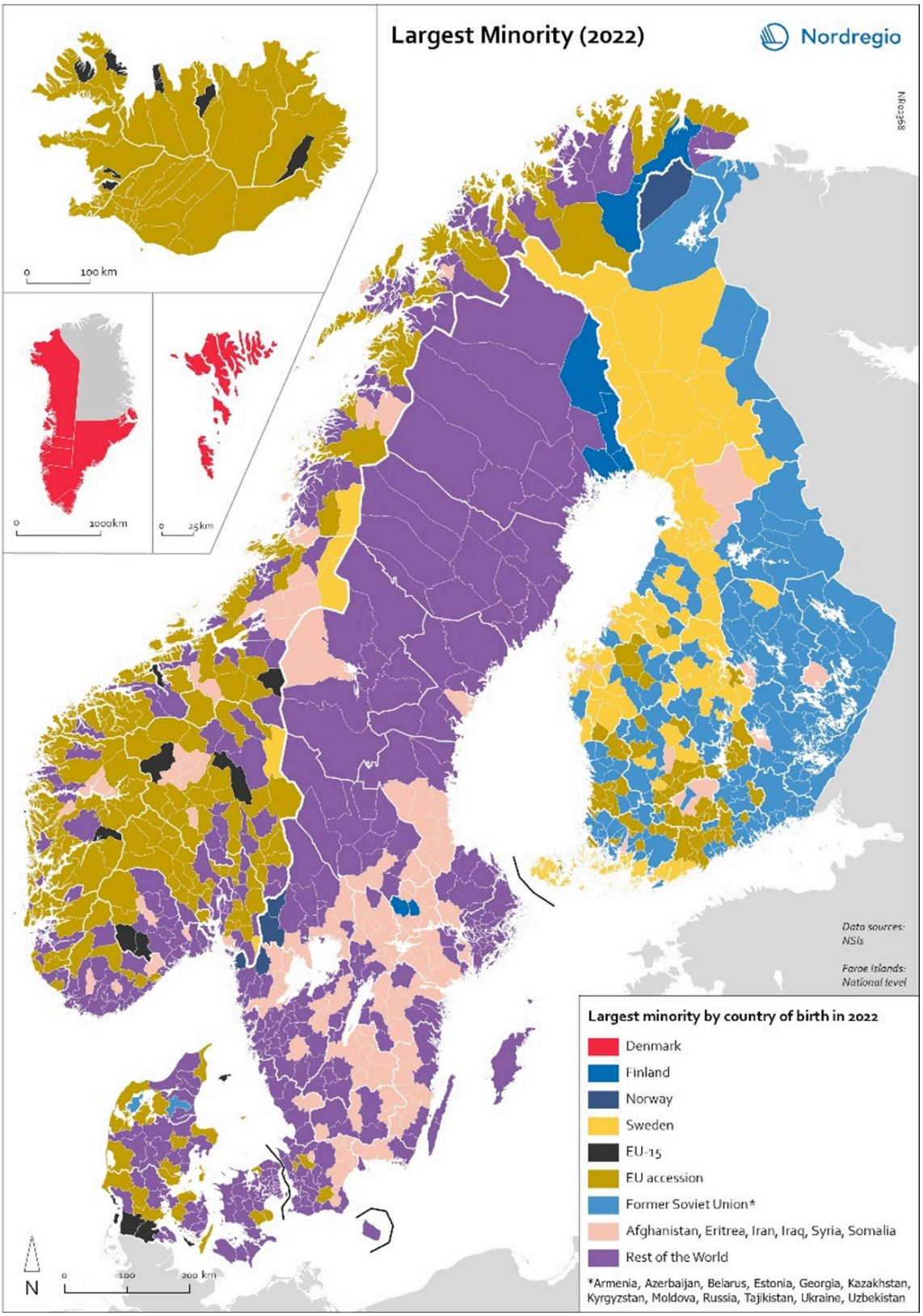
	Norð-urþing	Dalvík-urbyggð	Stord	Hamm-erfest	Skellefteå	Gotland	Åland
Foreign-born share of the population (2022)	20.2%	15.1%	11.9%	17%	10.4%	8.2%	14.8%
National average	15.1%		11.3%		12.7%		2.4%
Nordic average	11.9%						

Table 10. Shares of foreign-born residents in the case study areas.

