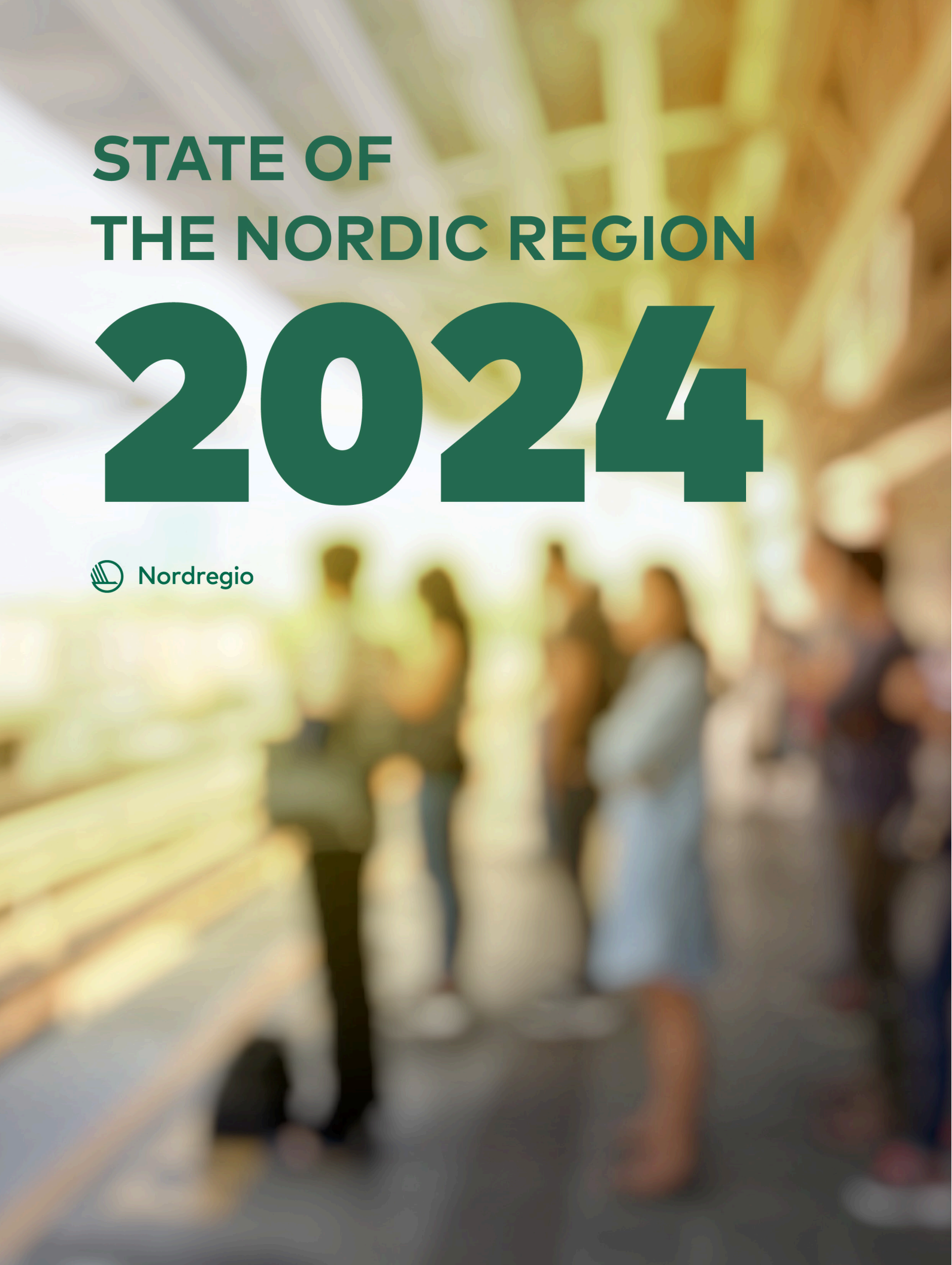
STATE OF THE NORDIC REGION 2024



Nordregio

STATE OF THE NORDIC REGION 2024

Editors: Gustaf Norlén, Timothy Heleniak, Karen Refsgaard

Authors: Gustaf Norlén, Timothy Heleniak, Nora Sánchez Gassen, Mats Stjernberg, Eva Maersk, Karina Berbert, Sigrid Jessen, Karen Refsgaard, Carlos Tapia

Contents

PREFACE 4

EXECUTIVE SUMMARY 5

DEMOGRAPHY 15

CHAPTER 1: Population change beyond the pandemic 18

CHAPTER 2: Fertility decline in the Nordic Region 51

CHAPTER 3: The Nordic geography of diversity 69

LABOUR MARKET 94

CHAPTER 4: The Nordic labour market after the pandemic 97

CHAPTER 5: Challenges of labour shortages and skills provision 122

CHAPTER 6: Green transition of the labour market 145

THE NORDIC ECONOMY 165

CHAPTER 7: Regional perspective on the economy 169

CHAPTER 8: Business perspective on the economy 190

CHAPTER 9: Household perspective on the economy 209

REGIONAL POTENTIAL INDEX:
A revised methodology 225

PREFACE

State of the Nordic Region 2024 offers a unique overview of where we stand in terms of demographic changes, labour market trends and economic conditions across the Nordic Region. In addition to presenting a broad Nordic panorama, it zooms in on key phenomena and subtle local and regional differences.

Based on the latest data and comprehensive analyses and insights, this 20th edition of the report offers timely insights and serves as a tool for making informed decisions and monitoring the socioeconomic trends and key indicators in all parts of the Nordic Region – Denmark, Finland, Iceland, Norway, Sweden, the Faroe Islands, Greenland and Åland.

This edition comes out at a time when Nordic co-operation is more important than ever. We face a range of challenges and uncertainties, including the longer-term impacts of the pandemic, environmental problems and climate change – not to mention the current global geopolitical turmoil that makes upholding democracy, contingency planning and resilience of even greater importance.

In this broader context, State of the Nordic Region 2024 provides timely insights to help us navigate the challenges ahead.

We hope this report will provide an opportunity to take stock of the present situation, recognise achievements and draw attention to ongoing challenges. Make use of the data, maps and analyses in your work and help shape the future of the Nordic Region.

Rolf Elmér
Director
Nordregio

Karen Ellemann
Secretary General
Nordic Council of Ministers

EXECUTIVE SUMMARY

AUTHOR: Timothy Heleniak
DATA AND MAPS: Gustaf Norlén



Photos: iStock, Unsplash, Simon Paulin/Imagebank Sweden

The Nordic countries regularly come out at the top of international rankings for quality of life, sustainability, gender equality, happiness and other measures. Although outsiders often view the 'Nordic model' with envy, our societies and economies are not without their problems and issues. This report summarises the current situation in the Nordic Region and points to challenges ahead.

The *State of the Nordic Region* provides a status update in three key areas – demographics, the labour market and the economy – all of which encompass socio-economic trends with a significant impact on the lives of everybody in the Nordic countries.

The target audience consists of policymakers and professionals in the field at the national, regional and local levels, and members of the public interested in socio-economic trends in the Nordic Region. With this audience in mind, the chapters have been kept to a digestible length and include figures and maps to illustrate the trends identified. Academics working in these areas in the Nordic Region may also find the report of interest. Although it is not intended to be an academic study, the report draws on academic research.

The *State of the Nordic Region* is published every two years, and this is the 20th edition in the series. While the focus is on current developments, the report also hints at future trends. Some future social and economic trends are discernible within broad parameters. Other 'black swan' events are less predictable but still have a significant impact on social and economic developments. The *State of the*

Nordic Region 2020 was published in early 2020, just as the COVID-19 pandemic was beginning, an event with significant global impact. The focus of the *State of the Nordic Region 2022* was on the impact of the pandemic. It was published in early 2022, just before the Russian invasion of Ukraine. It is difficult to foresee the next endogenous or exogenous events that will affect Nordic society, but the report highlights some of the more predictable long-term trends in demography, the labour force and the economy.

The demography chapter notes that fertility rates have fallen to historic lows and population growth in many of the countries is at the lowest level in decades. These trends are likely to persist into the future. Nearly all population growth in the Nordic Region is now the result of positive net migration, a trend that will make the populations of the Nordic countries increasingly diverse.

The COVID-19 pandemic showed the potential for more remote working, further separating where we live and work. This will affect settlement patterns across the region, although the extent is not fully known as the migration patterns are still developing. Labour shortages and skills mismatches are affected by both internal and international migration, as well as population ageing, automation and the education systems. Related to this trend is the green transition of all business sectors and the retooling of the labour market necessitated by it. New climate policies and the need for a green transition are among the megatrends already having an impact on the labour market, and the rate of change will probably speed up.

The report highlights the current situation and future economic challenges at the regional, business and household levels. To achieve the goal of a green Nordic Region, the countries need to accelerate the transition away from sectors and economic activities based on fossil fuels, an objective that also applies to the high-earning consumers of the region who have large carbon footprints. Moving forward, as income inequalities between and within regions increase, the goal of a socially sustainable Nordic Region must be reiterated. In addition, ensuring good conditions for both public and private sector innovation will be key to making the Nordic Region more competitive. While urban regions often have higher levels of traditional R&D innovation, a number of the non-urban regions specialise in various other types of innovation that are important drivers of competitiveness and growth.

The regional approach

The Nordic Region is vast and has a diverse physical geography, stretching from the northern edge of the European mainland to north of the Arctic Circle. It consists of Denmark, Finland, Iceland, Norway and Sweden, as well as the three self-governing regions, the Faroe Islands and Greenland (both part of the Kingdom of Denmark) and Åland (part of the Republic of Finland).

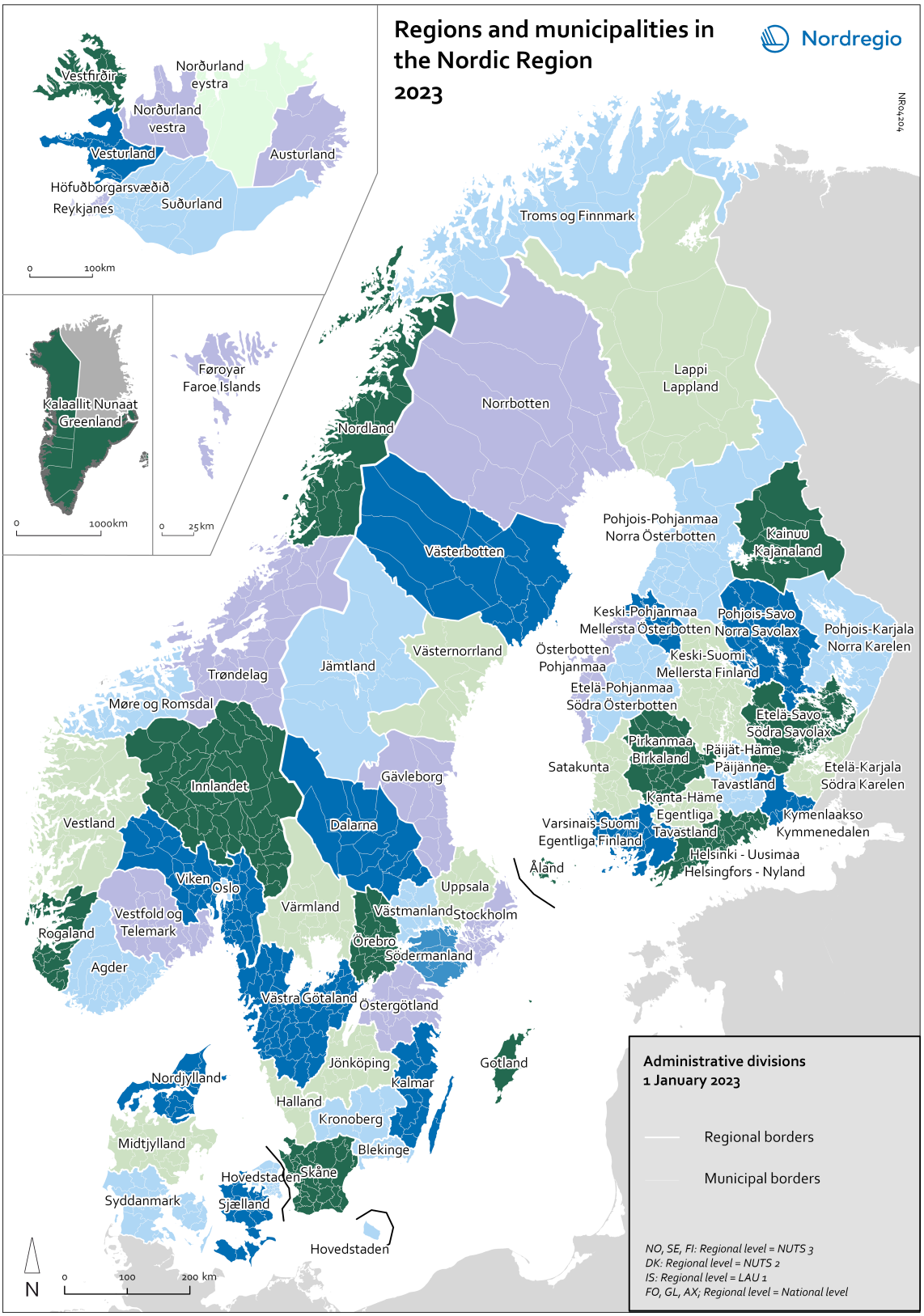
The population is unevenly spread across the states and autonomous territories. In Norway, Sweden and Finland, much of the population is concentrated in the capitals and large urban areas in the south, with large swathes of the north sparsely populated. Iceland is similar, with more and more of the population concentrated in the capital of Reykjavík. The picture is the same in Denmark, with a growing proportion of the population living in the capital, Copenhagen. While the populations and much of the economic activity converge on these larger urban centres, important economic activity also takes place elsewhere.

The methodological approach taken in the *State of the Nordic Region* is to begin at the national level and compare social and economic trends among the countries and autonomous territories. It then makes regional and municipal comparisons and depicts them in maps. The analysis at all levels is primarily based on data produced by the national statistical offices. Significant effort has gone into harmonising data to make the indicators comparable.

The table below summarises the administrative structure in each of the Nordic countries. These structures form the basis for the Nomenclature of Territorial Units for Statistics (NUTS) classification, a hierarchical system dividing European states into statistical units for research purposes. In general, the NUTS and Local Administrative Units (LAU) classifications follow existing divisions, but this may differ from country to country. Light grey frames represent the regional levels presented in most of the regional maps in the report. There are currently 66 regions at this level. Dark grey frames show the local units represented in most of the municipal maps. There are currently 1,133 units at this level. In this edition, Nordregio has developed new grid-level maps and an urban-rural typology, which facilitates new ways of analysing the data, and it has been made available to other researchers.

	NUTS O	Denmark	Finland	Iceland	Norway	Sweden	SNUTS 0	Faroe Islands	Greenland
Regional	NUTS 1		Manner-Suomi Fasta Finland Åland/-Ahvenan-maa 2			Landsdel 3	SNUTS 1		
	NUTS 2	Region 5	Suuralue Storområde 5		Landsdel 6	Riksområde 8	SNUTS 2		
	NUTS 3	Landsdel 11	Maakunta Landskap 19	Hagskýrslu-svædi 2	Fylke 11	Region/län 21	SNUTS 3		
Local	LAU 1	Kommune 98	Seutukunta Ekonomisk region 69	Landsvædi 8	Økonomisk region 85		SNUTS 4	Sýsla 6	
	LAU 2	Sogn 2133	Kunta Kommun 309	Sveitarfélög 64	Kommune 356	Kommun 290	SNUTS 5	Kommuna 29	Kommunia 5

Administrative structure of the Nordic Region, 1 January 2023.
Note: Åland makes up 16 of Finland's 309 municipalities and 1 of the 19 Maakunta/Landskap.



Regions and municipalities in the Nordic Region 2023

Report overview

The report is in four parts: three topical sections on demography, the labour market and the economy and a fourth presenting the Regional Potential Index (RPI). The first three are the same in every edition of the *State of the Nordic Region,* although the content of the chapters changes each time to reflect topical issues.

Demography

Population change beyond the pandemic – The COVID-19 pandemic had a pronounced impact on demographic trends in the Nordic countries, influencing every component of change -morbidity, mortality, nuptiality, fertility and internal and international migration. The Nordic Region demonstrated relative resilience during the pandemic compared to other parts of Europe. In 2022, the number of deaths exceeded births for the first time, and the population continued to grow only because more people immigrated than emigrated. The fall in the population in 2022 and 2023 was due to a rapid decline in births after the pandemic and an increase in the number of deaths that surpassed even the pandemic years. The ageing populations in the Nordic countries and territories also contributed to the decline.

Fertility decline in the Nordic Region – Over the past decade, the fertility rate in the European Union has been low but stable. However, since 2010, the rates for the Nordic countries and territories have been declining and have reached the lowest recorded levels. The fertility rates in the Nordic Region are well below replacement level, the level necessary for a population to replace itself in the long run. Demographers are puzzled by these falls but have identified declines in first births and overall increases in childlessness as the reasons behind the overall declines. Young people seem to be foregoing parenthood because of uncertainty about the future, and low fertility rates appear to be here to stay.

The Nordic geography of diversity – High levels of immigration in recent decades have substantially increased the proportion of the Nordic population born elsewhere in the world, which is now at a historically high level and has gone up in nearly all regions and municipalities. Newcomers have faced greater segregation, and spatial segregation is often associated with other aspects, such as segregation in schools, workplaces and social activities. Migration and integration are challenging social and policy issues and have triggered contentious political debates.

Labour market

The Nordic labour market after the pandemic – Like the rest of the world, the Nordic labour markets were severely hit by the effects of the pandemic. While COVID-19 was a shock to the labour market, its impact was much shorter-lived than that of the financial crisis. In terms of employment rates, recovery was quick, and the rate for the Nordic Region reached its highest level in at least twenty years in 2022. Sectors badly affected by the pandemic, such as accommodation and food service, bounced back, but employment rates in others have also gone up, e.g. the information and communication, public administration and defence sectors. One of the pandemic's most visible effects on the labour market was the greater opportunities for remote work. While remote work has continued since the pandemic, most workers (63%) have still never worked from home.

Challenges of labour shortages and skills provision – This section focuses on 'skills matching' and 'skills provision' from a perspective of educational planning, as well as demographic and generational differences in a labour market characterised by megatrends and rapid change. While the differences in labour shortages are spread across sectors, ages and geography, the Nordic labour markets all have very high employment rates.

The report identifies three factors that cause skills' mismatches'. Factor 1: In the last three decades, the Nordic system of post-secondary education attainment has changed significantly. University degrees used to be the almost exclusive preserve of a small, often elite and primarily urban group, but over 40% of the population are now graduates. Factor 2: Demographics or an ageing population – the 'greying of Europe'. An ageing population also means increasing healthcare needs and more support jobs. Factor 3: Automation, digitalisation and technological adaptation are three of the most important drivers behind changes to the labour market in the Nordic Region and globally. The Nordic Region is at the forefront of efforts to maximise the potential for digitalisation and digital integration. Accessing the skills and employees necessary for this transition is crucial for national and regional development.

Green transition of the labour market New climate policies and the need for a green transition are among the megatrends impacting the labour market. This involves transitioning from jobs that contribute to high levels of greenhouse gas emissions and negative environmental effects and emissions towards jobs that support the environment and promote social equity. During this transition, new jobs will be created, others in sectors dependent on fossil fuels will be reformed or phased out. This section looks at the effects of the green transition on the labour market from a geographical perspective. It begins with a discussion of how the green transition affects the labour market and the concepts of green and brown (polluting) jobs. In 2021, 25.2% of total employment in the Nordic Region was classified as green. This is higher than the OECD average of 17.6%. Although higher

than the European average, there are differences at the regional and municipal levels among the Nordic countries. The Nordic Region has a higher proportion of green and brown jobs than the EU average, which indicates that the Region is competitive in terms of green innovation, but there is still a need for structural change.

Economy

The economic analysis in this chapter uses three different types of indicators – economic, social and environmental – for each of the three aggregated levels of analysis – regional, business and household. The point of this approach to the economy is to achieve a holistic understanding of the Nordic economies.

Regional perspective on the economy – GDP in the Nordic countries grew by 3.5% between 2021 and 2022. However, the per capita GDP in the Nordic Region was much higher than the EU average – $80,406 compared to $57,098, with Norway having by far the highest figure. Intra-regional inequality quantified by Gini coefficient is growing in the Nordic countries, both between and within regions. While Denmark's urban regions have higher growth in per capita GDP, the regional patterns in other Nordic countries are less related to urbanisation, e.g. Finland's northern and less populated regions have the highest growth. Throughout this period, Sweden and Greenland had the highest levels of income inequality, Norway and the Faroe Islands the lowest, with Denmark, Finland and Åland in the middle. Research has argued that the high Gini coefficient in Greenland reflects both the small size of the population and the relatively large proportion employed in the informal economy and that the increase in inequality in Sweden was due to the diminished significance of social transfers within the working-age population and the resulting decrease in relative income levels experienced by the lowest quintile. The highest municipal income disparities were observed in the capital city regions of Denmark, Finland and Sweden, each of which had Gini coefficients around 0.6. These municipalities also have some of the highest income levels in their respective countries. Data on territorial GHG (greenhouse gas) emissions from 1990 to 2021 was collated for each Nordic country. While emissions have surged in Iceland, a contrasting macro trend is evident in Denmark, Finland, and Sweden, where reductions have been consistently observed, the pace of which has been accelerating since 2010. Norway initially registered an increase, but it started to taper off in 2020. All the Nordic countries have exceeded the EU's overall climate goals, with several of them on track to achieve carbon neutrality between 2035 and 2045.

Business perspective on the economy – This section adopts a business-level perspective to analyse important economic, social and environmental indicators. SMEs form the backbone of the Nordic economy, comprising about 90% of companies and over half of people in work. Innovation measured by expenditure on both R&D and non-R&D innovation by SMEs shows regional variations. While urban regions have higher concentrations of SMEs involved in product innovation, more non-urban SMEs are involved in process innovation than in product innovation in the Nordic Region. The rate of business bankruptcies is a core indicator of the robustness of the economy from a business perspective and also since Nordic and international businesses have been impacted by the COVID-19 pandemic and rising inflation in recent years. Despite challenges during the COVID-19 pandemic, the Nordic countries fared relatively well in terms of bankruptcy rates. However, when job-retention schemes ended, the number of bankruptcies went up, as did inflation and interest rates.