However, it is not only the share of the foreign-born population that differs across the Nordic countries and regions, but also the composition of the foreign-born population, which is shown in Map 14.



Map 13. Shares of foreign-born residents, 2022. Source: State of the Nordic Region 2024.



Map 14. Largest foreign-born minority, 2022. Source: State of the Nordic Region 2024.

Globalisation has fostered an increasingly interconnected world, characterised by the high mobility of people, goods and capital. The Nordic countries, with their robust economies and competitive industries, have actively engaged in this global landscape, attracting substantial foreign direct investment and maintaining strong export-driven markets. However, recent global events – such as the COVID-19 pandemic, the war in Ukraine and rising protectionist sentiments – have introduced uncertainties, prompting a renewed focus on re-industrialisation and national security within the region.

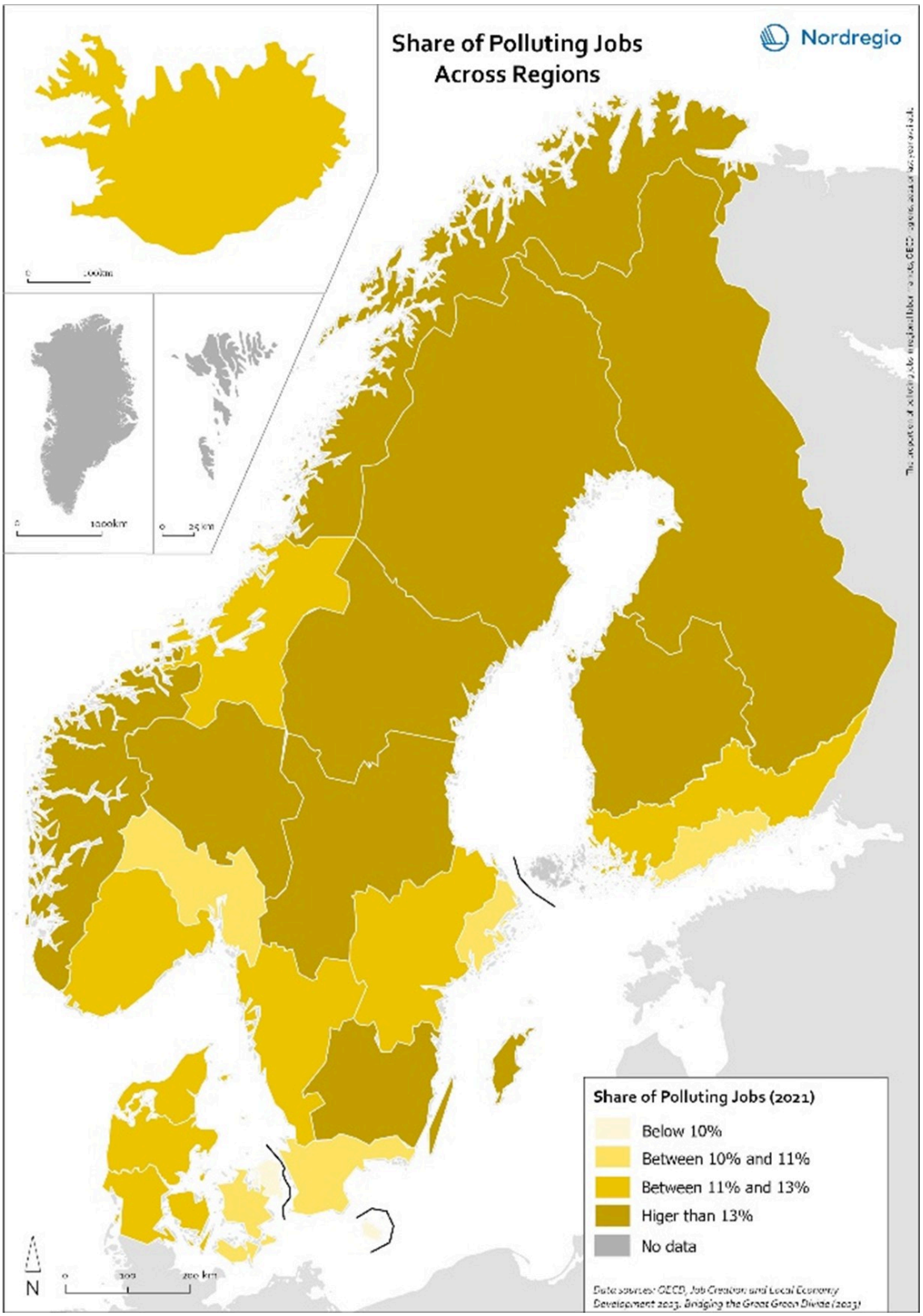
Migration remains an important aspect of globalisation. The Nordic countries have experienced significant demographic shifts, with foreign-born individuals constituting a growing share of the population. While urban areas typically attract a higher proportion of immigrants, remote regions, especially those with substantial industrial activities, also rely on foreign labour to address workforce shortages. Integrating these populations into local labour markets is essential for sustaining economic vitality and addressing demographic challenges across the Nordic Region.

Megatrend 4: Climate change/ the green transition and the labour market

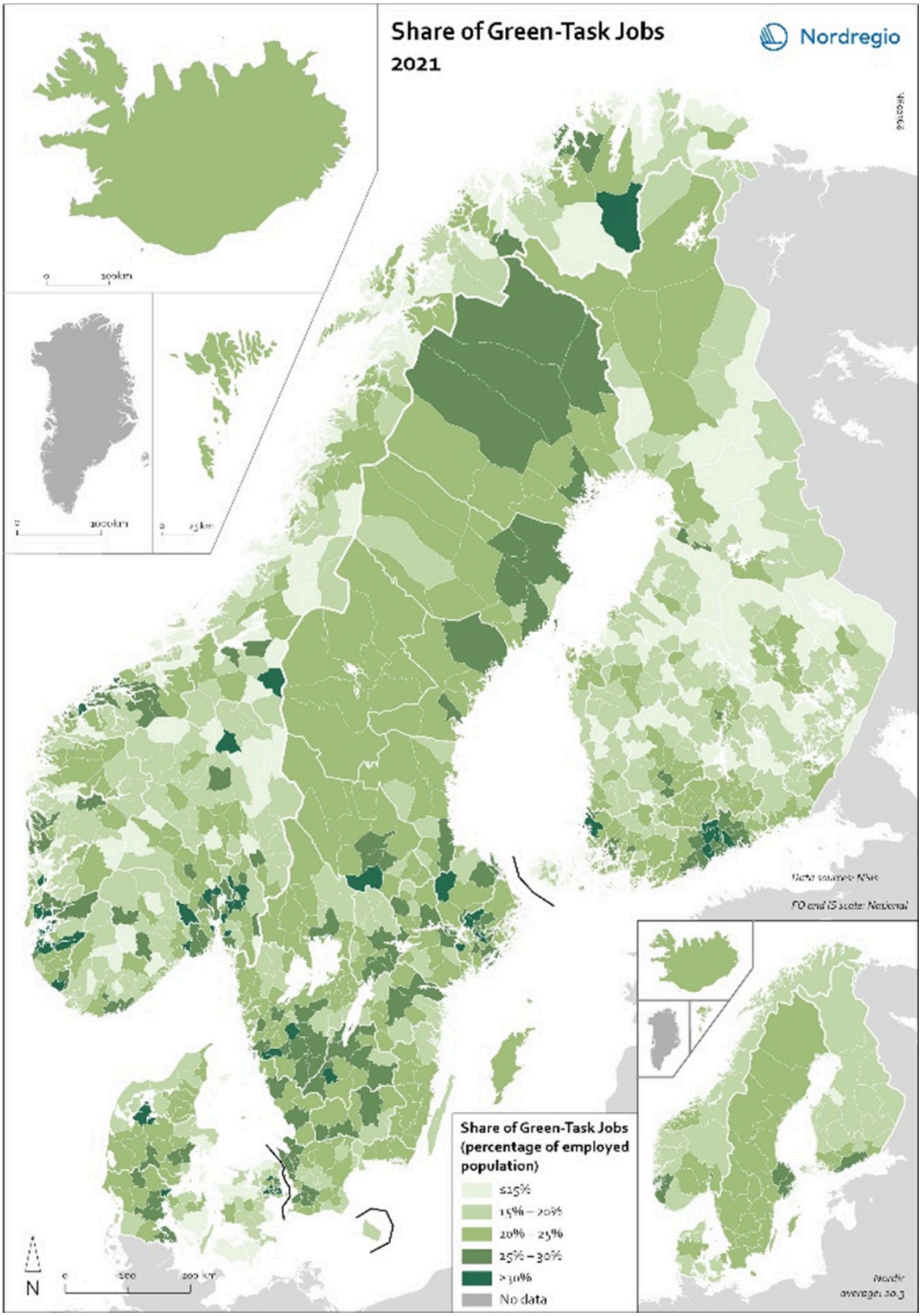
Both climate change and the green transition – driven by efforts to reduce CO2 emissions – have significant implications for the labour market. While climate change and the green transition affects all sectors of the economy, certain industries and job roles are more likely to experience substantial change than others. However, estimates of the impact of climate change and the green transition on the labour market are difficult to make.