Territorial GHG emissions vary at regional level because the countries and regions have different resources, energy mixes and production structures and, therefore, different emission patterns and climate goals. From 2017 to 2021, the Nordic regions cut their per capita GHG emissions by 11.3% on average, with an overall average fall of 8.7% over the same period. This trend is evident in Denmark, as well as in southern Sweden and southern Finland – densely populated areas that have taken steps toward expanding district heating and reducing carbon intensity. In regions historically reliant on fossil fuels for heat and power, emissions have continued to fall. Regardless of past trends, coal, oil and gas are still major components of primary energy consumption structures in the Nordic countries. Even if significant progress has been achieved in terms of generating renewable energy, substantial decarbonisation challenges remain in all of the Nordic countries because of fossil-based energy mixes (Sweden, Finland and Denmark), oil production (Norway) and industrial processing (Iceland).

Household perspective on the economy This section looks at economic, social and environmental indicators from a household perspective. As far as purchasing power is concerned, Norway still has the highest income, although the differences between the countries have changed. Since 2015, Denmark has had a steady increase in household income, while Finland, Sweden and Åland have seen no increase and in the last year, even a decrease in purchasing power. The Faroe Islands and Greenland were slightly higher, reaching the level of Finland in 2022. Iceland's purchasing power increased in 2022 but was still at the lowest level among the Nordic countries. All the Nordic countries have cut their consumption-based emissions significantly by around 30–50% since 2000. The results also show significant variations between municipalities when it comes to the composition of emission sources. Urban municipalities have a higher-than-average carbon footprint due to air travel, people in rural areas use more cars, and in the northern part of Sweden, a larger proportion of the emissions is caused by heating. The

highest carbon footprints are in urban municipalities, followed by those with high levels of tourism, while the lowest are in municipalities within commuting distance of a small town.

Regional Potential Index 2024

Nordregio's Regional Potential Index (RPI) makes it possible to conduct cross-regional comparisons of development potential and illustrates the regional balance between the Nordic countries. The multidimensional index is designed to summarise the current and past performance of the regions across major policy domains. It helps identify ones with high potential and those needing further support to boost their potential and meet existing challenges. It provides policymakers with a comparative learning tool to inform the design of effective regional development strategies at Nordic level.

Nordregio's RPI is a multi-item measurement scale incorporating information about the demographics, labour market and economic output of the Nordic countries' 66 administrative regions. It highlights the role of the biggest cities and city regions. The top performing region in 2022 was Oslo, the Capital Region of Norway, followed by Stockholm County and the capital regions of Denmark and Iceland. On the other end of the RPI spectrum, we find regions such as Greenland, the Eastern Region in Iceland, and South Savo and Päijät-Häme in Finland, all of which are sparsely populated, have rural economies and, in some cases, are remote.

DEMOGRAPHY

DEMOGRAPHY

POPULATION • FERTILITY • DIVERSITY





Photos: Unsplash, iStock, Johnér

What are the latest demographic trends in the Nordic Region? What kind of impact did the pandemic have on different aspects of demographic development? The Demography section takes us through key population statistics on mortality and birth, population change and migration in the Nordic Region based on the most recent available data.

CHAPTER 1: POPULATION CHANGE BEYOND THE PANDEMIC

The COVID-19 pandemic had a pronounced impact on demographic trends in the Nordic countries, influencing every component of change -morbidity, mortality, nuptiality, fertility and internal and international migration. The Nordic Region demonstrated relative resilience during the pandemic compared to other parts of Europe. In 2022, the number of deaths exceeded births for the first time, and the population continued to grow only because more people immigrated than emigrated. The fall in the population in 2022 and 2023 was due to a rapid decline in births after the pandemic and an increase in the number of deaths that surpassed even the pandemic years. The ageing populations in the Nordic countries and territories also contributed to the decline.

CHAPTER 2: FERTILITY CHANGE IN THE NORDIC REGION

Over the past decade, the fertility rate in the European Union has been low but stable. However, since 2010, the rates for the Nordic countries and territories have been declining and have reached the lowest recorded levels. The fertility rates in the Nordic Region are well below replacement level, the level necessary for a population to replace itself in the long run. Demographers are puzzled by these falls but have identified declines in first births and overall increases in childlessness as the reasons behind the overall declines. Young people seem to be foregoing parenthood because of uncertainty about the future, and low fertility rates appear to be here to stay.

CHAPTER 3: THE GEOGRAPHY OF DIVERSITY

The geography of diversity in the Nordic Region – High levels of immigration in recent decades have substantially increased the proportion of the Nordic population born elsewhere in the world, which is now at a historically high level and has gone up in nearly all regions and municipalities. Newcomers have faced greater segregation, and spatial segregation is often associated with other aspects, such as segregation in schools, workplaces and social activities. Migration and integration are challenging social and policy issues and have triggered contentious political debates.

CHAPTER 1

POPULATION CHANGE BEYOND THE PANDEMIC

AUTHORS: Nora Sánchez Gassen and Mats Stjernberg
MAPS AND FIGURES: Anna Vasilevskaya, Karina Berbert and Nora Sánchez Gassen



The COVID-19 pandemic had a pronounced impact on demographic trends around the world, affecting morbidity, mortality, nuptiality, fertility and migration (Norlén et al. 2022). In comparison to other European nations, the Nordic Region demonstrated relative resilience during this period. Despite a significant number of infections and deaths, life expectancy did not decline in most Nordic countries[1] in 2020, in contrast to other European countries (Heleniak 2022a). Furthermore, while many European countries experienced a decline in births in 2021, several Nordic countries saw an increase (Sánchez Gassen 2022). And while mobility restrictions substantially reduced international migration flows to and from the Nordic Region, internal migration within individual Nordic countries increased.

Researchers have documented and analysed the direct and indirect impacts of the pandemic on demographic trends in almost real time but have also emphasised the need to analyse the longer-term consequences on population dynamics (Klancher Merchant 2021). This chapter contributes to this discussion by providing an overview of recent demographic trends in the Nordic countries. As will be seen, the Nordic Region has witnessed remarkable population dynamics since the end of the pandemic, including declines in life expectancy, natural population decline, and shifts in internal migration patterns.

1. Sweden and Greenland are exceptions. Between 2019 and 2020, life expectancy in these two countries declined by 0.8 and 0.7 years, respectively.

Population change in the Nordic Region: Key trends beyond the pandemic

The population of the Nordic Region has grown steadily over the past few decades, increasing by almost 18% between 1990 and 2019 (Heleniak 2020). This growth resulted from a combination of natural population increase (more births than deaths) and positive net migration (more people moving to the Nordic Region than leaving). Of these two factors, migration was the more dominant, accounting for about two-thirds of the overall growth.

During the pandemic, population growth continued, albeit at a slower rate than previously. This can be seen in Table 1.1, which compares population change during the pre-pandemic (2018 and 2019), pandemic (2020 and 2021) and post-pandemic years (2022). The second column shows that population growth was especially slow in 2020 due to an increased number of deaths and reduced international migration, with immigration declining more strongly than emigration. However, in contrast to many other European countries, the number of births increased in the Nordic Region during the second year of the pandemic (2021), which buffered population growth. Overall, the total population size in the Nordic Region continued to increase even during the pandemic.

After the pandemic[2] population growth accelerated. This was entirely due to immigration to the Nordic Region. In 2022, international net migration reached around 212,400 people – almost three times as many as in 2020. Several factors contributed to this increase, including the lifting of international travel restrictions and the influx of refugees due to the Ukraine war (Berlina 2022).

Interestingly, natural population change did not contribute to population growth in the Nordic Region in 2022. For the first time since at least 1975, it was negative (Nordic Statistics 2023).[3] In other words, the number of deaths outweighed the number of births, albeit by a small margin. This trend is remarkable since negative natural population change was not observed even during the pandemic years with their elevated mortality levels. The negative natural population change in 2022 can be attributed to a rapid decline in births after the end of the pandemic and an increase in the number of deaths, surpassing even the pandemic years.

2. The Nordic countries declared the end of the pandemic at slightly different times in 2022. Denmark was the first to lift COVID-19 restrictions on 1 February 2022. Norway and Iceland followed on 12 and 25 February, respectively. On the Faroe Islands, coronavirus regulations ended on 1 March 2022. In Sweden, COVID-19 was no longer classified as a danger on 1 April, while Greenland lifted all COVID-19 restrictions on 18 May, and Finland by the end of June.
3. The dataset from Nordic Statistics used here does not go back further than 1975.

Finally, Table 1.1 also shows that while international migration slowed down during the pandemic, internal mobility within the Nordic countries – i.e. relocation from one municipality to another within each country or autonomous region – increased and was particularly high in 2021 (Heleniak 2022b). This trend reversed in 2022. In the following two sections, we discuss negative natural population change and internal migration dynamics in greater detail. Chapter 2 and Chapter 3 of this report discuss post-pandemic trends in fertility and increased population diversity.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Population (1 January)	Population change (in %)	Births	Deaths	Natural population change	International immigration	International emigration	International net migration	Internal migration
2018	27,164,965	0.67	285,736	245,922	39,814	323,040	181,504	141,536	1,426,020
2019	27,346,639	0.62	281,781	240,593	41,188	301,566	178,041	123,525	1,429,110
2020	27,515,520	0.39	279,481	252,062	27,419	238,825	162,112	76,713	1,492,255
2021	27,622,563	0.59	289,713	252,070	37,643	272,810	156,102	116,708	1,543,953
2022	27,785,599	0.79	265,363	266,870	-1,507	386,466	174,060	212,406	1,485,878
2023	28,005,614								

Table 1.1: Population change in the Nordic Region (2018–2023)
Source: Nordic Statistics

Negative natural population change

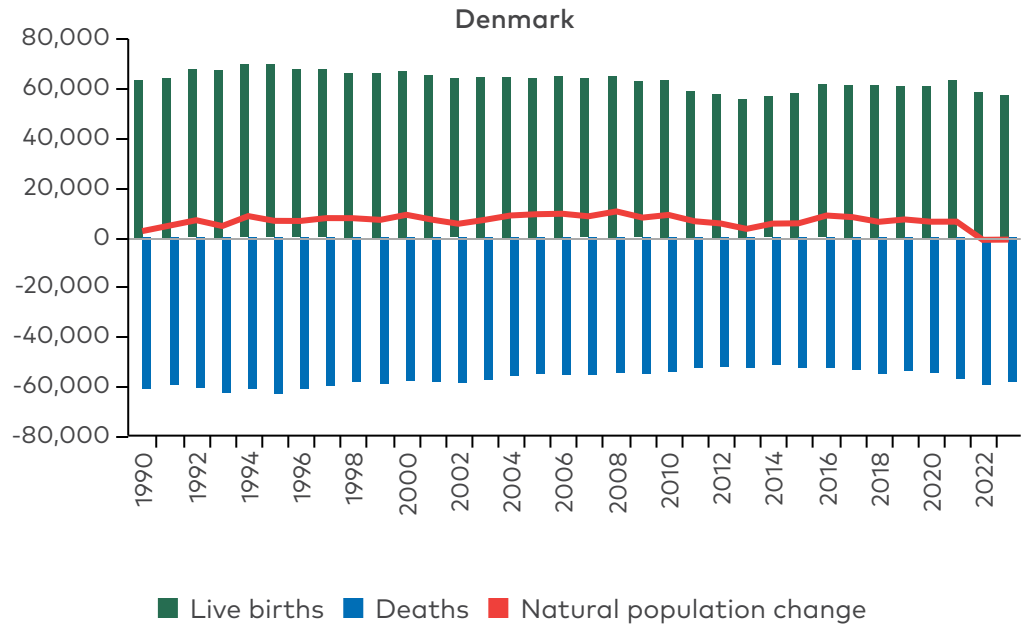
Although natural population change in the Nordic Region, considered as a whole, was negative in 2022, the Nordic countries and autonomous regions showed distinct patterns (Figure 1.1). Natural population change was positive in the Faroe Islands, Greenland, Iceland, Norway and Sweden, where births continued to surpass deaths in 2022.[4] In the other countries, however, natural population change was negative in the same year. In Finland, natural population change has been negative since in 2016. In Åland, natural population change has fluctuated, with some years seeing negative change and others seeing an increase, most recently in 2021. In Denmark, natural population change turned negative in 2022 for the first time during the period covered here.

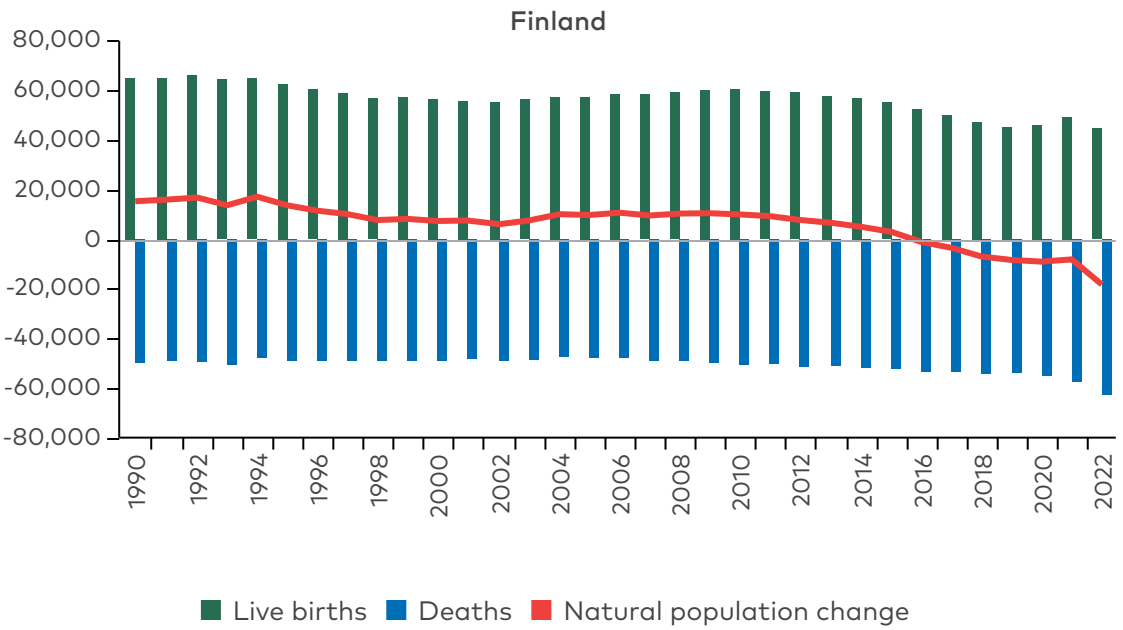
The different dynamics in natural population change across the Nordic countries can partly be attributed to differences in population age structures. For example, Greenland has had higher fertility rates and lower life expectancy than the other Nordic countries, and therefore its population is comparatively youthful, which currently contributes to a surplus of births over deaths. Finland, by contrast, has had the lowest fertility rate in the Nordic Region in recent years. In combination with advances in life expectancy, this has contributed to rapid population ageing and a surplus of deaths over births.

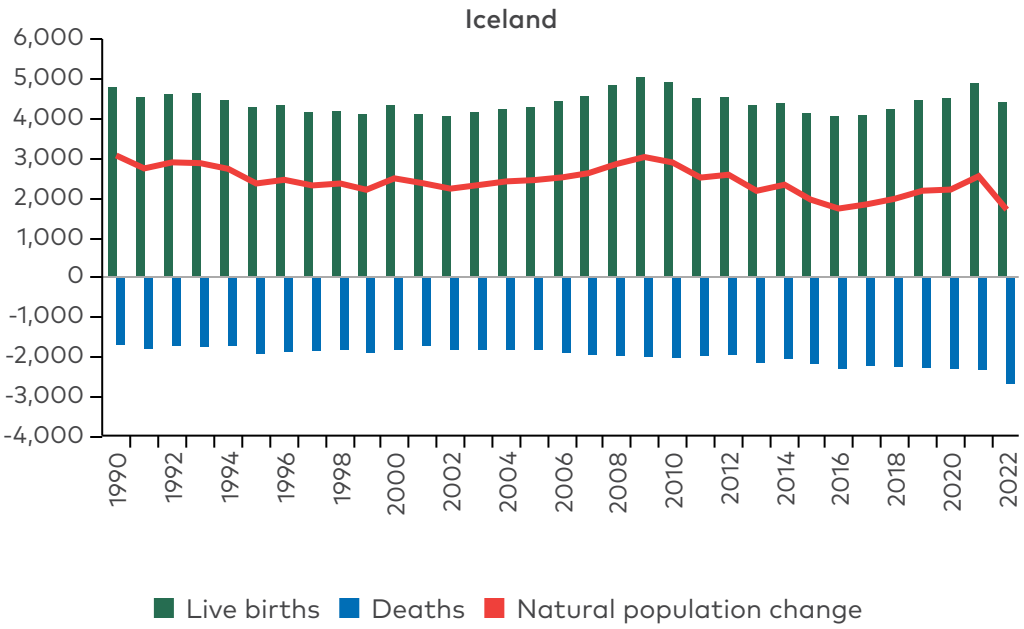
While several Nordic countries and territories still registered a surplus of births over deaths in 2022, Figure 1.1 also shows that the gap between the two has been closing even in countries with traditionally high fertility, such as the Faroe Islands, Greenland and Iceland. In addition, several countries and regions saw a relatively sharp drop in natural population change following the end of the pandemic in 2022. As noted above, this decline was due to a drop in the number of births between 2021 and 2022 in all countries and territories and an increase in the number of deaths, which occurred everywhere except in Greenland.

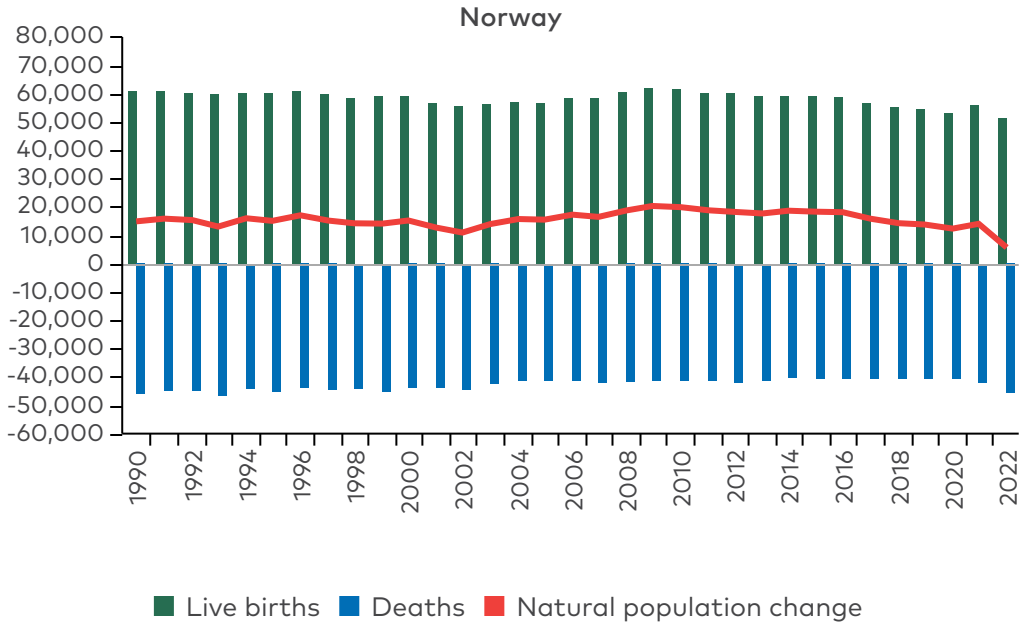
4. Note that Sweden had negative population change between 1997 and 2001.