Maps 15 and 16 highlight areas with a high proportion of polluting or green jobs, based on a method developed by Vona (2018) and applied by organisations such as the OECD (2023)[6]. The results should be interpreted with caution, since such calculations may have several limitations. The maps show that, on average, urban areas have a higher share of green jobs, while rural areas have a higher share of polluting jobs. For example, remote areas on average have 20.5% green-task jobs according to the definition used in the study, compared to the Nordic average of 25.2%. As shown in the maps, some regions and municipalities – such as in Western and Northern Norway – have a significant share of both polluting and green jobs (Norlén & Berbert, 2024).

6. For more information on the methodology and results underlying the green and polluting job maps, see Norlén & Berbert (2024): https://pub.nordregio.org/r-2024-13-state-of-the-nordic-region-2024/chapter-6-green-transition-of-the-labour-market.html



Map 15. Share of polluting jobs, 2021.



Map 16. Share of green-task jobs, 2021.

The maps of polluting and green jobs show that while all case study areas are located in areas with a high share of polluting jobs, the shares of green-task jobs are, in general, also at a medium level or above in the case study areas.

	Norð-urþing	Dalvík-urbyggð	Stord	Hamm-erfest	Skellefteå	Gotland	Åland
Share of green task jobs (2021)	n/a	n/a	32.3%	26.3%	25.9%	22.2%	17.0%
National average	23%		26.3%		26.6%		23.6%
Average for remote labour markets (excl. Denmark)	20.5%						
Nordic average	25.2%						

Table 11. Green-task jobs.

Direct effects of climate change and indirect effects through the green transition will shape the labour market in the future. While many green-task jobs are located in urban areas, a significant number of investments are being made in more remote areas. These investments can create "demand shocks", posing challenges in sourcing the right skills and workforce. Many of these investments are in areas with access to fossil-free electricity, as in the case in several of the case studies.

6. Sustainable labour market participation – final remarks

This background working paper has provided an overview of the labour market in the Nordic Region, drawing on indicators identified in an initial literature review and statistical data primarily sourced from national statistical offices. These data have been presented using maps and figures. Additionally, we have defined what we understand by remote local labour markets and mapped remote labour markets in the Nordic Region based on this definition.

Furthermore, we have examined the impact of key megatrends – demographic change, technological advancements, globalisation and climate change/the green transition – on Nordic labour markets.

In line with the SUNREM project's working definition of sustainable labour market participation , this concept encompasses three main dimensions: the balance between job supply and demand, decent jobs and job quality, both in the present and the future.

In this overview, we have examined the first two dimensions and can conclude that, overall, the Nordic Region has high employment levels and a relatively strong balance between job supply and demand. However, an analysis of statistical data at the regional and municipal levels reveals significant variation across countries, regions and municipalities. We have found that our case study areas perform above the Nordic average in some respects, but fall below it in others.

In the next phase of the project, we will further examine key labour market characteristics specific to each region. With these additional data at hand, we will be better prepared to engage with the case study regions through interviews and co-creation processes, allowing us to explore the more qualitative aspects of sustainable labour market participation, such as job quality.

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Appendix 1. Harmonisation process

The harmonisation process differs depending on the indicator, but is designed to make data as comparable as possible. To give a simple example, the countries have different reference dates for population data. While most countries measure the population on 1 January, Finland and Sweden measure it on 31 December. The data labelled as 2024 in Sweden and Finland are therefore not comparable to the 2024 data in the other countries. To harmonise these data, the year for Finland and Sweden is changed to 2025, making it comparable to the other countries' data (albeit with a one-day difference).

The Labour Force Survey provides official labour market statistics and is comparable across countries. However, as a survey-based source, it does not enable breakdowns of the findings to the lowest geographical levels (such as municipalities). National registers are the other source of labour market data.

The register data are based on records of all individuals within the countries, allowing for detailed breakdowns. However, it is not possible to make exact comparisons between the countries since the data collection methods and definitions vary slightly. Accordingly, for our municipal maps, we have, harmonised the register data to correspond to the Labour Force Survey data.

Appendix 2. Labour market statistics

The Labour Force Survey (LFS) is the official source for labour market statistics and the only source that provides comparable data across countries. The data are derived from a standardised survey conducted uniformly across all EU countries, as well as in several non-EU countries, including Norway, Iceland and the Faroe Islands.

The LFS categorises the working-age population (defined as those aged 15–74) into three groups: employed, unemployed and outside the labour force.

Employed: A person who performed work – for at least one hour – during the reference week or who was temporarily absent from a job they hold.

Unemployed: A person who was not employed during the reference week but is currently available for work within two weeks and is actively seeking work (within four weeks of the reference week) or has a job that will start in more than three months from the reference week.

Outside the labour force (formerly known as economically inactive): A person who is neither employed nor unemployed according to the definitions above.

Workforce: Employed plus unemployed.

Indicators for measuring labour market performance

Employment rate: The proportion of people in employment within a certain age group, expressed as a percentage of that population.

Unemployment rate: Unemployed individuals as a share of the workforce (i.e. employed plus unemployed).

In this section, we have chosen to focus on the employment rate rather than the unemployment rate. While the unemployment rate is a good short-term indicator of the economy, focusing on those who are immediately available for work, it overlooks the segment of the population that is neither in employment nor seeking a job.

The employment rate is not the only indicator of a functioning labour market. It should be noted that while a high employment rate is considered positive at both the individual and societal level, full employment can also mean that it is difficult for companies to find workers with the right skills, which can slow growth. It can also mean that very few people are pursuing higher education, which could pose long-term challenges related to the skills needed on the future labour market. It

should also be noted that many labour markets consist of more than one municipality, with a local labour market defined as the geographical area where labour supply and demand meet. Eurostat (2023, 2024a, 2024b)

Source: Norlén, 2024.