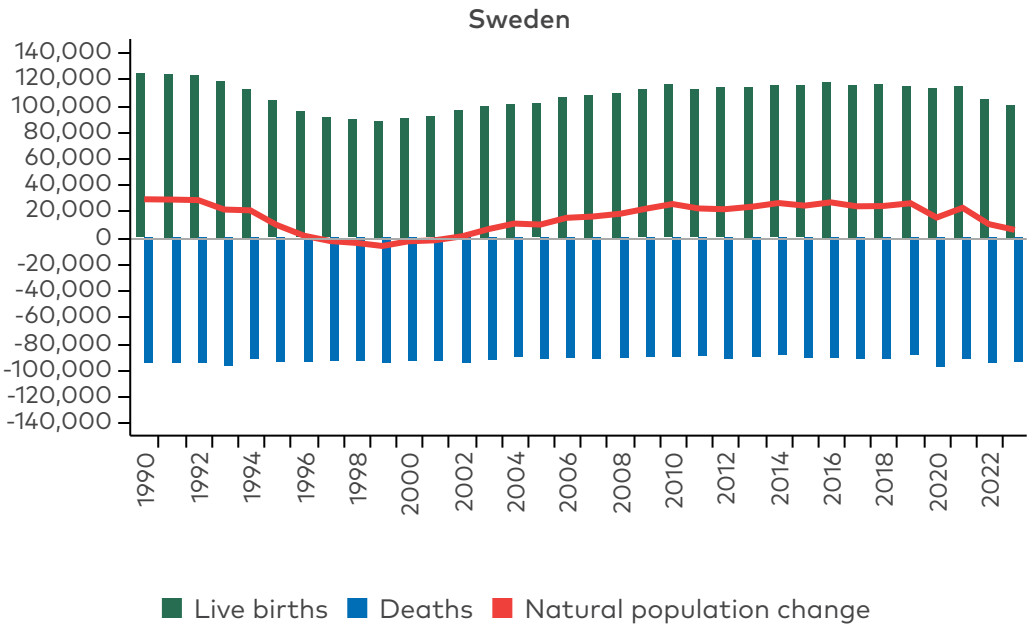
Births, deaths and natural population change in the Nordic countries and autonomous regions (1990–2022/23)

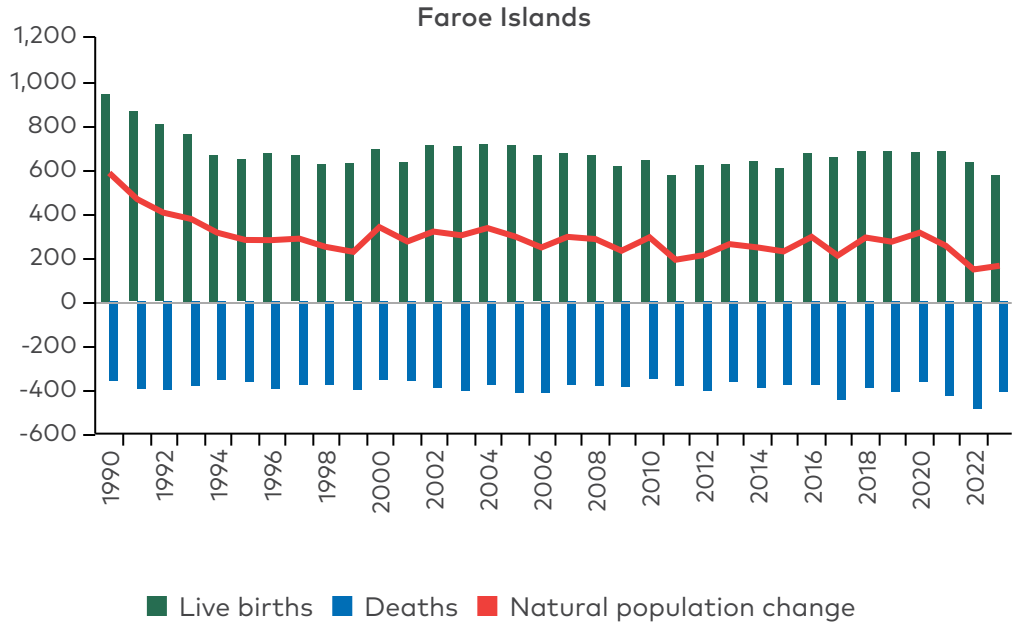





Iceland
6,000
5,000
4,000
3,000
2,000
1,000
0
-1,000
-2,000
-3,000
-4,000
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
Live births
Deaths
Natural population change


Norway
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
-10,000
-20,000
-30,000
-40,000
-50,000
-60,000
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
Live births
Deaths
Natural population change


Sweden
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
-20,000
-40,000
-60,000
-80,000
-100,000
-120,000
-140,000
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
Live births
Deaths
Natural population change


Faroe Islands
1,200
1,000
800
600
400
200
0
-200
-400
-600
1990
1992
1994
1996
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Live births
Deaths
Natural population change

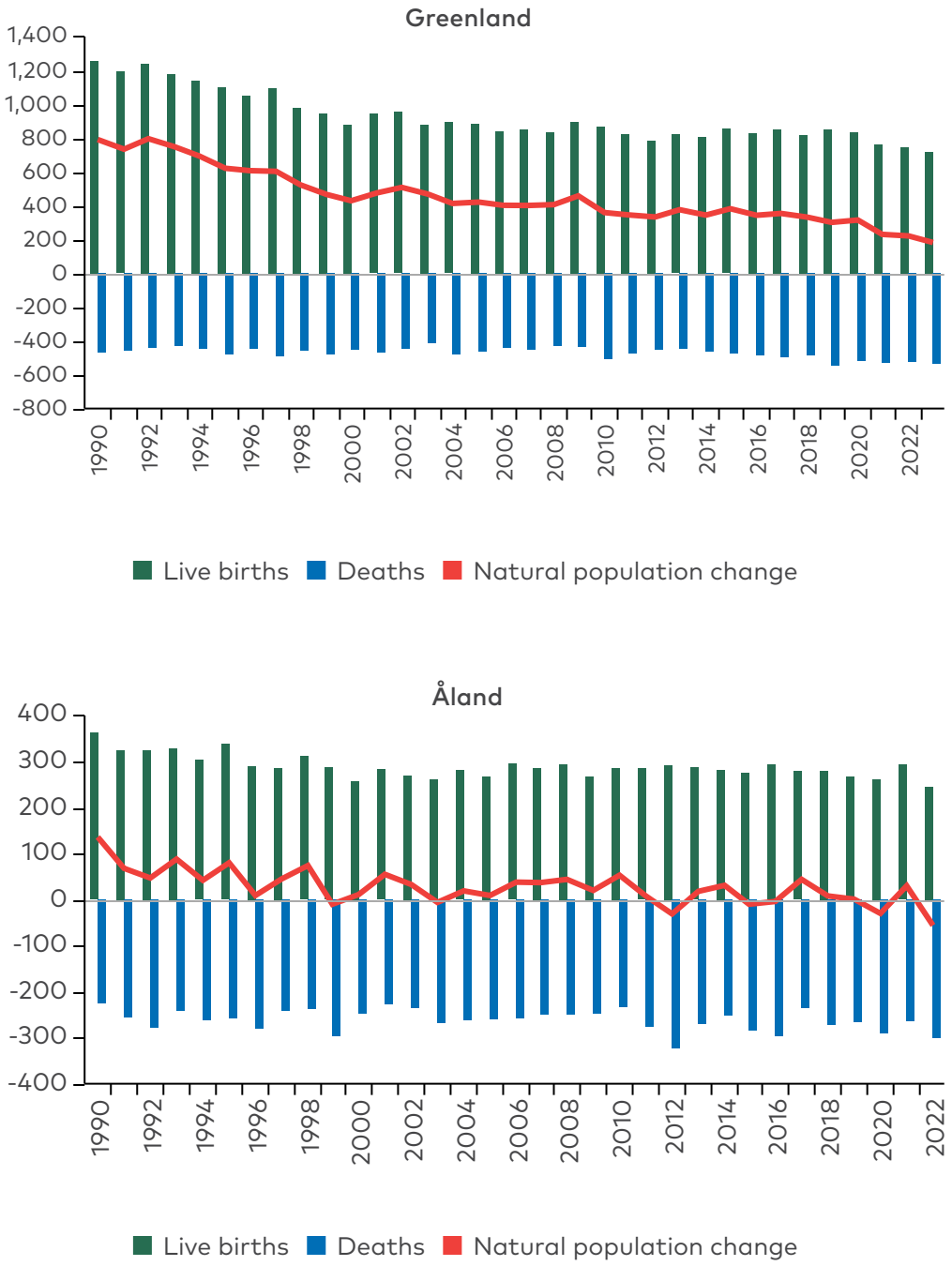


Figure 1.1: Births, deaths and natural population change in the Nordic countries and autonomous regions (1990–2022/23)
Source: Nordic Statistics
Note: Natural population change is calculated as the difference between births and deaths.

Births

Often considered frontrunners in implementing family-friendly policies, the Nordic countries have traditionally had relatively high fertility levels compared to other European nations (Sobotka 2020). The factors that have contributed to the recent fertility declines in the Nordic countries are not yet fully understood, especially given the lack of substantial changes to family policies (Hellstrand et al. 2021).

Several potential explanations have been proposed, including the postponement of parenthood and rising childlessness (Rotkirch 2020, Jónsson 2023). These trends may be driven by a shift towards more individualistic, 'child-free' lifestyles, union instability, increasing demands placed on parents, and a growing sense of economic and social uncertainty.

Global concerns such as the climate crisis and new geopolitical tensions may also have contributed (Guetto, Bazzani and Vignoli 2022, Campisi et al. 2023). One study focusing on Sweden and Germany linked the decline in fertility in 2022 to the launch of vaccination campaigns and the reopening of societies after the pandemic (Bujard and Andersson 2023). Finally, it is also plausible that the post-pandemic decline was, to some extent, a consequence of the elevated fertility rates observed during 2021, as couples who contemplated having a(nother) child may have chosen to do so during the pandemic.

Deaths

Many observers were also surprised by the increase in registered deaths across Europe and the US after the end of the pandemic (Rougerie 2022). According to monthly statistics from Eurostat (2024), all five Nordic countries had excess mortality in 2022 compared to the 2016–2019 baseline. This was particularly pronounced in Iceland and somewhat less so in Norway and Sweden, with the other Nordic countries falling in between.

The causes of these elevated mortality levels are not yet fully understood. In Sweden, excess mortality during winter 2022 has been associated with the circulation of respiratory infections, including influenza, COVID-19 and the respiratory syncytial virus (Folkhälsomyndigheten 2023). In Iceland, excess deaths during the first half of 2022 have been attributed to the spread of the Omicron variant of COVID-19 (Tomás 2023). The long-term and indirect effects of the pandemic, such as reduced immunity, delayed or deferred disease detection and treatment, may also have contributed. For instance, excess mortality in Norway in 2022 was primarily driven by deaths related to cardiovascular conditions and, to a lesser extent, cancer (Raknes et al. 2024).

Excess mortality in 2022 is not only evident in the increased number of registered deaths, as shown in Table 1.1. Life expectancy also declined, as shown in Table 1.2 – the red cells denote years in which life expectancy declined compared to the previous year, while the green cells highlight an increase. In all Nordic countries and autonomous territories, life expectancy declined at some point during the pandemic (in either 2020 or 2021),[5] but these declines were relatively modest compared to other advanced economies (OECD 2022). Nonetheless, despite higher mortality rates during the pandemic, life expectancy also continued to increase in the Nordic countries – for example, in 2020 in Denmark, Norway and the Faroe Islands and in 2021 in Iceland and Sweden.

In 2022, however, life expectancy declined in almost all Nordic countries and autonomous territories.[6] The only exception is Sweden, where the reduction was limited to women. In Norway, the drop in life expectancy has been described as the largest since World War II (Raknes et al. 2024). Similarly, in Finland, the decline has been described as 'historic' and the largest in over 50 years (Statistics Finland 2023).

5. The only exception concerns life expectancy of men in Norway and the Faroe Islands, which continued to increase throughout the pandemic.
6. Note that on the Faroe Islands and in Greenland, trends were somewhat uneven even prior to the pandemic, with life expectancy declining for both men and women in some years. Icelandic life expectancy data for 2022 were not yet available from the Human Mortality Database at the time of writing (Spring 2024). Data from Statistics Iceland, however, indicate that life expectancy at birth also declined for women in Iceland between 2021 and 2022, from 84.1 years to 83.8 years. For men, life expectancy stagnated during the same period at 80.9 years.

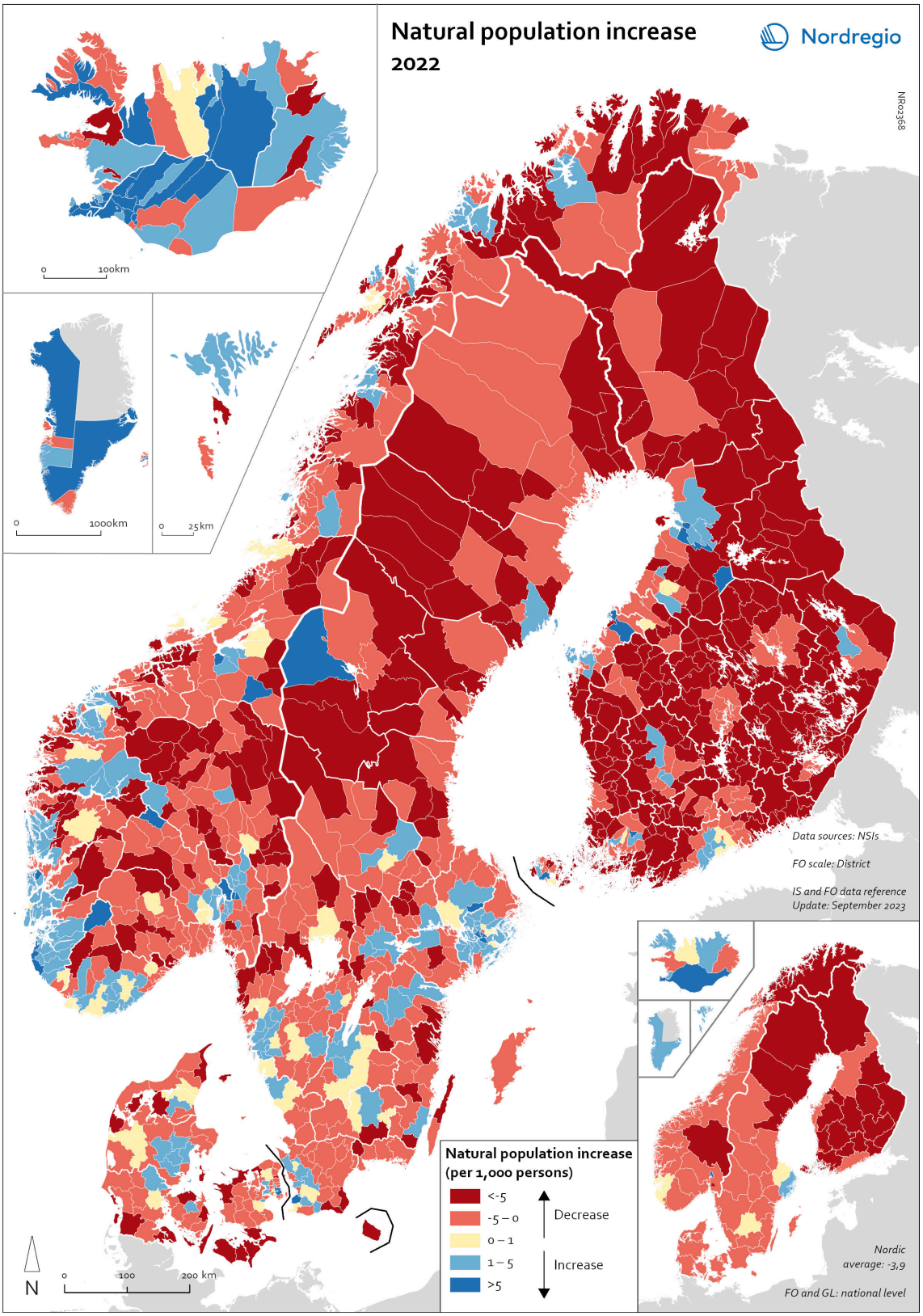
	Denmark		Finland and Åland		Iceland		Norway		Sweden		Faroe Islands		Greenland	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
2018	79.02	82.96	78.91	84.31	81.09	84.24	81.01	84.50	80.79	84.26	80.0	84.8	69.87	74.17
2019	79.44	83.42	79.18	84.52	81.47	84.59	81.18	84.70	81.35	84.73	80.4	85.3	69.72	74.28
2020	79.58	83.51	79.03	84.62	81.38	84.43	81.48	84.90	80.60	84.29	80.6	85.8	69.68	74.13
2021	79.57	83.30	79.15	84.48	81.63	84.44	81.59	84.73	81.22	84.82	82.1	85.6	69.97	73.75
2022	79.43	83.18	78.69	83.83			80.92	84.36	81.36	84.75	80.4	83.3	69.76	73.41

Table 1.2: Life expectancy at birth in the Nordic countries (2018–2022)
Note: Cells in green indicate that life expectancy increased compared to the year before. Cells in red indicate that it declined compared to the previous year.
Source: Human Mortality Database. Data for the Faroe Islands and Greenland: NSIs.

Natural population change at local level

Levels of natural population change do not only vary across but also within the Nordic countries. A comparison of natural population change in 2022 across municipalities reveals pronounced rural-urban differences (Map 1.1). Urban areas such as Stockholm and Gothenburg in Sweden; Oslo and Bergen in Norway; Copenhagen and Aarhus in Denmark; as well as Helsinki and Turku in Finland all experienced positive natural population change. This can be attributed to the comparatively young population age structure of these urban centres. Young people of child-bearing age often cluster in cities for study and work, and many start families there. By contrast, rural and remote areas often have a higher proportion of older people and, as such, tend to register more deaths than births, resulting in negative natural population change. These patterns are particularly pronounced in Finland but also in the northern parts of Sweden and Norway.

Nonetheless, there are exceptions. In Iceland, Greenland, and the Faroe Islands, which had comparatively high levels of natural population growth at national level (Figure 1.1), a majority of municipalities, including many in rural areas, still registered more births than deaths in 2022 (77% of municipalities in Iceland, 60% in Greenland, 67% on the Faroe Islands). In the other Nordic countries, only a minority of municipalities, mostly in urban centres, recorded natural population increase in 2022 (30% in Norway and Sweden, 26% in Denmark, 12% in Finland).



Map 1.1: Natural population change at local level (2022)
Source: NSIs

Internal migration

During the pandemic years, international migration in the Nordic Region slowed down (see Table 1.1). By contrast, internal migration – here defined as migration between municipalities within each Nordic country and autonomous region – increased, especially in 2021. A counter-urbanisation trend has been described, with people moving away from larger cities to suburbs or smaller municipalities in search of affordable, larger homes and access to nature, which became more desirable during the pandemic-era restrictions (Vogiazides and Kawalerowicz 2022, Tønnessen 2021). This section looks at how internal migration patterns evolved even after the end of the pandemic during 2022.

The following analysis is based on a new Nordic urban-rural typology (see Box 1.1), in which the Nordic territories are classified into seven different categories at grid level (1 x 1 km): inner urban areas, outer urban areas, peri-urban areas, local centres in rural areas, rural areas close to urban areas, rural heartland areas, and sparsely populated rural areas. Map 1.2a provides an overview of territorial differences in the Nordic countries according to the typology. It can be scaled up to municipality level, such that municipalities are classified according to the category in which most people reside. Map 1.2b provides an overview of this classification of Nordic municipalities.

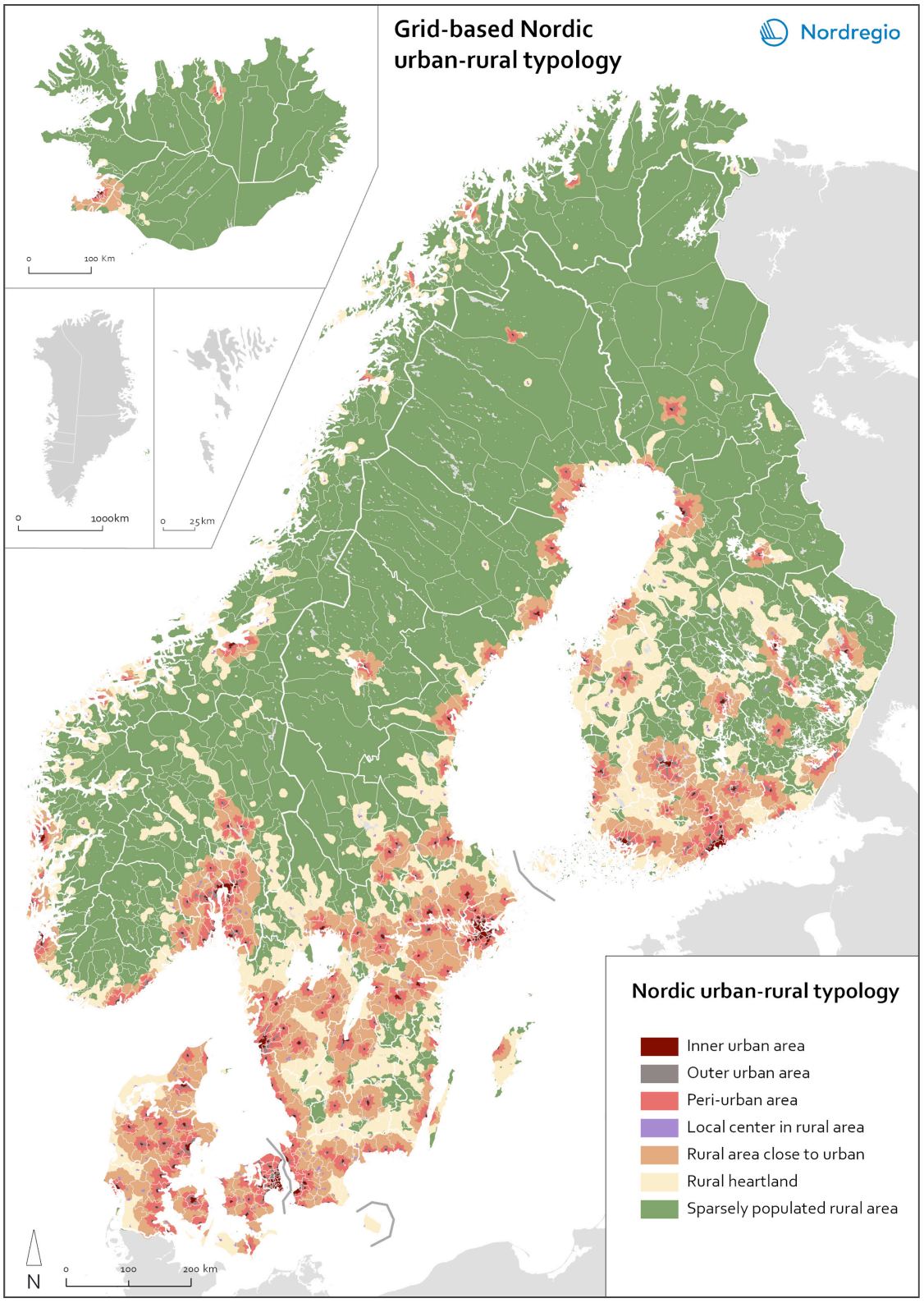
As Map 1.2b shows, many of the municipalities classified as inner urban, outer urban and peri-urban are clustered in the southern parts of Sweden, Norway and Finland (see Stjernberg et al. 2024). However, some northern municipalities also fall into these categories, such as Alta in Norway, Umeå and Piteå in Sweden, and Oulu in Finland. In Iceland, the only municipalities belonging to the urban categories are located around Reykjavik and Akureyri. In Denmark, inner urban, outer urban and peri-urban municipalities are especially concentrated around the capital in Zealand, as well as on the Eastern coasts of Jutland and Funen.

Box 1.1: A new Nordic grid-based urban-rural typology

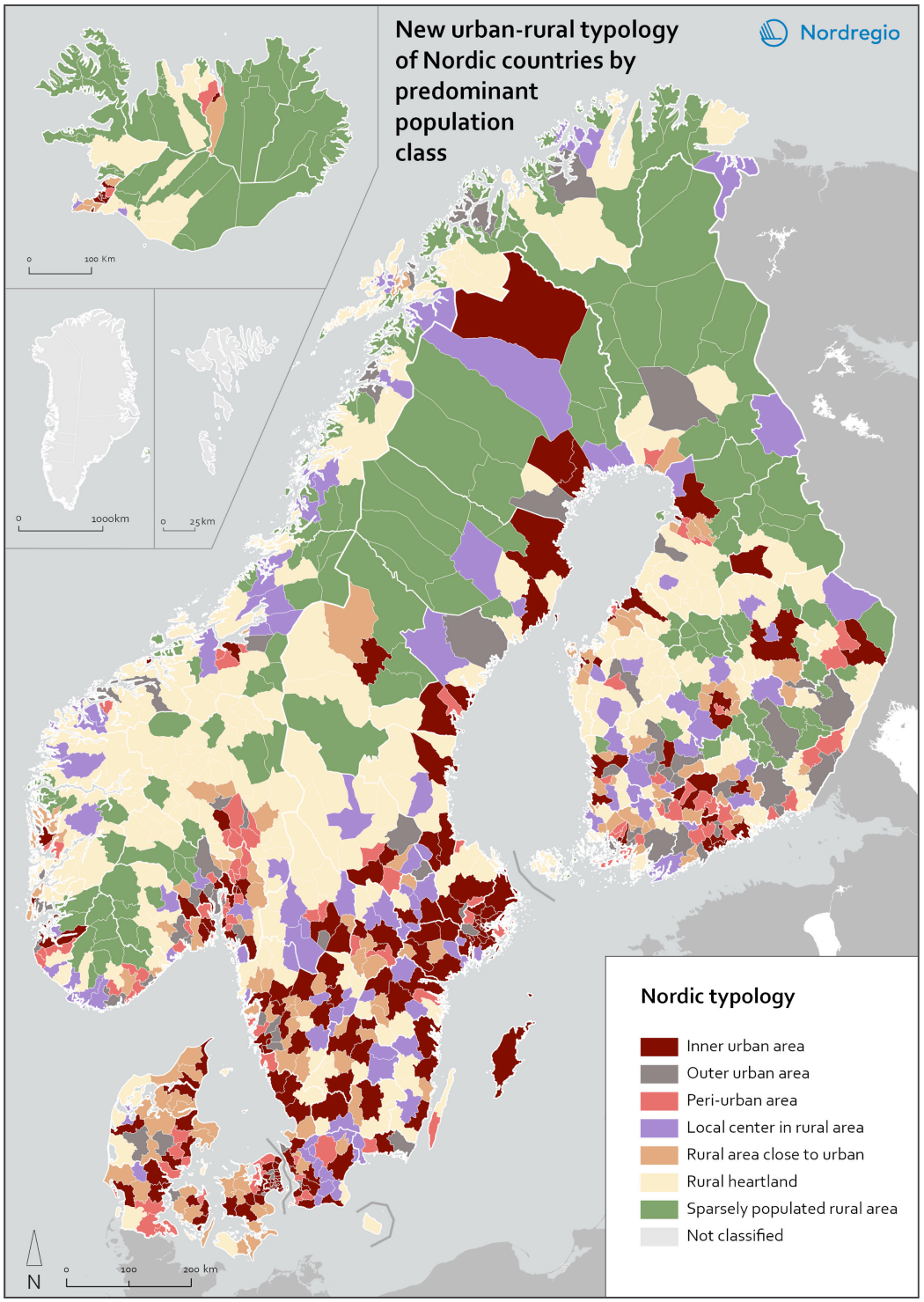
The Nordic urban-rural territorial typology is a new system for classifying Nordic territories into seven distinct categories: inner urban areas, outer urban areas, peri-urban areas, local centres in rural areas, rural areas close to urban areas, rural heartland areas, and sparsely populated rural areas. These classes are based on different degrees of urbanity and rurality. The typology is based on a 1 x 1 km grid system that enables the classification of different types of areas at a detailed territorial level (see Map 1.2a).

Nordregio and Ubigu developed this typology as a new analytical framework that could combine different types of data and facilitate a more nuanced and fine-grained understanding of territorial differences across the Nordic countries. The typology includes Denmark, Finland, Iceland, Norway, Sweden and Åland. Due to data limitations, it was not possible to include Greenland and the Faroe Islands.

A recent report by Stjernberg et al. (2024) presents the Nordic typology, along with analyses of territorial and settlement patterns, as well as demographic change dynamics across the urban-rural continuum. The typology has also been published online as an interactive digital web-mapping platform, which allows users to zoom in on different areas.



Map 1.2a: Population-based Nordic territorial typology – at grid level

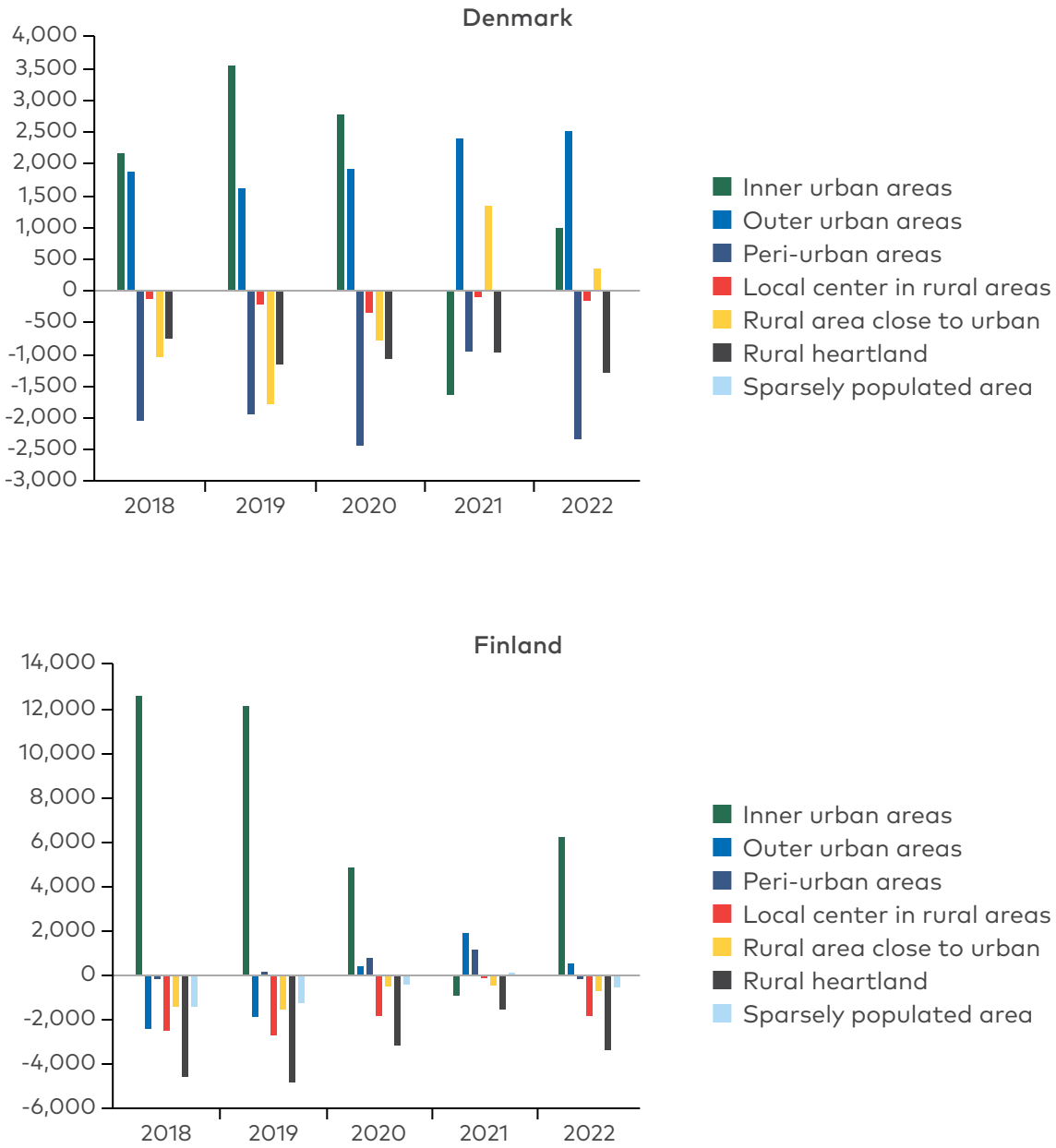


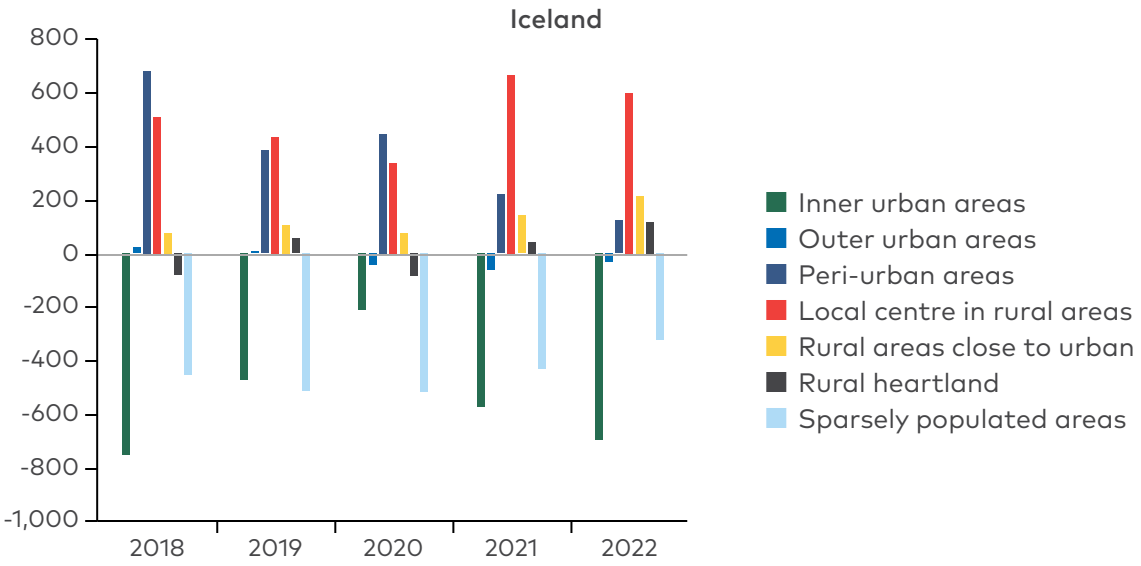
Map 1.2b: Population-based Nordic territorial typology – at municipality level
Note: Nordic urban-rural typology scaled up to the municipality level. Classification of municipalities is based on the category in which most people reside.

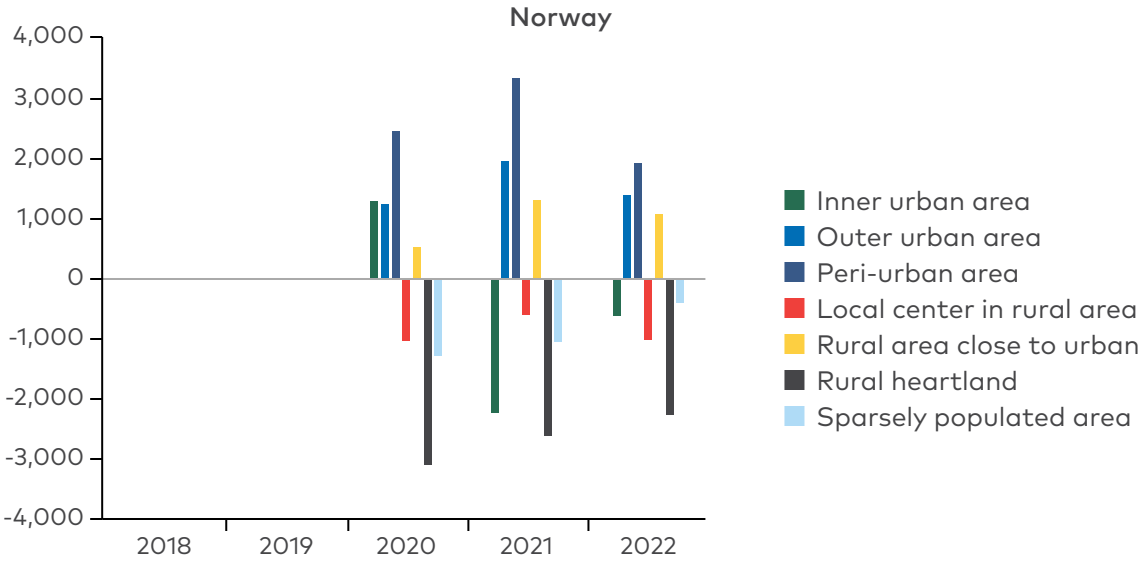
Figure 1.2 is based on the new typology and shows internal net migration across different types of municipalities in the five Nordic countries.[7] For each country, we grouped the municipalities by category (e.g. all inner urban municipalities) and calculated the internal net migration flows between the seven different categories (e.g. internal net migration between inner urban municipalities and the other six categories). The panels in Figure 1.2 display internal net migration numbers for each of the seven categories in each Nordic country. Positive internal net migration implies that more people move to the given municipality type than move away. Conversely, negative internal net migration implies that the number of people who move away surpasses the number of newcomers. Our analysis covers a five-year period, encompassing pre-pandemic (2018–2019), pandemic (2020–2021) and post-pandemic (2022) years.

7. Greenland and the Faroe Islands are not included in the new Nordregio typology and are therefore not part of Figure 3. The municipal reform in Norway in 2020 meant that the urban-rural typology could not be applied for 2018 and 2019.

Figure 1.2: Internal net migration by type of municipality (2018–2022)




Iceland
800
600
400
200
0
-200
-400
-600
-800
-1,000
2018
2019
2020
2021
2022
Inner urban areas
Outer urban areas
Peri-urban areas
Local centre in rural areas
Rural areas close to urban
Rural heartland
Sparsely populated areas


Norway
4,000
3,000
2,000
1,000
0
-1,000
-2,000
-3,000
-4,000
2018
2019
2020
2021
2022
Inner urban area
Outer urban area
Peri-urban area
Local center in rural area
Rural area close to urban
Rural heartland
Sparsely populated area

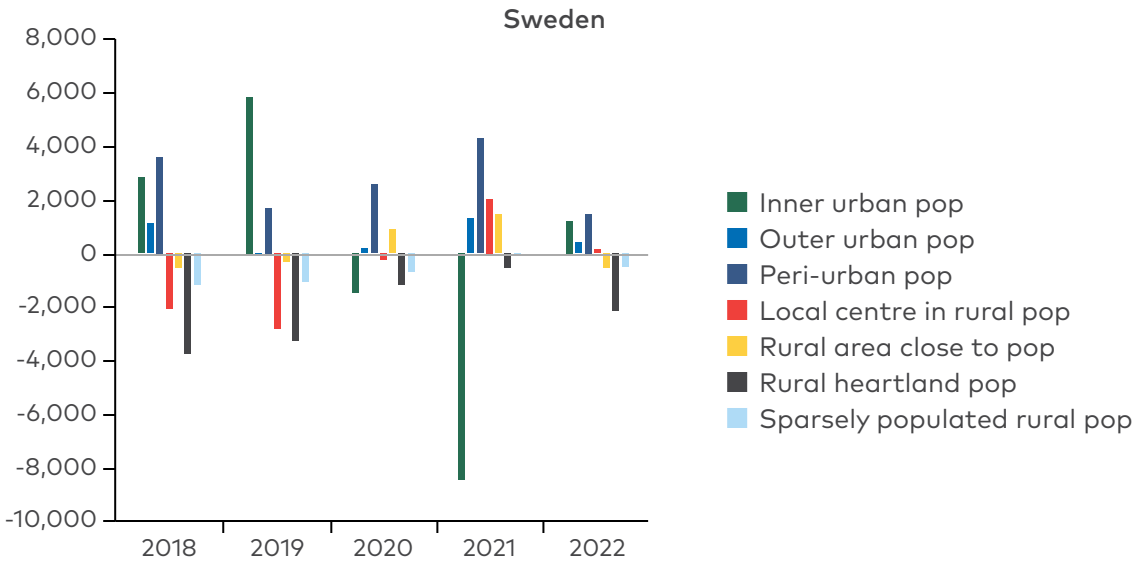


Figure 1.2: Internal net migration by type of municipality (2018–2022)
Note: Internal net migration is calculated as the difference between the number of internal immigrants and internal emigrants. The municipal reform in Norway in 2020 meant that the urban-rural typology could not be applied for 2018 and 2019
Source: NSIs

Figure 1.2 reveals interesting differences and similarities across the Nordic countries. In Denmark, Finland and Sweden, the inner urban areas experienced strong population gains from internal migration during the pre-pandemic years. This pattern is most pronounced in Finland, where all other municipality categories – with the exception of peri-urban areas in 2019 – saw negative internal net migration. In Denmark, outer urban areas also registered positive internal net migration, while in Sweden, peri-urban areas benefitted in both years. In all three countries, the more rural municipality categories (including local centres in rural areas, rural areas close to urban centres, rural heartlands and sparsely populated areas) recorded negative internal net migration.

During the pandemic, this pattern changed, and internal net migration in inner urban areas turned negative. Sweden was the first to experience this shift in 2020, and Denmark, Finland and Norway followed in 2021. The decline was least pronounced in Finland. In all four countries, internal migrants began opting for suburbs, towns or rural areas close to cities.[8] However, the exact migration patterns differ between the Nordic

8. This trend has also been observed in other countries, including Germany, the Netherlands and France (Vogiazides and Kawalerowicz 2022).

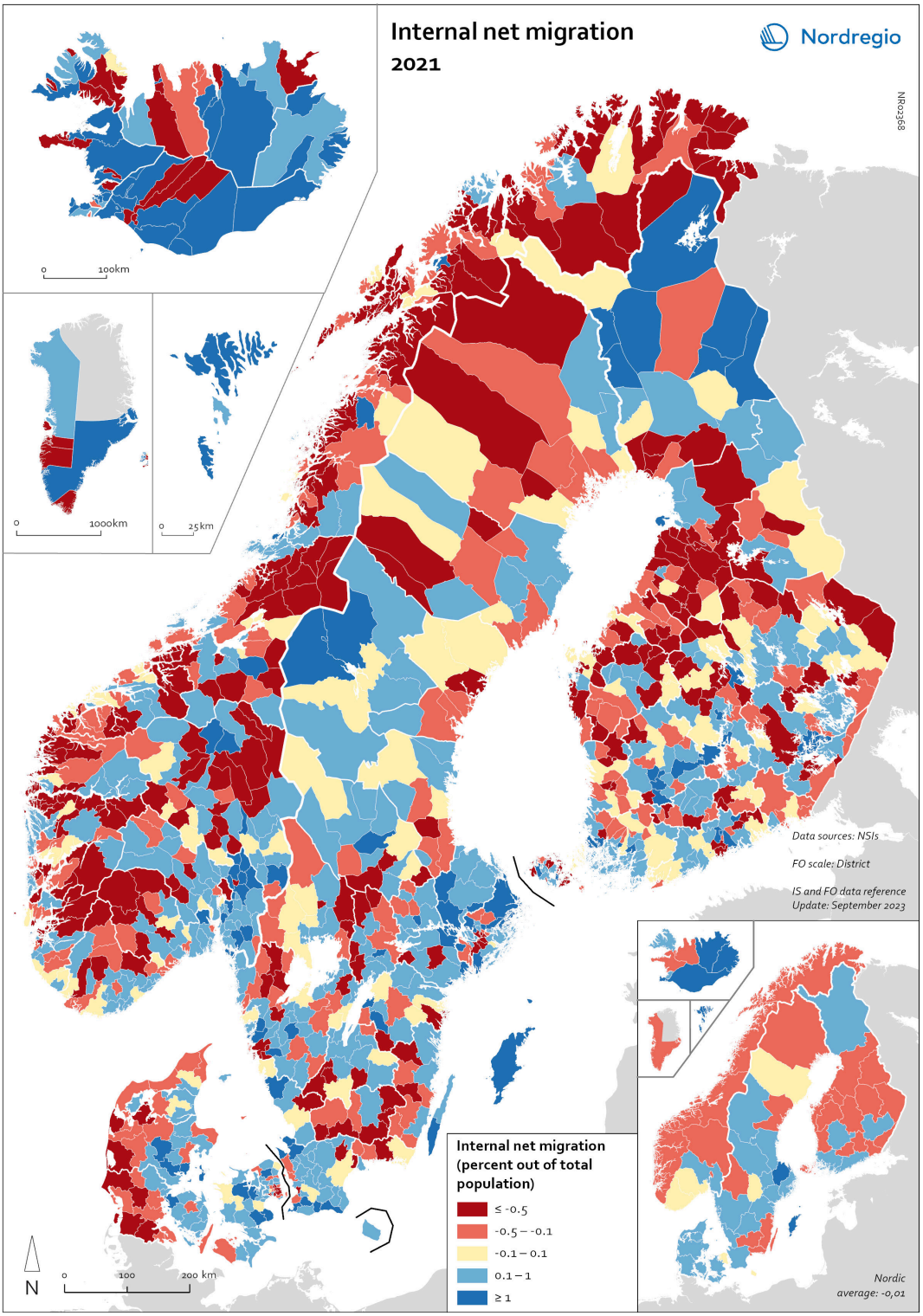
countries. In Denmark, outer urban areas and rural areas close to urban centres saw the largest population gains via internal migration in 2021. In Finland and Norway, outer and peri-urban areas registered positive internal net migration (in Norway, even rural areas close to urban centres), while in Sweden, peri-urban areas gained most. In all four countries, internal migrants avoided both the inner urban areas and the most remote and sparsely populated areas during 2021.

After the pandemic, in 2022, these patterns changed again, with internal net migration to inner urban areas turning positive in Denmark, Finland and Sweden, but not in Norway. Nonetheless, with the exception of Finland, some patterns seen in 2021 continued. In Denmark, outer urban areas and rural areas close to urban centres still experienced positive net migration. In Sweden, internal net migration remained positive in outer urban areas, local centres in rural areas and peri-urban areas, with the latter registering the highest internal net migration numbers. In Norway, net migration to inner urban areas remained negative, as internal migrants favoured outer urban and peri-urban areas, as well as rural areas close to urban centres. It remains to be seen whether internal migration patterns will return to those of the pre-pandemic years or whether suburbs, towns and rural areas close to cities will remain attractive to internal migrants in the Nordic countries in the years to come.