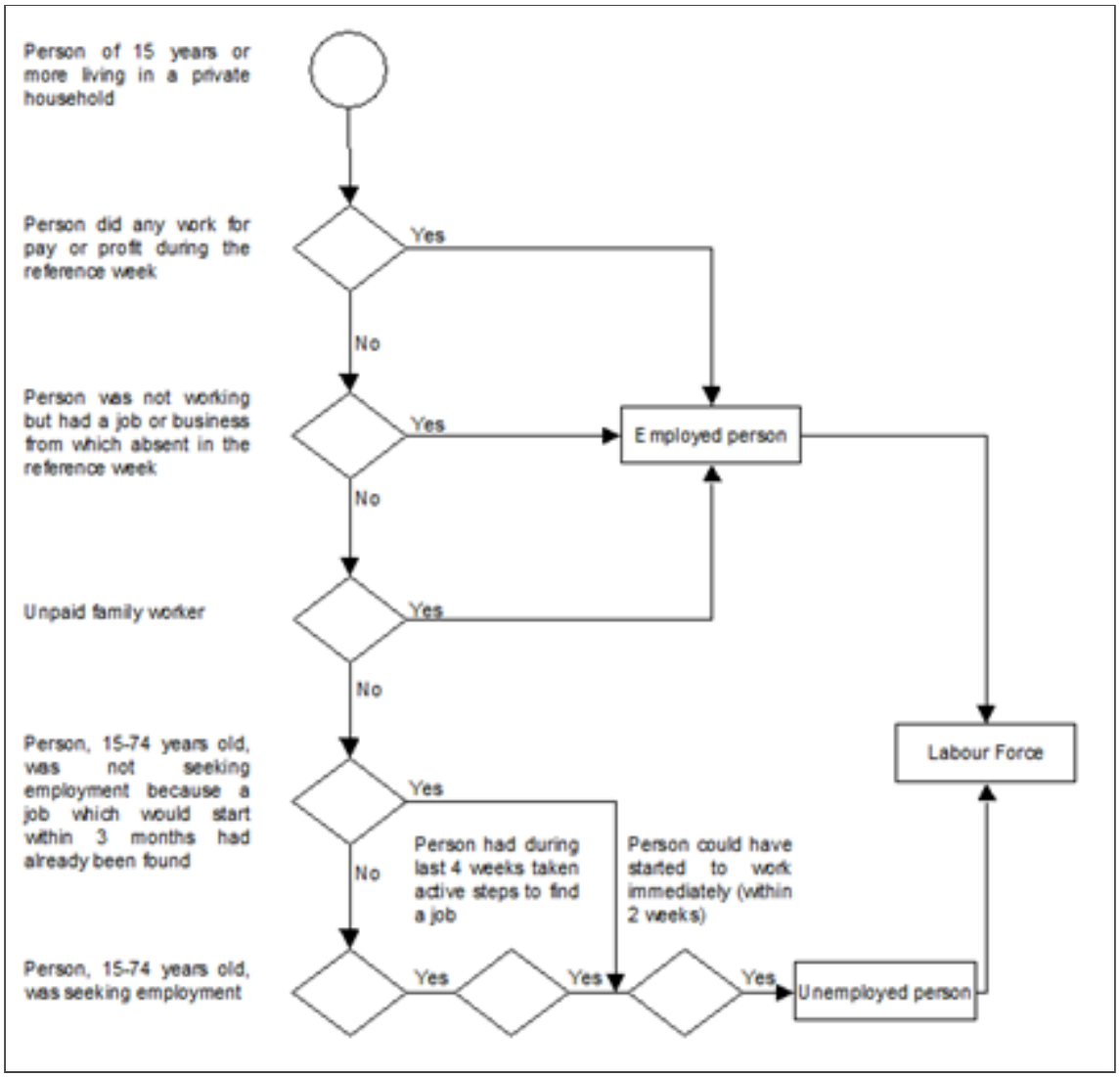