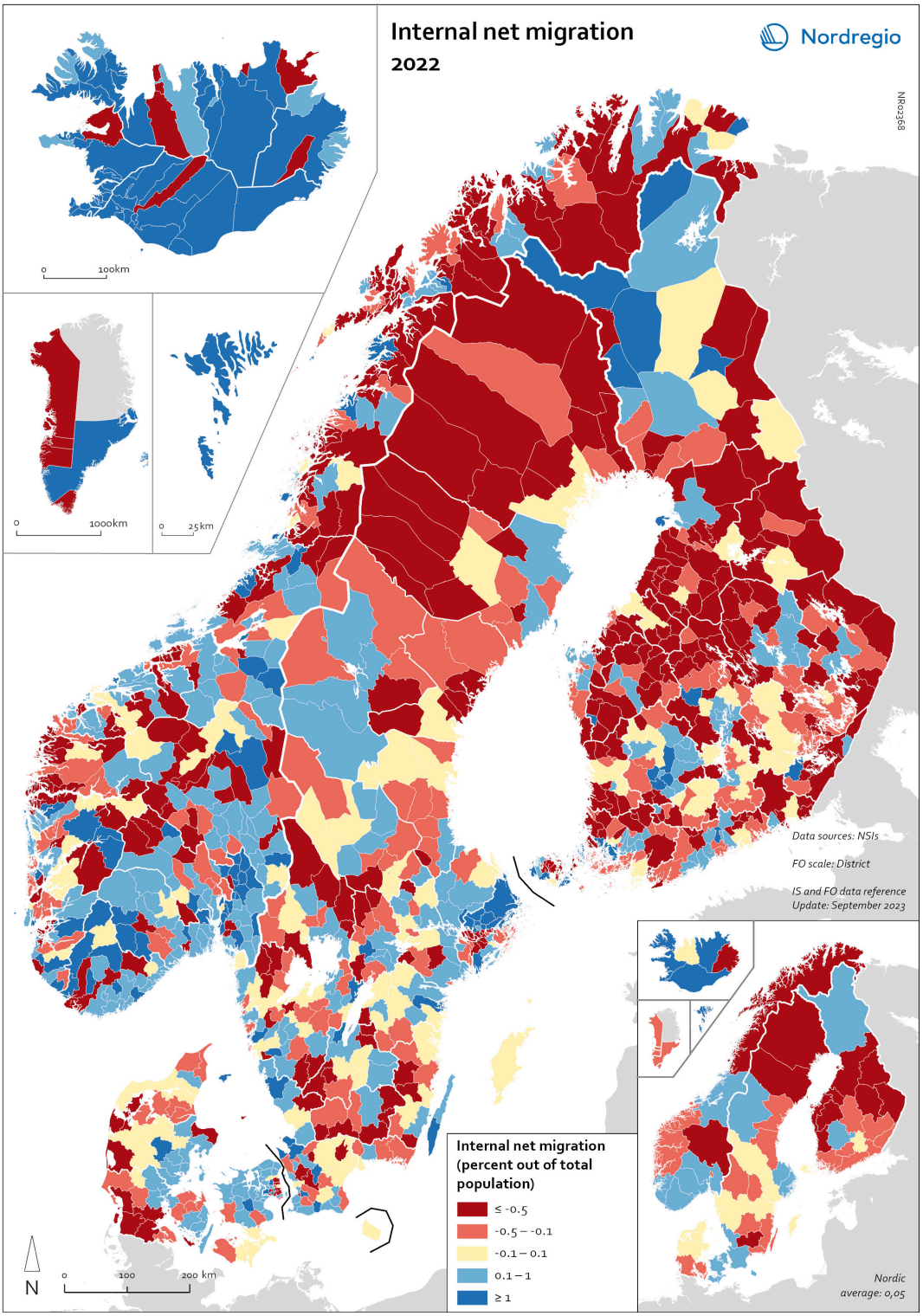
Iceland has experienced different internal migration trends compared to the other Nordic countries. Throughout the five-year period shown in the figure, both inner urban areas and sparsely populated areas registered net internal migration losses. In outer urban areas and rural heartlands, net internal migration fluctuated around zero, while the remaining three municipality types experienced net internal migration gains.

The trends in Figure 1.2 are shown at an aggregate level, as they group municipalities by category. As such, the figure masks variations in migration patterns across individual municipalities. Map 1.3 allows for a more fine-grained analysis by presenting annual net migration as a percentage of the total population in each municipality in 2021 and 2022. A comparison of the two maps reinforces some of the insights provided by Figure 1.2.

In 2021, internal net migration was positive (indicated by shades of blue) or at least balanced (shown in yellow) in many of the municipalities in central and northern Sweden and in central and eastern Finland – areas that traditionally were more likely to lose population due to internal migration (Heleniak 2022b). Conversely, several municipalities in the capital regions – such as Stockholm, Oslo and Copenhagen – exhibited negative internal net migration. In 2022, some of these patterns reversed, but several municipalities across the Nordic Region, including in more remote and rural areas, continued to register positive internal net migration.



Map 1.3a: Internal net migration by municipality, in per cent of total population (2021)
Source: NSIs



Map 1.3b: Internal net migration by municipality, in per cent of total population (2022)
Source: NSIs

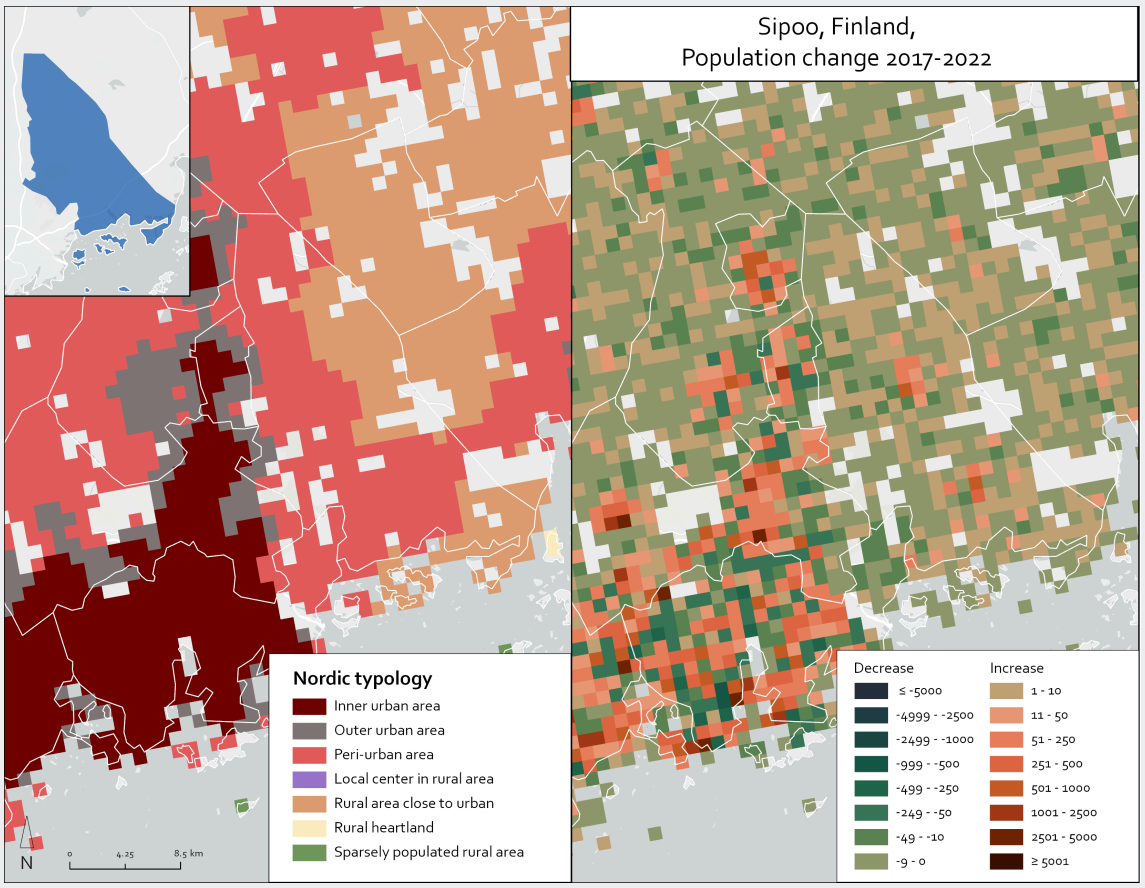
Box 1.2: Analysis of population changes within municipalities, based on the Nordic urban-rural typology

The Nordic urban-rural typology and population data at the 1 × 1 km grid level can also provide more detailed insights into pre- and post-pandemic population changes. Grid-level data from three reference years (2008, 2017, 2022) is available to illustrate changes at local level, which cannot be observed via more aggregated data at the municipality level. Here, we focus on the latter two years.

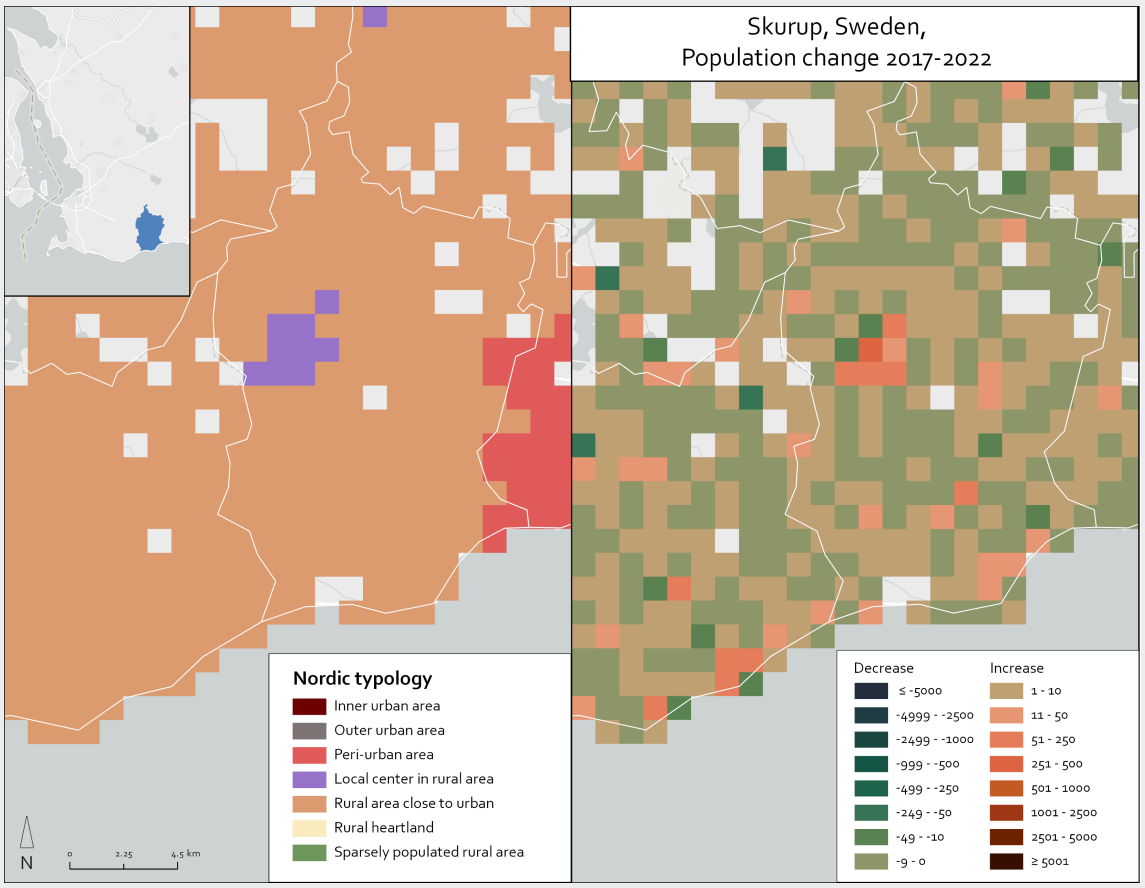
To illustrate the benefits of analysing population changes at grid level, we look at three different Nordic municipalities: Sandefjord in Norway, Sipoo in Finland, and Skurup in Sweden. All three have recorded population growth in recent years. Based on their characteristics, Sipoo is classified in the typology as a peri-urban area. It is part of the Helsinki metropolitan region, approximately 30–35 km from the capital. Skurup is a local centre in a rural area, located in Skåne County and part of the Greater Malmö region. Sandefjord is an example of an inner urban area located in southern Norway, approximately 120 km south of Oslo. As shown in Table 1.3, almost the entire population of Skurup is classified as living in a local centre in a rural area or rural area close to urban area. In Sipoo, most people live in peri-urban areas. Sandefjord has a somewhat different profile in that the largest share of the population lives in the inner and outer urban areas.

	Inner urban area	Outer urban area	Peri-urban area	Local centre in rural area	Rural area close to urban	Rural heartland	Sparsely populated rural area	Total population
2017								
Sipoo	881	878	15,383	-	3,658	-	-	20,805
Skurup	-	-	105	8,038	7,145	-	-	15,293
Sandefjord	24,691	23,079	13,932	-	1,183	-	-	62,885
2022								
Sipoo	887	823	17,395	-	3,910	-	-	23,018
Skurup	-	-	95	8,548	7,655	-	-	16,307
Sandefjord	25,913	24,097	14,803	-	1,221	-	-	66,034

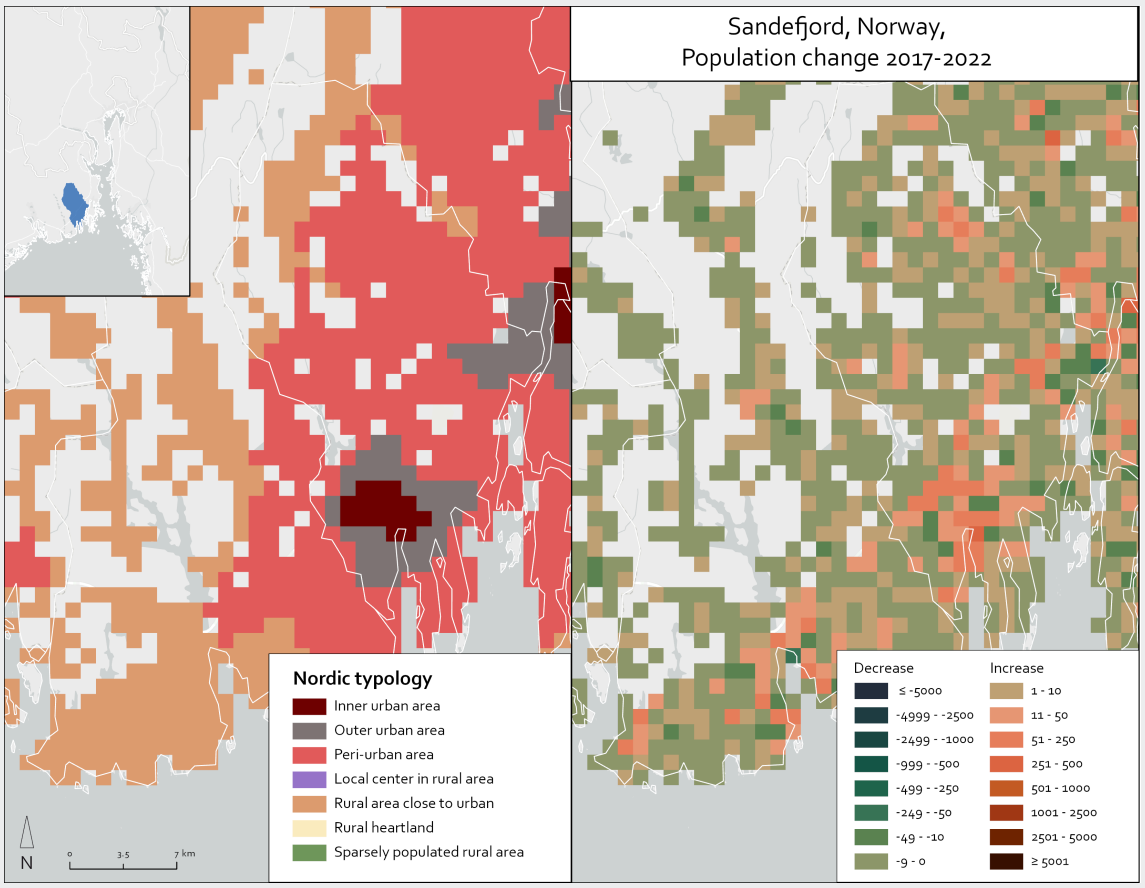
Table 1.3: Population in Sipoo, Skurup and Sandefjord by type of area, as defined in the Nordic urban-rural typology (2017 and 2022)



Map 1.4a: Population change in Sipoo, 2017-2022 at grid level



Map 1.4b: Population change in Skurup, 2017-2022 at grid level



Map 1.4c: Population change in Sandefjord, 2017-2022 at grid level

Table 1.3 and Maps 1.4 show that all three municipalities saw substantial increases in population between 2017 and 2022. During this period, population growth was most evident in Sipoo (10.6%), followed by Skurup (6.6%) and Sandefjord (5.0%).

It is noteworthy that population increase in Sipoo mainly occurred in peri-urban areas, while in Skurup, increases of similar size occurred in the categories 'local centre in rural area' and 'rural area close to urban'. In Sandefjord, population growth occurred in all types of areas, but the largest proportional increases were seen in the outer urban and peri-urban areas. The development seen in the three municipalities is in line with the findings of Stjernberg et al. (2024), showing that the mentioned categories in the Nordic typology were among those that saw a noticeable population increase at the Nordic level.

Concluding remarks

The COVID-19 pandemic had a complex and multifaceted impact on demographic developments in the Nordic Region. Nonetheless, as argued in this chapter, important and, to some extent, unexpected demographic trends also emerged after the Nordic governments lifted pandemic-related restrictions in 2022. Fertility rates dropped to low levels, while mortality levels remained high, leading to declines in life expectancy and natural population decline in the Nordic Region as a whole. Internal migration in the Nordic Region declined somewhat from the high levels of the pandemic years, but some of the trends witnessed during this period – such as increased popularity of suburbs and rural areas close to city centres – persisted.

These different demographic trends had varying effects on urban and rural areas in the Nordic Region. Urban areas continued to register natural population growth, thanks to the relatively high proportion of young people who live there. During the pandemic, urban areas lost population due to a net internal migration outflow, but this trend reversed in 2022 in Denmark, Finland and Sweden. Many suburbs, rural areas close to cities and smaller towns benefitted from internal migration during 2021 and 2022. By contrast, demographic trends appear to remain challenging in the most remote rural municipalities. The populations in these municipalities tend to be older, comparatively speaking, and many experienced natural population decline both during and after the pandemic. Rural heartlands and sparsely populated areas also continued to experience negative internal net migration during recent years, with more people moving to other parts of the country than moving in.

International migration – attracting immigrants from abroad to settle, including in more rural areas – is one potential solution to labour shortages in such areas. However, as discussed in Chapter 3, most migrants gravitate towards cities, which increases population diversity in urban areas. The diverging demographic trajectories of Nordic urban and remote rural areas have continued beyond the pandemic.

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CHAPTER 2:

FERTILITY DECLINE IN THE NORDIC REGION

AUTHOR: Timothy Heleniak
MAPS AND DATA: Karina Berbert, Anna Vasilevskaya and Timothy Heleniak



The Nordic countries provide generous benefits to families and children. These include long paid parental leave, inexpensive childcare and individual-based taxation, all of which make it less attractive to divide work and care along gender lines. These policies make it conducive for people to have and raise children and to combine childrearing with careers. The main aim is to promote gender equality and get more women into work (Andersson 2020; Hellstrand, Nisén, Miranda, Fallesen, Dommermuth, Myrskylä 2021). It appears that other factors may be influencing the decision to have – or not have – children.

The Nordic countries have often been demographic forerunners, so current trends could be indicative of future trends in other countries. This chapter explores recent fertility trends in the Nordic Region, the factors influencing those trends, and the impact of the recent declines.

The next section provides an overview of recent fertility trends in the Nordic Region and a brief overview of theories that may explain variations in fertility levels. We then look at Nordic fertility trends in a wider European context. The next two sections break down fertility levels by region, by the mothers' socio-economic characteristics, and by birth order. The final section concludes with a discussion of the implications of low fertility.

Fertility trends in the Nordic Region

Total fertility rate is the most common measure of fertility at a given point in time. Substitute indicates for describes the number of children a woman would have during her childbearing years based on current age-specific fertility rates. A rate of about 2.1 children per woman is considered replacement level, i.e. the level necessary for a population to replace itself in the long run. Fertility rates above this level lead to population increase, as is the case in many low-income countries. Levels below this lead to population decline and ageing, as is the case in the Nordic countries and most countries elsewhere in Europe.

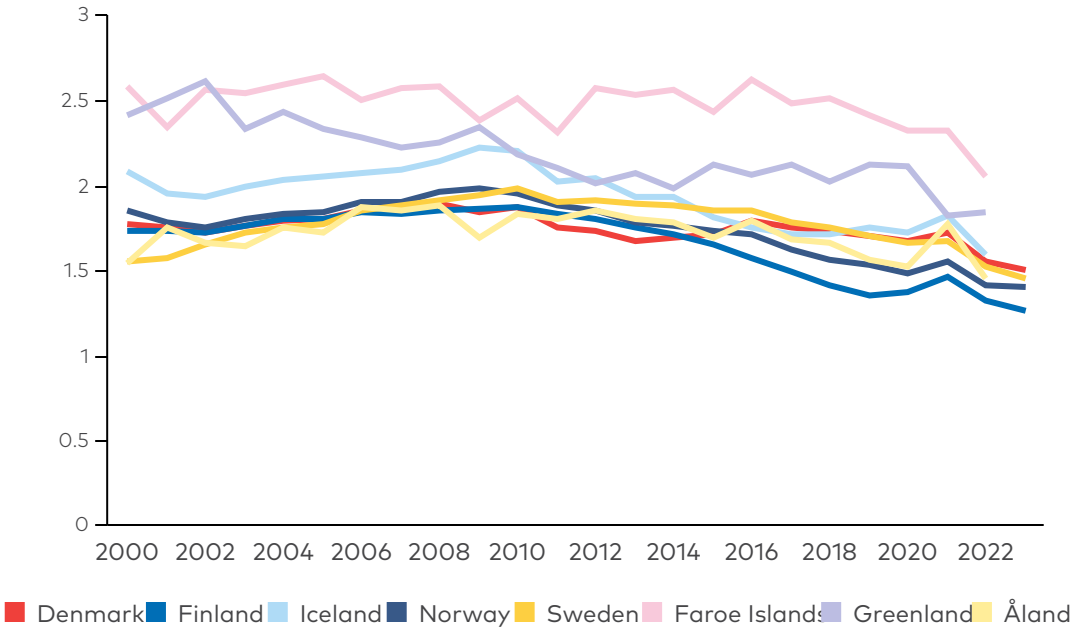


Figure 2.1: Total fertility rates in the Nordic Region (2000-2023)
Source: NSIs and Nordic Statistics Database

In *State of the Nordic Region 2020,* the fertility rates in Iceland, Norway and Finland were the lowest ever recorded (Karlsdottir, Heleniak, & Kull 2020). Since then, the total fertility rates for those three countries have fallen further to new lows, following brief and small increases during the COVID-19 pandemic (Figure 2.1). The fertility rates for Greenland, the Faroe Islands and Åland are also new lows. Similarly, the rates for Sweden and Denmark also fell in 2022 to near-record lows. Given these recent declines, all of the Nordic countries and autonomous territories have fertility rates below replacement level. The fertility rates for the five Nordic countries range from 1.59 children per woman in Iceland to 1.32 in Finland. For the three autonomous territories, the rates range from 2.05 in the Faroes to 1.45 in Åland.

The increases in fertility during the pandemic in 2021 were quite small and hardly constituted a 'baby boom'. They can be primarily attributed to the timing of births rather than a long-term increase in the number of them. One analysis of pandemic fertility trends in high-income countries concluded that the trends represented neither a baby boom nor a baby bust (Sobotka, Zeman, Jasilioniene, Winkler-Dworak, Brzozowska Alustiza-Galarza, László, Jdanov 2023). Rather, they were a short-term stall in the downward trend. Monthly fertility-rate data shows slight increases from January 2021 through November or December 2021 (Max Planck Institute for Demographic Research (Germany) and Vienna Institute of Demography (Austria), 2024). According to monthly data, after these small peaks at the beginning of 2022, fertility fell even further.

Fertility peaked in the five Nordic countries and Åland during 2008–2010. In those years, fertility rates ranged from 2.22 children per woman in Iceland to 1.87 in Finland. Fertility peaked earlier in Greenland at 2.61 in 2002 and in the Faroes at 2.64 in 2005. While there are some common trends and patterns regarding fertility across the Nordic Region, there are also some differences, with Iceland until recently experiencing higher fertility and Finland having lower fertility and more overall childlessness (Hellstrand, Nisén, Miranda, Fallesen, Dommermuth, Myrskylä 2021). This recent and almost uniform decline across the Nordic Region has puzzled demographers and is the subject of this chapter.

The total fertility rate is the number of children a hypothetical cohort of women would have in one year. Cohort fertility is the actual number of children women have during their reproductive years. Cohort fertility can only be measured when the women concerned complete their childbearing, roughly around 45 years of age. Period-specific measures such as the total fertility rate are influenced by the timing of births, which might, in turn, influence the number of births a woman has over her reproductive life. The total fertility rate goes down when women postpone having children and tends to underestimate ultimate cohort fertility (Nisén, Jalovaara, Rotkirch & Gissler 2022). Period-specific measures are also influenced by fertility intentions, i.e. the number of children women and couples see as desirable. Fertility intentions can be influenced by factors such as the state of the economy,

geopolitical events or personal characteristics, and can impact the timing or number of births, or both. While the total fertility rate has fluctuated and has recently exhibited a downward trend, this might not affect cohort fertility if women start having children at older ages.

The number of births in a year is a function of the total fertility rate and the age structure of the population – specifically, gender composition and the number of women of childbearing age. Following a small increase in the number of births in 2021, partially consisting of babies conceived during the peak of the pandemic, 2022 saw a decline to the lowest number of births in three decades, despite the increase in both the overall population and the number of women of childbearing age. In 2022, the number of births in the Nordic Region fell from 290,000 to 265,000, a decline of 8%. This fall in births, combined with a rise in deaths, resulted in deaths outnumbering births in the Nordic Region (see Chapter 1).

Various theories explain variations in levels of fertility across societies and over time, including the proximate determinants of fertility (Bongaarts 1978; Bongaarts 1982). According to this theory, indirect determinants – which may be, e.g. socio-economic, cultural or environmental – operate via a narrow set of direct determinants that influence levels of fertility. Demographers have identified four direct factors that can explain nearly all spatial and temporal variations in fertility levels. These are the proportion of women who are married or in a consensual union; contraceptive use and effectiveness; the prevalence of abortion; and duration of postpartum infecundability due to breastfeeding. For example, couples might continue to use contraception to postpone or reduce childbearing during periods of economic uncertainty or while pursuing other career or life goals.

Nordic fertility in a European context

In 2022, the total fertility rate for the EU was 1.53 children per woman (Figure 2.2). Iceland, Denmark and Sweden had fertility rates above this level, with the rate in Iceland being close to that of France, which has the highest rate in the EU. Fertility rates for Norway and Finland were below the EU average. Malta, Spain, Albania, Italy and Poland have the lowest fertility rates, below 1.3 children per woman, which demographers classify as 'lowest-low' fertility. The rate for Finland, at 1.32, is close to this level. The fertility rate for the EU has declined slightly, from 1.57 in 2010 to 1.53 in 2021. Notably, the Nordic countries have recorded some of the largest declines in fertility over the past decade (note the differences in the bars between 2010 and 2022).

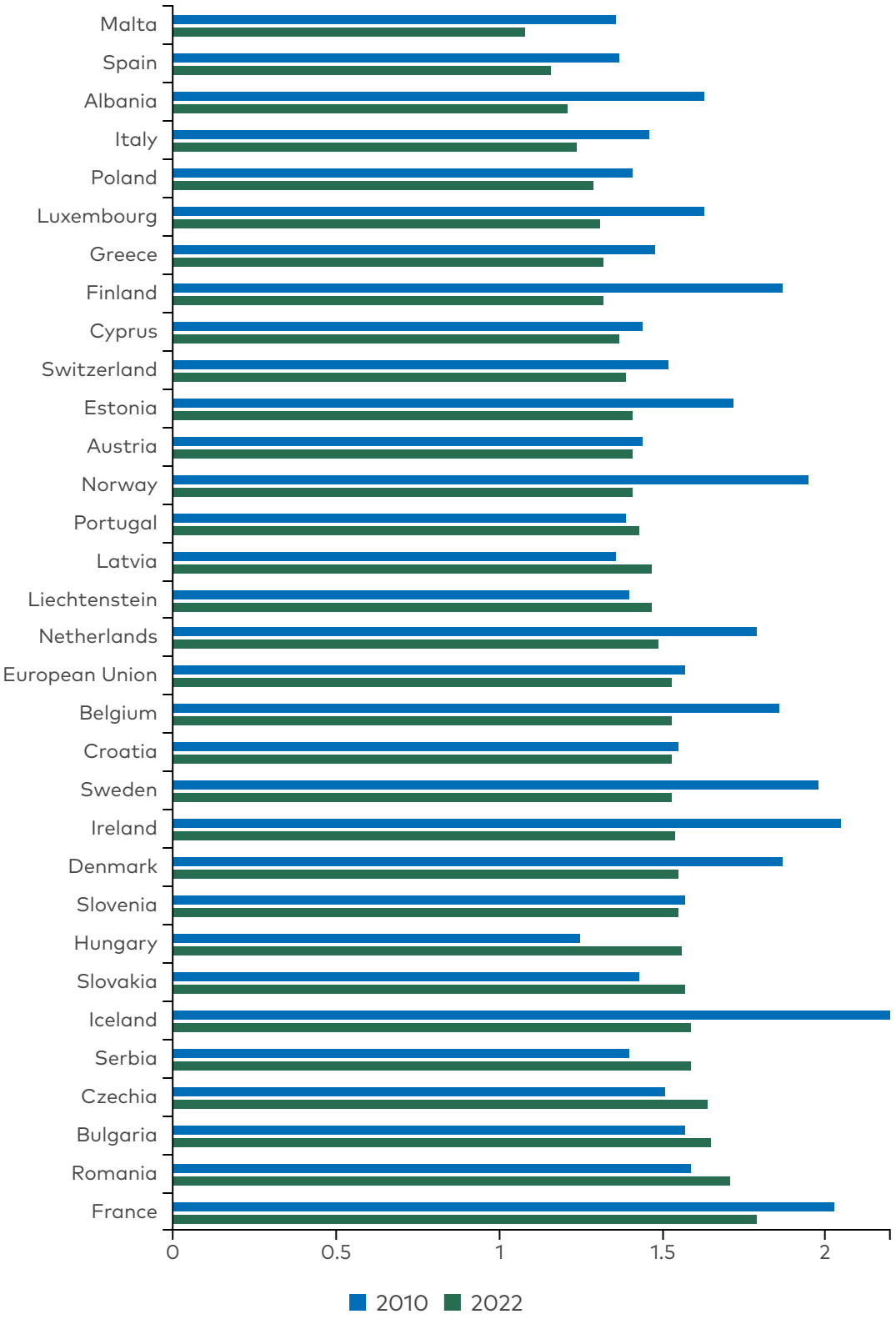
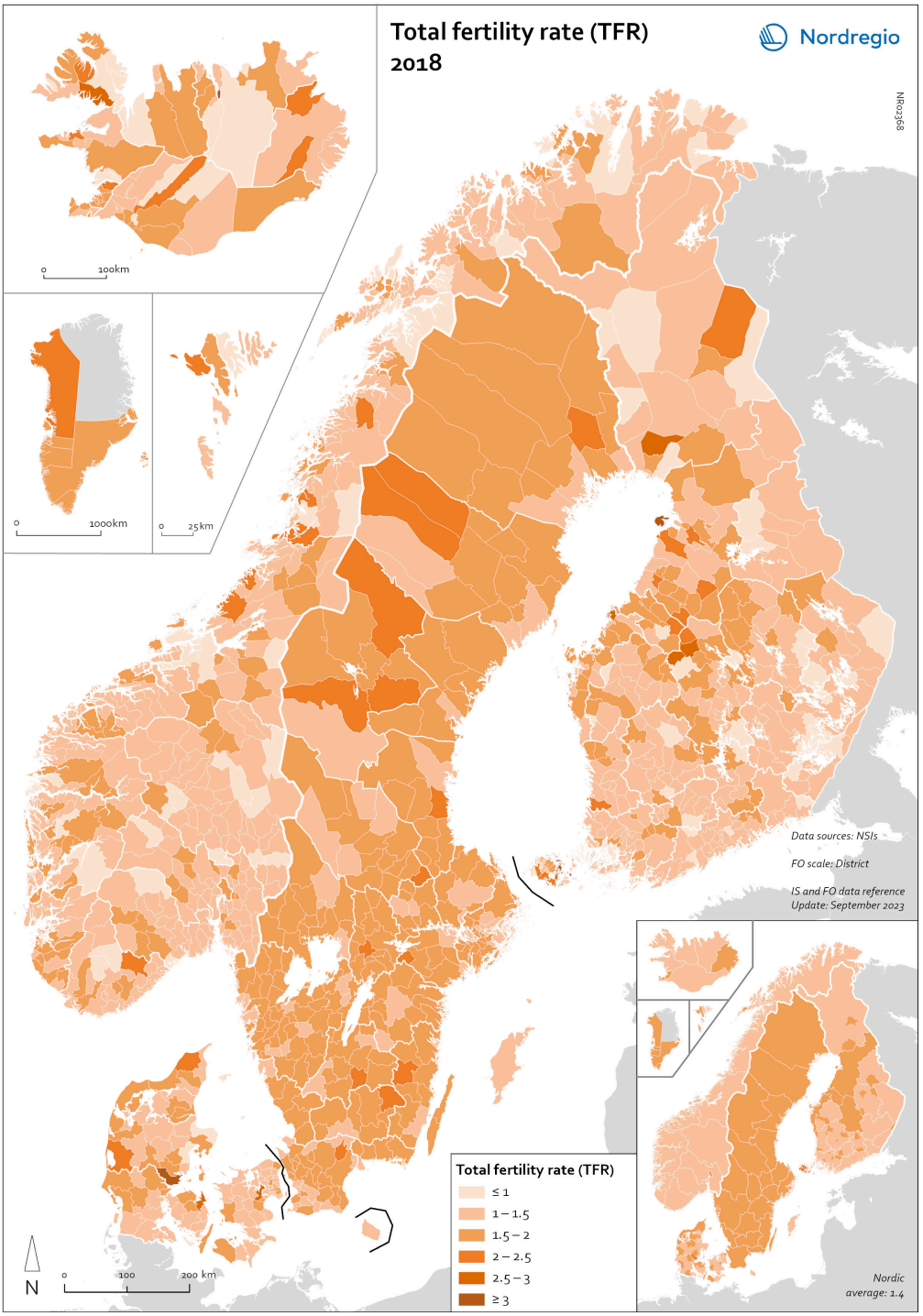


Figure 2.2: Total fertility rate in the Nordic countries and Europe, 2010 and 2022.
Source: Eurostat (2024).

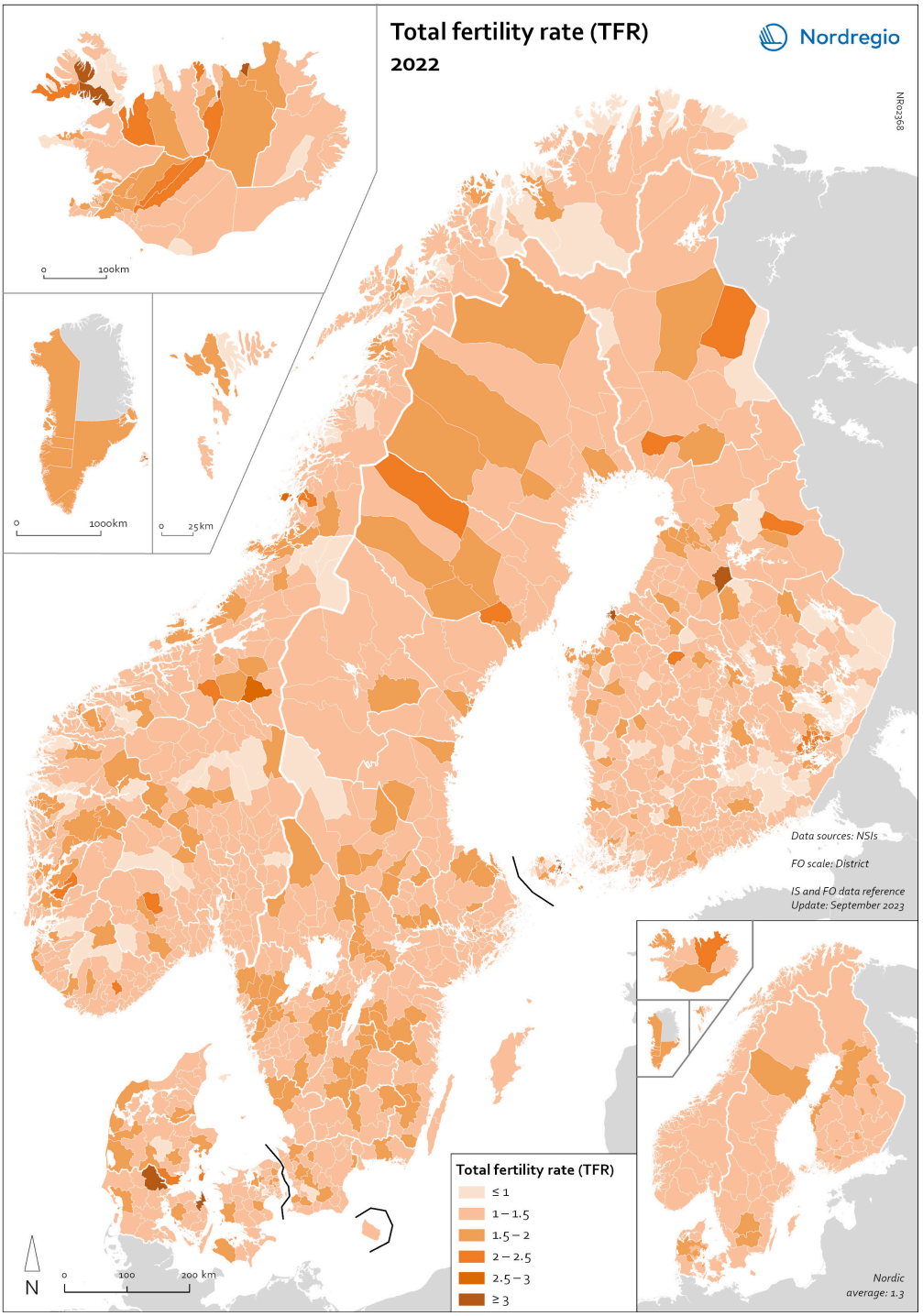
Most countries in Europe have had a pattern of a steadily declining number of births, despite stable fertility, due to ageing populations with fewer people of childbearing age. The number of births in the EU27 declined from 4,458,386 in 2010 to a low of 4,071,484 in 2020 (Eurostat 2024). This was followed by a small pandemic-era increase in 2021 before another decline to 3,885,585 in 2022. Since 2010, the number of births in Europe has declined by 13%. The Nordic countries have seen a similar decline due to larger falls in fertility combined with age structures that favour more births. In 2022, following the end of the pandemic, the Nordic countries registered a greater decline in the number of births than the rest of Europe.

Regional fertility trends

At the regional level, age and gender composition are indicative of past trends but also harbingers of future population change. In 2018, prior to the pandemic, most Nordic municipalities had fertility levels in line with their respective national levels. Most municipalities within Greenland and the Faroes had fertility rates above 1.5 children per woman, consistent with national rates of about 1.9 (Map 2.1a). Municipalities in Sweden and Denmark typically had fertility rates of 1.5 or higher, consistent with their national rates of 1.7. By contrast, many municipalities in Norway and Finland had fertility rates of 1.5 or lower. In 2022, fertility in most municipalities across the Nordic Region fell, reflecting the declines at the national levels, but the spatial pattern had become slightly more varied (Map 2.1b). In several municipalities in Norway, Finland and Sweden, fertility rates fell to less than 1.0 children per woman.



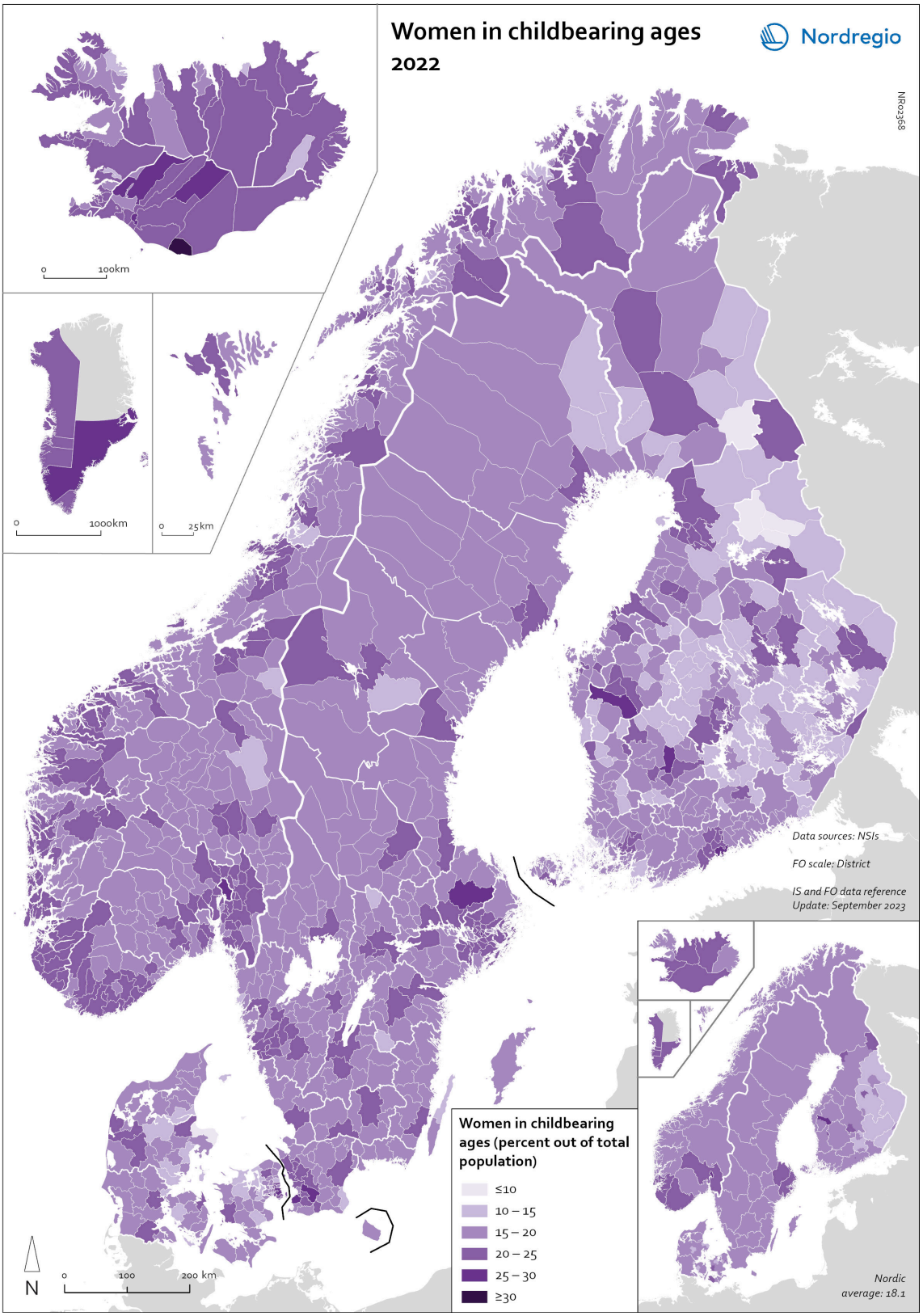
Map 2.1a: Total fertility rate (2018)
Sources: NSIs. Data on total fertility rates is not available at regional or municipal levels for all of the Nordic countries. The figures are estimated based on multiplying the general fertility rate by 30 (representing the typical number of reproductive years, between 15 and 45), assuming the general fertility rate is constant throughout this period. The general fertility rate is the number of births per woman during the childbearing years.



Map 2.1b: Total fertility rate (2022)
Sources: NSIs. Data on total fertility rates is not available at regional or municipal levels for all of the Nordic countries. The figures are estimated based on multiplying the general fertility rate by 30 (representing the typical number of reproductive years, between 15 and 45), assuming the general fertility rate is constant throughout this period. The general fertility rate is the number of births per woman during the childbearing years.

The drops in fertility resulted in declines in the number of births across most municipalities in 2022. Combined with increases in the number of deaths, this resulted in more deaths than births in many municipalities, consistent with trends at the national level (see Chapter 1). Most municipalities in Greenland, Iceland and the Faroes continued to have more births than deaths. However, in many municipalities in Denmark, Norway, Sweden and Finland, there were more deaths than births. Municipalities in and around the capital and other large cities continued to have more births than deaths due to their younger age structures and higher number of women, relatively speaking. Meanwhile, many municipalities in northern or peripheral areas had more deaths than births due to low fertility and lower proportions of women of childbearing age (Map 2.2).