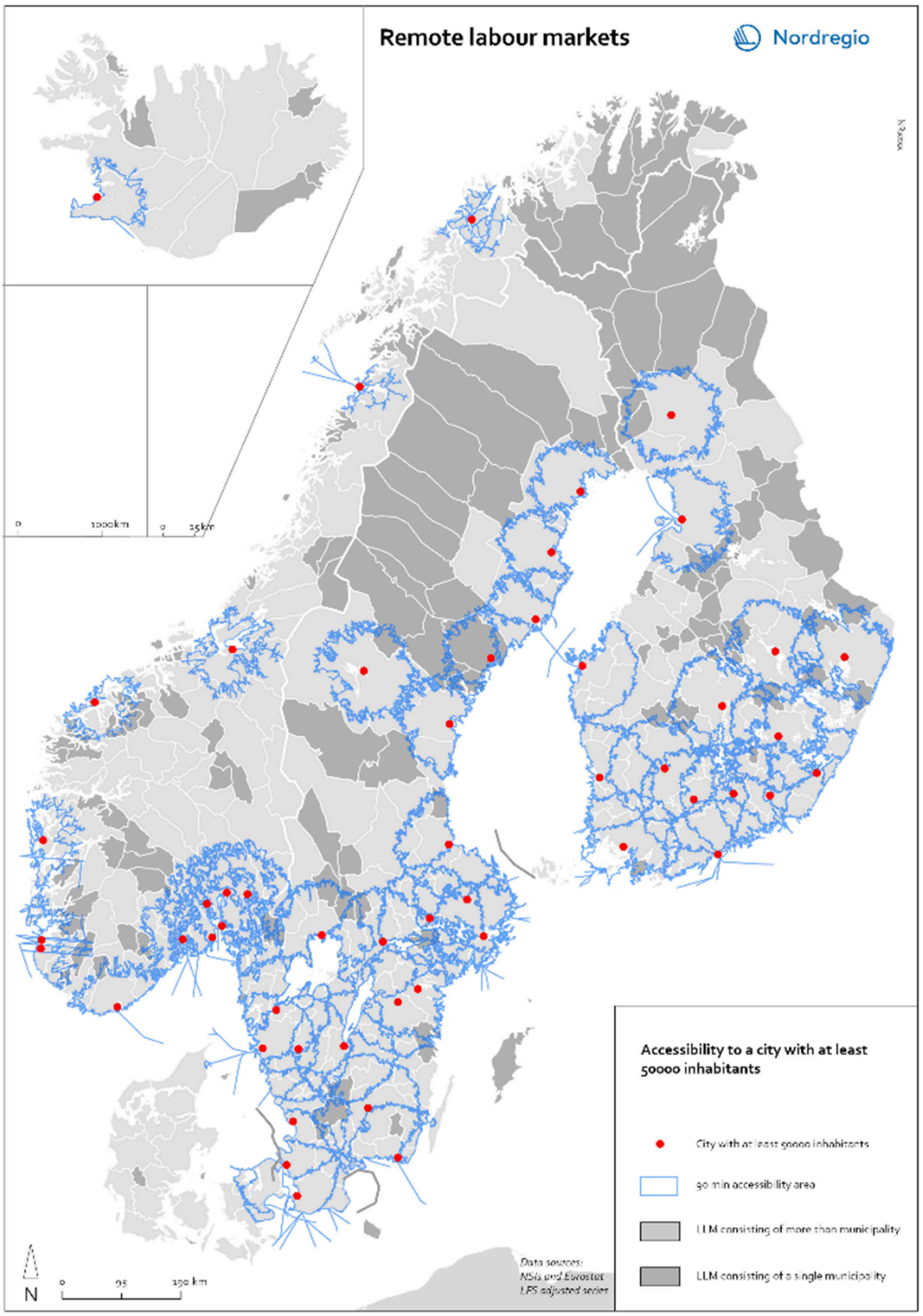