Within the Nordic countries, there are large differences between the municipalities in terms of age and gender composition. These are driven largely by differences in patterns of migration, with rural and peripheral regions losing people and southern and more urban regions gaining new residents. Migration is quite age-specific and primarily consists of outward migration by younger people of working age – which are also the years of peak fertility. It is also gender-specific, with more women than men migrating away from rural and peripheral regions. This results in a vicious cycle for population growth at the municipal level. Regions with older age structures are losing younger and more fertile people in the largest numbers, contributing to a low natural population increase – or, in many municipalities across the Nordic Region, situation of natural decrease where deaths exceed births. There is a high correlation between regions with small shares of women of childbearing age and natural population decline.



Map 2.2: Women of childbearing age, percentage of total population (2022)
Source: Nordic NSIs

At the national level, Greenland and Iceland have the largest shares of women of childbearing age (15–45 years), more than 20%. Next are Norway, Denmark and Sweden, with somewhat lower shares, 18–19%. The lowest share, less than 18%, is in Finland, where there have been more deaths than births since 2016. The Faroes and Åland both have shares of less than 17%. Municipalities in Greenland and Iceland follow the national trends, mostly with shares of women of childbearing age of 20–25%, although some are higher than 25%. In the other countries, municipalities in and around the capitals and other large cities have larger shares, 20% or higher. Most regions outside of the large cities have smaller shares, between 15 and 20%. Many regions in Finland have older populations, and these have shares of less than 10%. The lack of women of childbearing age, combined with those of childbearing age having so few children, means that there will be fewer births in these municipalities in the future, leading to further population decline.

Explaining the fertility decline

This section seeks to explain the fertility decline in the Nordic Region by breaking down births by age, education, nativity and other characteristics of women and mothers. It also examines births by parity and how the decline impacts cohort fertility. The Nordic countries remain at the forefront of many demographic trends and have rich statistical sources with which to analyse demographic processes. This section uses aggregate data to understand the fertility decline, alongside analysis by Nordic demographers working with the unique micro-data available in the national statistical offices' population registers. The demographers have found the overall decline in fertility during the 2010s somewhat puzzling, as there have been no economic shocks in this period, and the supportive social policy regimes have not changed.

As mentioned above, while there are some variations in fertility rates among regions and municipalities, changes at the regional level tend to follow national patterns. Thus, regional differences in fertility decline cannot explain declines at national level. Rather, the factors that influence fertility decline operate uniformly across regions within countries.

There has been a steady increase in the age at which women in the Nordic countries begin having children. In 1970, the average age of women at their first birth ranged from 21 in Iceland to 24 in Denmark, Sweden and Finland (Nordic Council of Ministers 2023). The average age at first birth has risen to 29 years in Iceland and 30 in the other Nordic countries (based on the most recent year for which data is available, i.e. 2021 or 2022). In most Nordic countries, women aged 30–34 now give birth to the largest number of children.

The differences in fertility by nativity are small. Fertility differences between native-born and immigrant women tend to narrow within one or two generations (Höhn, Andersson, Kulu & Campbell 2022). In Norway, the fertility rate in 2022 was 1.41 for all women, and 1.50 for immigrant women (Statistics Norway 2023). In Denmark in 2022, the fertility rate for all women was 1.55, for Danish women it was 1.61, for immigrant women from Western countries it was 1.22, and for immigrant women from non-Western countries it was 1.52 (Statistics Denmark, 2023). In Sweden in 2021, the fertility rate for all women was 1.67, for native-born women 1.62, and for foreign-born women 1.83 (Statistics Sweden 2022). Fertility rates among both native-born and foreign-born women have declined in parallel since the peak fertility rate in 2010, so these differences cannot explain the overall decline. The decline in fertility is taking place among women across educational levels, with slightly larger declines among lower-educated women (Hellstrand, Nisén & Myrskylä 2022).

Among the demographic trends in which the Nordic countries have been at the forefront are the separation of marriage and childbearing and delays in both of them. While many men and women eventually marry, most cohabitate before having children. Registered cohabitation confers similar rights to marriage and has become widely socially accepted (Jónsson A. K., 2021). It has been argued that the fact that fewer people are cohabitating or marrying may potentially explain the recent decline in fertility. However, this has not been found to be the case. Rather, studies have found the decline is partly attributable to increasing union instability, with the primary driver being postponing or delaying fertility within cohabiting unions (Hellstrand, Nisén & Myrskylä 2022).

The consensus among Nordic demographers is that the recent decline in fertility is driven by an increased propensity of childlessness (Jónsson 2023), as indicated by the decline in the number of first births (Ohlsson-Wijk & Andersson). This factor explains most of the decline in period fertility since 2010 – from 57% of the decline in Iceland to 91% in Denmark. The decline is most prevalent among women under 30 (Hellstrand et al. 2021). Figure 2.3 clearly shows the decline in first-birth intensity since 2010, interrupted by small increases during the pandemic. Finland has experienced the largest drop in first-birth intensity and to the lowest level.

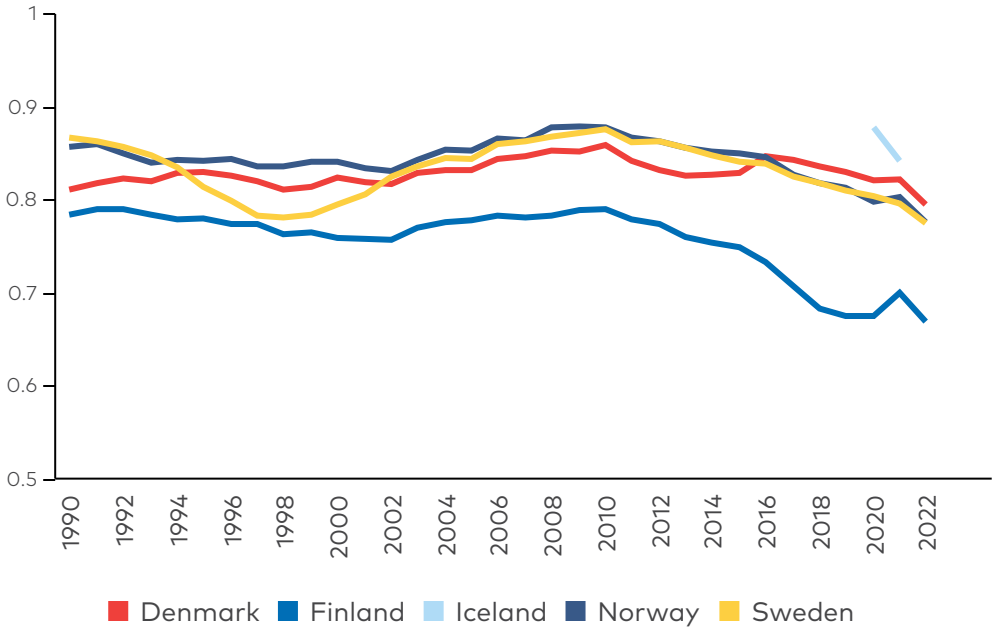


Figure 2.3: Total fertility rate for first births (1990-2022)
Source: Max Planck Institute for Demographic Research (Germany) and Vienna Institute of Demography (Austria) (2024)

Among women born in 1988 (i.e. those who turned 30 in 2018), childlessness ranged from 42% in Iceland to 52% in Finland, with the other countries at 47–48%. While it remains possible that some women will have children later in life to compensate for childlessness at younger ages, this also limits the recuperation possibilities. It is difficult for older couples to conceive, either naturally or using assisted reproductive technologies (Skirbekk 2023). This results in couples being involuntarily childless or having fewer children than they intended.

Cohort childlessness varies among the Nordic countries. For the cohort of women born in 1978, who are now 46 and may be considered to have completed their childbearing, the percentage who never had a child is 11% in Iceland, 12% in Norway, 13% in Denmark, 14% in Sweden and 21% in Finland (Max Planck Institute for Demographic Research (Germany) and Vienna Institute of Demography (Austria) 2024). For women in Åland, the childless share was 22%. These levels have remained relatively steady since the cohorts of women born in the late 1950s.

As emphasised, a decline in period fertility does not necessarily imply lower cohort fertility. Cohort fertility has remained relatively stable for cohorts of women born between 1950 and 1978 who completed their childbearing between 1995 and 2023.

Women in Iceland had the highest cohort fertility, at 2.3 children per woman, while the others had a cohort fertility of 1.9. Using a mix of methods, cohort fertility projections show a decline for cohorts of women born between 1975 and 1988, i.e. those who will complete their childbearing over the next decade (Figure 2.4). Cohort fertility is expected to stabilise or decline in Denmark and Sweden and sharply decline in Iceland, Norway and Finland (Hellstrand et al. 2021). Finland is projected to decline to a low of around 1.6 children per woman, below the threshold of 1.75 that demarcates very low cohort fertility. While previous declines were driven by lower levels of higher-order birth parity, the projected declines are the result of increased childlessness. The Nordic countries have long been at the forefront of demographic trends, and this tendency towards smaller cohorts and increased childlessness may, therefore, be a harbinger of things to come for other countries.

The decline in cohort fertility challenges the assumption that the generous social welfare support package, including long and generous parental leave and inexpensive childcare, contributes to high levels of cohort fertility (almost two children per woman). Finland, in particular, seems to be an outlier among the Nordic countries, with projected lower cohort fertility and increased childlessness (Hellstrand, Nisén & Myrskylä 2020).

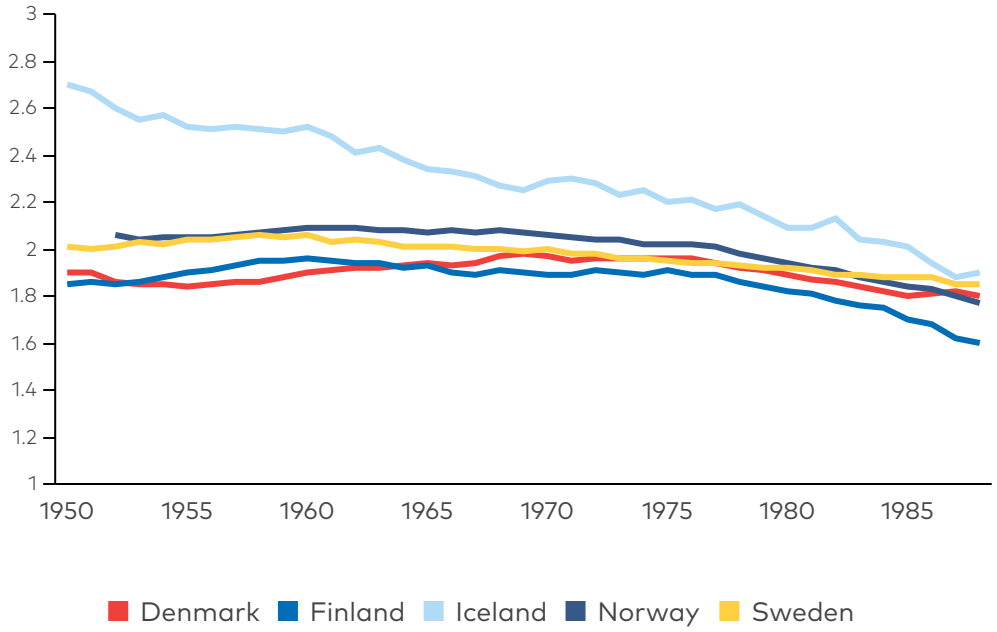


Figure 2.4: Cohort fertility for women in the Nordic countries (1950–1988)
Sources: Hellstrand et al. (2021); Max Planck Institute for Demographic Research (Germany) and Vienna Institute of Demography (Austria) (2024).
Data is actual to 1978 and projected for 1979 to 1988. There is a wide confidence interval for the cohort projections. The freeze rate is also shown, in the middle of the range of projections.

Concluding remarks

The question remains – why are women and men choosing to forego parenthood? In the past, declines in fertility could be explained by factual circumstances that impacted the decision to become parents or not. In an attempt to explain the current downturn, demographers theorise that the decline is driven by perceived uncertainty and subjective visions of the future (Neyer et al. 2022). Economic uncertainty is usually controlled through either individual agency or government intervention. Perceived risks such as climate change, war, terrorism and global pandemics are perceived to be uncontrollable, and it is difficult to incorporate these considerations into fertility projections. Note that children born today are very likely to be alive in 2100 when climate conditions are projected to be very different.

Current trends towards smaller cohorts will inevitably lead to population decline in the Nordic countries. Population decline can be defined in various ways, but government efforts to counter decline have been shown to have only limited impact, and those that are effective are only temporary. As mentioned, Nordic family policies target gender equality and are not explicitly pro-natalist. In other words, low fertility seems to be here to stay.

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CHAPTER 3:

THE NORDIC GEOGRAPHY OF DIVERSITY

AUTHOR: Timothy Heleniak
MAPS AND DATA: Karina Berbert, Anna Vasilevskaya and Timothy Heleniak



Introduction

Until recently, the Nordic countries were quite homogeneous – almost everyone was native-born, spoke the same language and shared similar cultural values. Due to high levels of immigration in recent decades, they have become increasingly diverse. With deaths exceeding births, the population increase in the Nordic Region is now primarily due to more people migrating into the countries than leaving them. This is a continuation of an ongoing trend observed over the past three decades, whereby two-thirds of the population increase in the Nordic Region is attributable to there being more immigrants than emigrants and only one-third from births outnumbering deaths.

Globally, 3.6% of the world's population are migrants, according to the UN's definition of a person residing outside their country of birth (United Nations Department of Economic and Social Affairs, Population Division 2020). The proportion of foreign-born people is significantly higher in the Nordic countries, which has contributed to increasingly diverse populations in terms of ethnicity, race, language and culture.

The existence of both 'old' and 'new' minorities reflects a shift in the countries of origin of people migrating to the Nordic countries. Older migrant groups primarily consisted of persons from the other Nordic countries, with small numbers coming from elsewhere in Europe, mostly Western Europe (the EU15, prior to several expansions this century). Newer migrant groups consist of persons from the EU accession countries, as well as from countries outside of Europe, with many of the latter arriving as refugees.

Migration is a challenging social and policy issue that has led to contentious debates spanning the political spectrum. On the one hand, there are those who favour immigration because it brings in people with new ideas and skills, who can help alleviate labour shortages and slow population ageing. On the other hand, there are those who oppose immigration because they perceive that newcomers are difficult to integrate and could become a burden on both society and public finances. This chapter does not address this debate but shows patterns of diversity at national and regional levels resulting from increased immigration.

The successful integration of these new migrants is important not only for the migrants themselves but also for the Nordic societies to which they have migrated. There are many aspects to integration, including spatial. The opposite of integration is segregation, in which new migrant groups cluster with their ethnic kin and do not mix with native-born Nordic groups. While some of this is natural, prolonged exposure to segregated neighbourhoods or areas can become a barrier to successful integration and lead to the development of parallel societies (Massey & Denton 1993). There are numerous examples of marginalised migrants in large urban areas across the Nordic Region (Righard, Johansson & Salonen 2015).

The rest of this chapter consists of four sections. The first discusses how identity is measured in the Nordic countries. The second and third sections analyse trends in diversity at national and regional levels. The conclusion discusses the implications of increased diversity.

Measuring identity

The Nordic countries' national statistics offices do not classify people by race or ethnicity. Most ceased collecting statistics on race following the misuse of this kind of data in World War II. The census in Sweden has not included a question on race since 1945 (Axelsson 2010). However, Sweden does collect data on individuals' places of birth and for some people, their parents' and grandparents' places of birth. Whether a person is native-born in a Nordic country is not a perfect indicator of their ability to integrate into Nordic society. However, country of birth has shown to be a robust indicator of integration potential (Gustafsson & Österberg 2022). Based on this, and for reasons of data availability, country of birth is used as an indicator of diversity and segregation, not only at national level but in various different geographic contexts.

Spatial segregation is important because it is closely linked with social segregation. The place where someone grows up and lives has a profound influence on their life chances. Immigrants who cluster in neighbourhoods with others from their country or region of birth often become isolated from the larger Nordic society to which they have migrated. While being surrounded by ethnic kin upon arrival can be a source of assistance and comfort, if spatial segregation persists it can also lead to

parallel and unequal societies. It can also lead to delays/difficulties in learning Nordic languages, which has been shown to be a crucial factor for advancing in the labour market.

National diversity trends

Due to high levels of immigration and low fertility among the native Nordic populations, the shares of foreign-born populations have increased substantially in recent decades and have now reached historically high levels. Sweden has long had a higher foreign-born population than the other Nordic countries, and its share of residents born outside Sweden has increased from 9% to 20% since 1990 (Figure 3.1). In 1990, in both Norway and Denmark, foreign-born residents accounted for 5%. This has since increased to 17% in Norway and 14% in Denmark, the latter of which has had more restrictive immigration policies. Finland had the smallest share of foreign-born residents in 1990, just 1%, but that has now increased to 9%. For decades, even centuries, Iceland was an extremely homogeneous and closed population, so the recent rise in the foreign-born population is quite a departure. The share of foreign-born residents in Iceland has increased from 4% in 1998 to 22% currently. Much of this is due to high levels of labour migration and increased tourism, with many new migrants working in this sector. The levels for Sweden and Iceland, where around one in five residents are foreign-born, are among the highest in Europe, and are higher than traditional migration destination countries such as the United States.

Among the autonomous territories, Greenland's share of foreign-born residents has been steadily declining as native Greenlanders have taken over roles in administration previously held by Danes. In the Faroes, the proportion of foreign-born residents has been steadily increasing since the end of the fisheries crisis in the mid-1990s, and now stands at 16%. A similar increase has been observed in Åland, where one in five persons are foreign-born (outside of Finland). Including those born in mainland Finland, 38% of the population were born somewhere other than Åland. Like the increase in the foreign-born population, the percentage of those born outside Åland has steadily increased since 2000, when it was 27%.

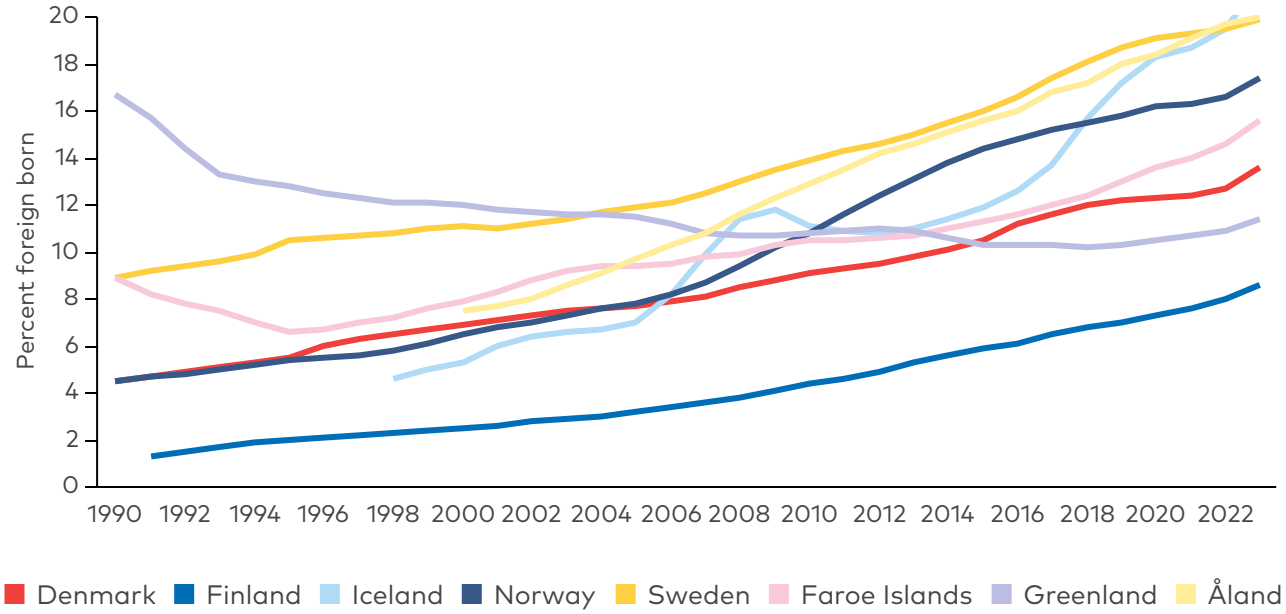


Figure 3.1: Foreign-born population in the Nordic countries (1990–2023)
Source: Nordic Council of Ministers (2024)

Analysis of more detailed data on the foreign background of people and their ancestors provides a more nuanced view of the foreign-origin population beyond the binary perspective of native-born versus foreign-born.[9] Note that the Nordic countries define and tabulate data on immigrant or foreign populations differently, and no attempts at comparability have been made across the countries.

Iceland: Iceland collects detailed data on the foreign-born population, including place of birth and parents' place of birth. People are first divided into those with no foreign background (i.e. both they and their parents were born in Iceland) and immigrants. Another category is those born abroad with an Icelandic background. Immigrants are further categorised into first- and second-generation. There is a further disaggregation of people born in Iceland with one foreign-born parent and those with two foreign-born parents.

In 1996, 95% of the population had either no foreign background or had been born abroad but had an Icelandic background (Figure 3.2). Only 2% of the population were immigrants, and less than 1% were both born abroad and had at least one parent born abroad. As such, two decades ago, Iceland was still a relatively homogeneous society, and those with foreign backgrounds accounted for only a small segment.

Most recently, in 2023, the proportion of the population with no foreign background and those born abroad with an Icelandic background had declined to 75% of the total population. The proportion of immigrants had increased to 18%, and second-generation immigrants to 2% (from almost zero in 1996). Thus, the total share of the population with some foreign background is now 27% of the Icelandic population – a significant increase from 20 years previously, when it was just 5%.

9. This section is an updated and condensed version of a previous report (Heleniak, From Migrants to Workers: International migration trends in the Nordic countries, 2018).