Figure X. Labour force participation according to the Labour Force Survey definition. (https://www.ecb.europa.eu/pub/pdf/other/mb201306_focus07.en.pdf)

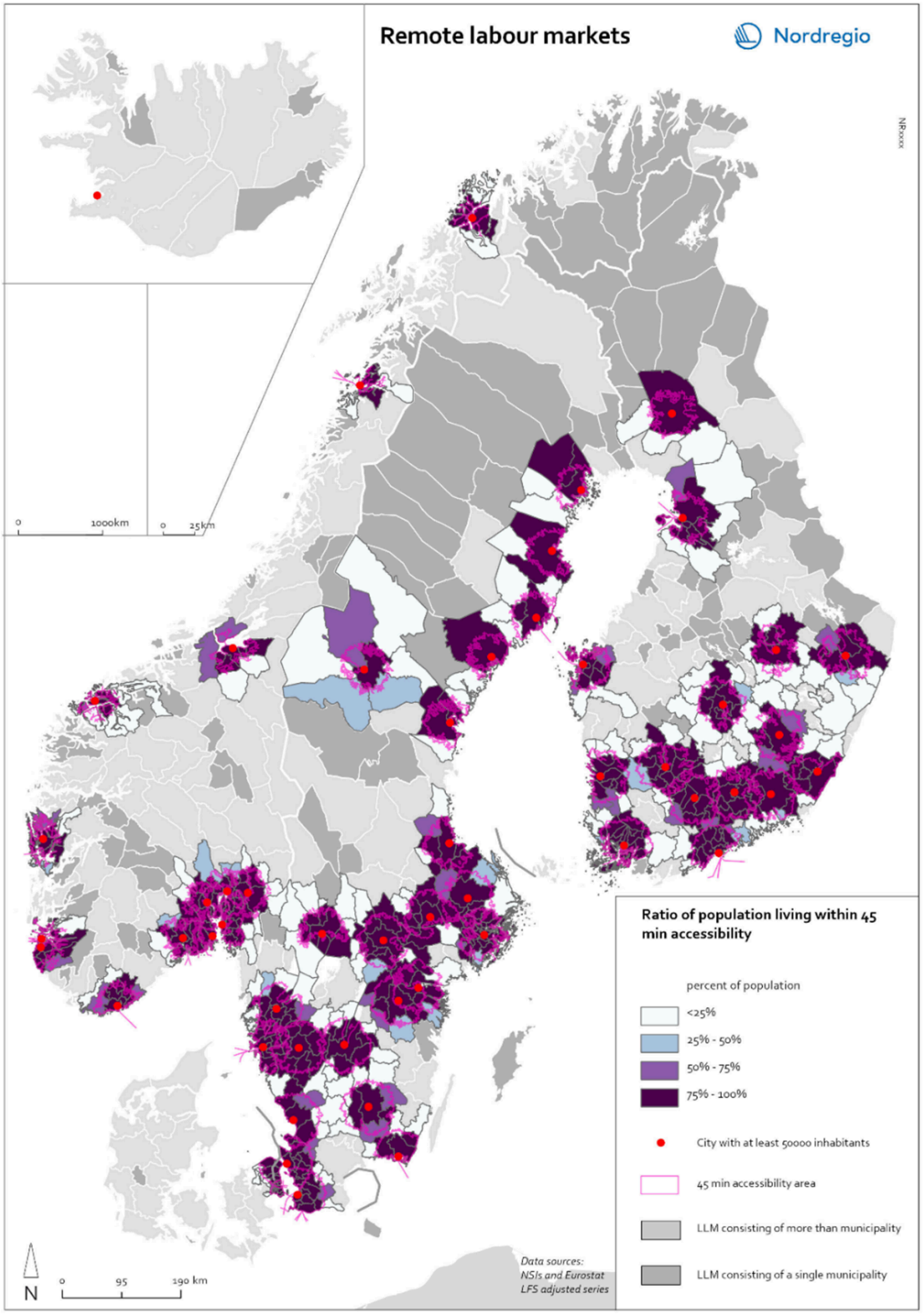
Appendix 3. Defining remoteness: application of a 90-minute drive time threshold

Classification of the case study areas remains unchanged when using a 90-minute driving distance criterion. While the Icelandic case studies – Hammerfest, Gotland and Åland – do not have access to cities with 50,000 or more inhabitants within this radius, the case study areas of Stord in Norway and Skellefteå in Sweden partially do. However, based on the significant overlap of areas in the southern areas of Finland and Sweden, this threshold was considered to be too high.

Residents of sparsely populated areas may be more tolerant to long driving distances, so to test how the results change when allowing for a longer distance, the same analysis was performed using a 90-minute drive time from the city centre as the threshold.



Map 17. Application of Dijkstra and Poelman's definition (2008) to Nordic local labour markets, using a 90-minute drive time threshold.



Map 18. Application of Dijkstra and Poelman's definition (2008) to Nordic local labour markets using 1x1 km grid population data.

About this paper

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Gustaf Norlén, Maria Bobrinskaya, Anna Lundgren

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SUNREM

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Nordregio
Holmamiralens Väg 10
Skeppsholmen
Stockholm, Sweden
www.nordregio.org