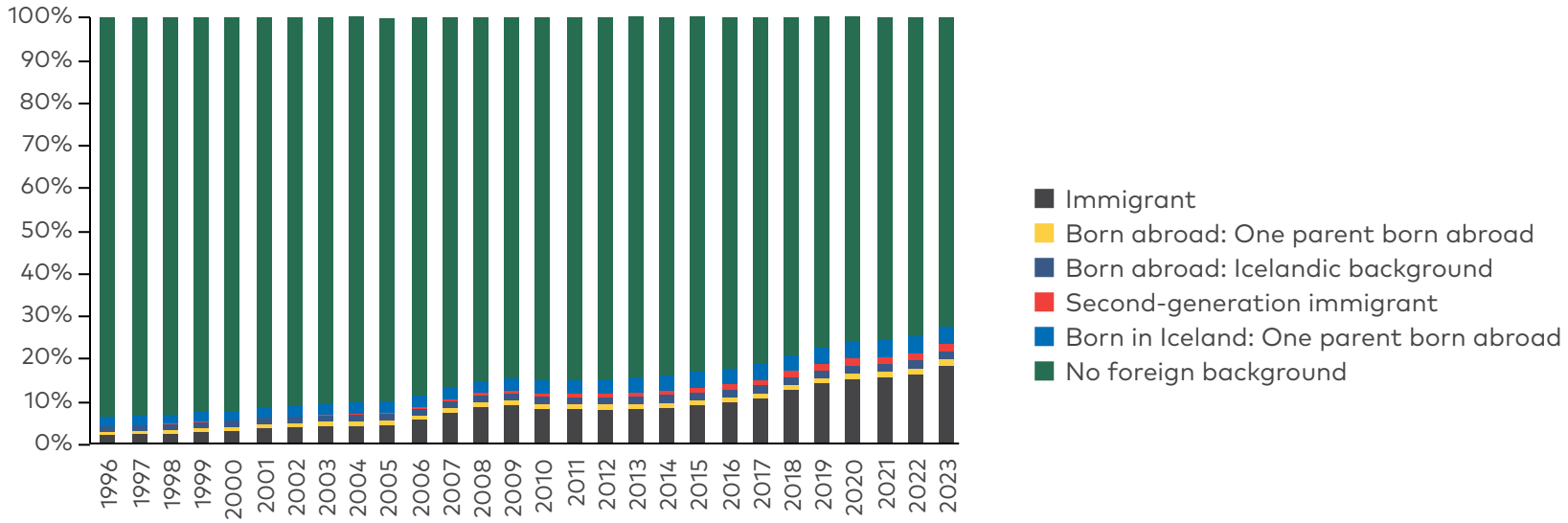


Figure 3.2: Population of Iceland by origin, 1996–2023 (percentage of total population).
Source: Statistics Iceland (2024)

Norway: Norway records the most detailed data on the immigrant population. It classifies people based on their place of birth (i.e. native- or foreign-born), as well as the places of birth of their parents and grandparents. This results in 30 different categories of foreign-born people based on three generations. However, not all of these categories are significant or useful in a policy-making context. Of the 30 categories, only five consist of more than 100,000 people (Andreassen, Dzamarija & Slaastad 2013).

In 1990, Norway remained rather homogeneous, with 93% of the population native-born with two native parents and four native grandparents, and immigrants accounting for only 7% (Figure 3.3). Of these, 4% were first-generation immigrants without a Norwegian background, while 2% were people born in Norway to foreign-born parents.

Given the high level of immigration in recent decades, in 2024, the percentage of the population who are native-born with two native parents and four native grandparents declined to 72%, while the immigrant population increased to 28%. In 2024, 17% were first-generation immigrants without a Norwegian background, while 6% were people born in Norway to foreign-born parents.

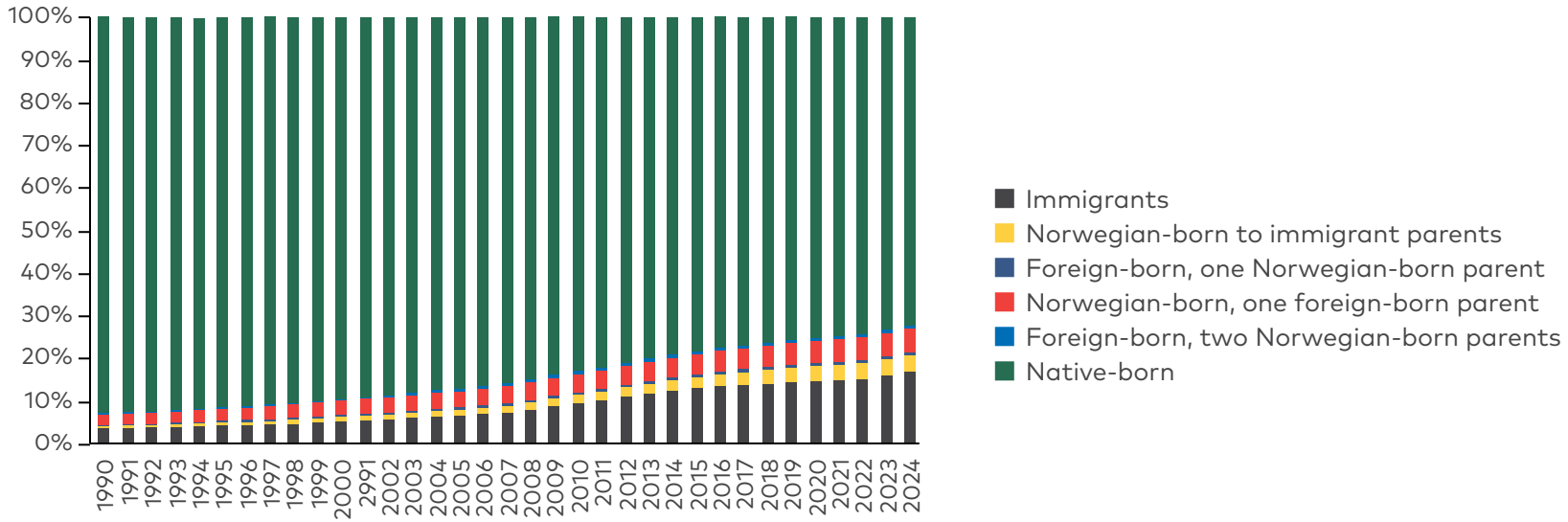


Figure 3.3: Population of Norway by immigration category, percentage of total population (1990–2024)
Source: Statistics Norway (2024)

Sweden: For Sweden, the data presented cover foreign- and native-born residents (Figure 3.4). Native-born residents are then further divided into those with two foreign-born parents, those with one parent born in Sweden and one foreign-born parent, and those with two parents born in Sweden.

A shorter time series is available for Sweden, but even so there has been a remarkable increase in the foreign-origin population. In 2002, 12% of the population were foreign-born, and 3% were second-generation (born in Sweden with two foreign-born parents). Six per cent were born in Sweden, with one parent born in Sweden and one foreign-born parent. Seventy-nine per cent of the population had no foreign background, as they and both of their parents were born in Sweden.

By 2022, the share of foreign-born residents had increased to 20%. The proportion of people born in Sweden with two parents born in Sweden declined to just 65% of the population. The proportion of second-generation immigrants increased to 7% of the total population from 3% in 2002.

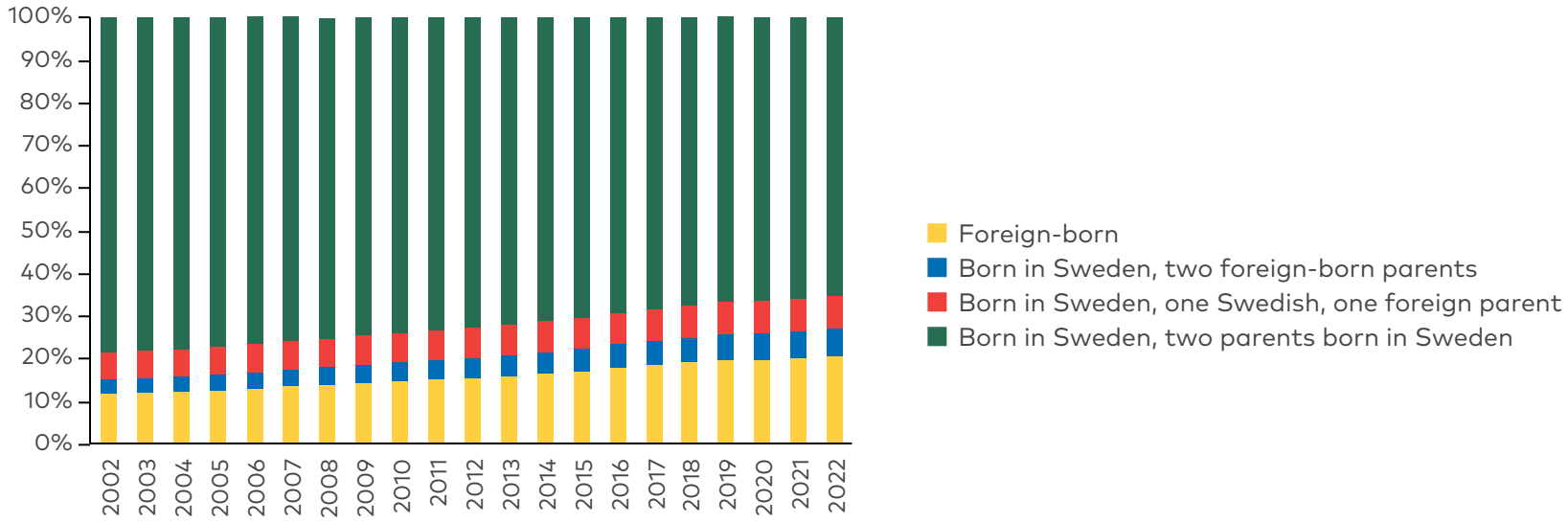


Figure 3.4: Population in Sweden with Swedish/foreign background, percentage of total population (2002–2022)
Source: Statistics Sweden (2024)

Finland: In Finland, data is collected on people with a Finnish background and people with a foreign background. These are disaggregated into those born in Finland and those born abroad. This allows for further disaggregation into first-generation immigrants (people with foreign backgrounds born abroad) and second-generation immigrants (people with foreign backgrounds born in Finland).

Finland has had lower levels of immigration than the other Nordic countries and, therefore, has a smaller foreign-origin population. However, there has still been a considerable increase in the number of those of foreign origin in the country since 1990 (Figure 3.5).

In 1990, only 1.3% of the population were born abroad, half of whom were of Finnish origin. In that year, Finland remained an extremely homogeneous country, with 99.2% of the population having a Finnish background and only 0.8% having a foreign background. By 2022, the proportion of foreign-born people had increased to 9% of the population, and the proportion with a foreign background had increased to 9%. Of those with a foreign background, 8% were born abroad (i.e. first-generation immigrants), while 2% were second-generation immigrants born in Finland.

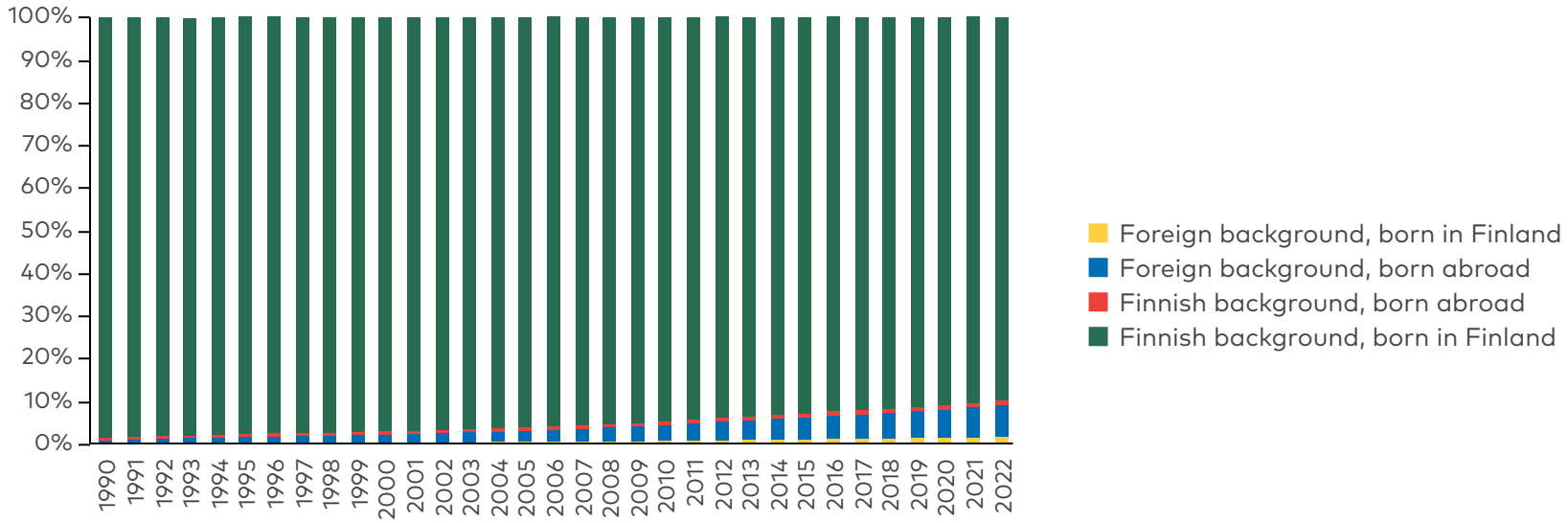


Figure 3.5: Population in Finland by foreign background and place of birth, percentage of total population (1990–2022)
Source: Statistics Finland (2024)

Denmark: Denmark provides data on the population by place of birth, which is then further disaggregated into immigrants and their descendants. The Danish definition of an immigrant is a person born abroad whose parents are both foreign citizens or who were both born abroad. A descendant is defined as a person born in Denmark whose parents are either immigrants or descendants with foreign citizenship. A person of Danish origin – regardless of their place of birth – has at least one parent who is a Danish citizen who was also born in Denmark.

The enormous increase in the population of foreign origin in Denmark since 1980 is evident. In 1980, only 3% of the population were of foreign origin – 2.6% were immigrants and 0.4% were the children of immigrants (Figure 3.6). At that time, Denmark was still an extremely homogeneous society, with 97% of the population being of Danish origin. The size of the population of foreign origin has steadily increased as a proportion of the Danish population. In 2024, 16% of the population is of foreign origin – 12% are immigrants born abroad, and 4% are descendants of immigrants.

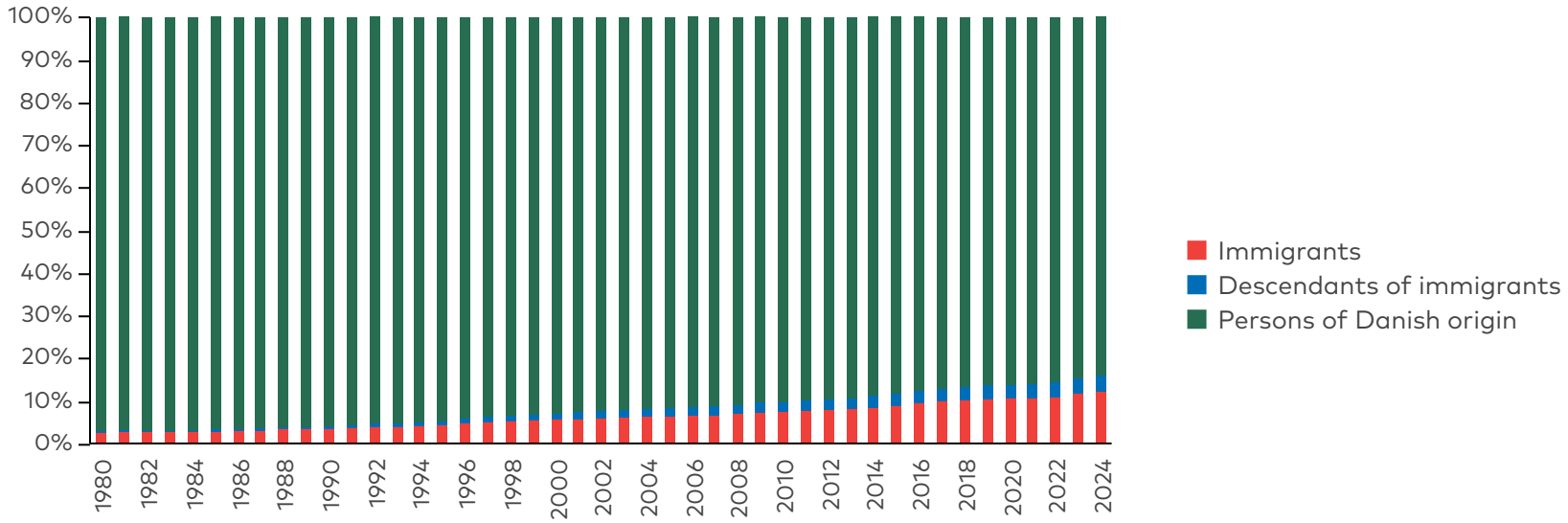
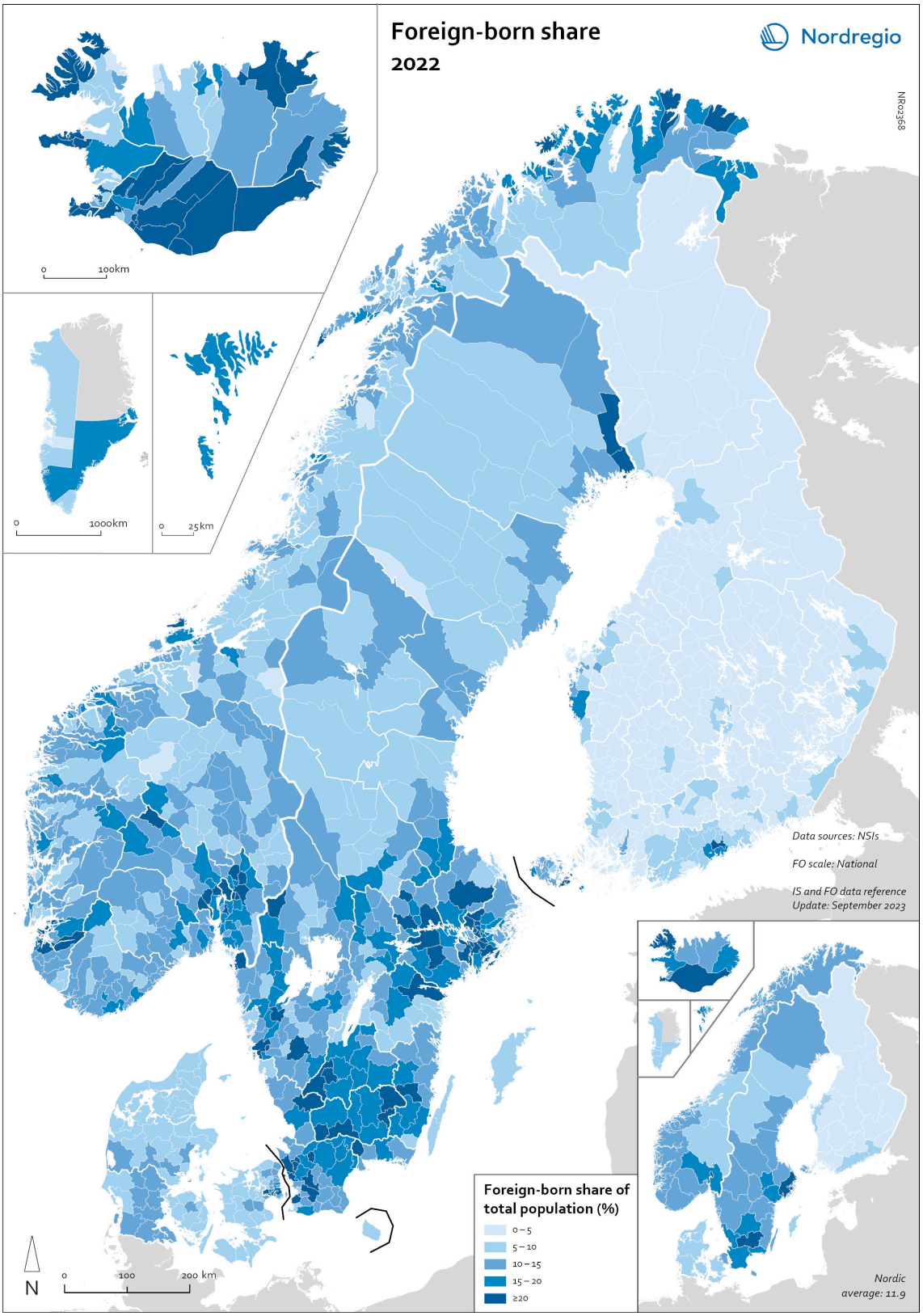


Figure 3.6: Population of Denmark by origin, percentage of total population (1980–2024).
Source: Statistics Denmark (2024).



Map 3.1: Foreign-born by municipality (2022)
Source: Nordic NSIs

Regional patterns of diversity

In line with the overall increase in foreign-born populations in the Nordic countries, there have been increases in nearly all regions and municipalities. However, the new foreign-born populations are not spread evenly across the Region. This section presents three measures of the geographic distribution of foreign-born populations at regional and municipal levels: percentage of foreign-born (Map 3.1); change in foreign-born populations (Map 3.2); and the largest minority group (Map 3.3).

Foreign-born: Iceland has the highest share of foreign-born residents in the Nordic Region, at 22% (Map 3.1). Mýrdalshreppur, the municipality in the south containing the village of Vik, has the largest foreign-born population, at 58%. It is also the only municipality in the Nordic Region with a majority non-native population. Other municipalities in the south, some of which are quite small, also have significant foreign-born populations. Reykjanesbær, near Keflavik airport, is the largest municipality with a sizeable foreign-born population, at 29%. In Reykjavíkurborg, 20% of the population is foreign-born, about the same as the national average. Many municipalities with tiny populations in the Westfjords and the north also have small shares of foreign-born persons.

In 2022, 17% of the population of Norway were foreign-born. Municipalities with high shares of foreign-born include Oslo (28%), several suburban municipalities near Oslo, and a few in the north – which have small overall populations but large numbers of foreign workers employed in the fishing industry.

In Sweden, 20% of residents are foreign-born, with large differences in distribution by region and municipality. At the regional level, Stockholm has the highest share of foreign-born persons (27%), followed by Skåne, including the city of Malmö (24%). The percentage of foreign-born persons in Västra Götaland, which encompasses Gothenburg, is the same as that of Sweden as a whole. The regions with low shares of foreign-born persons are in the north of the country – Dalarna, Gävleborg, Västernorrland, Jämtland, Västerbotten and Norrbotten – plus the island of Gotland, which has the lowest share (9%).

There are no municipalities in which foreign-born persons are the majority, but there are several with quite high foreign-born populations and which are illustrative of the segregation of the population. Botkyrka (44%) and Södertälje (43%), south of Stockholm, have the highest foreign-born shares, followed by Haparanda on the border with Finland, which functions as one city with neighbouring Tornio. There are several other municipalities in Stockholm county with a concentration of migrants, including Sigtuna, Järfälla, Upplands Väsby, Solna and Sundbyberg. In Stockholm city, more than one-quarter (26%) are foreign-born. In Malmö, the share is more than one-third (36%), while in Gothenburg, 29% are foreign-born. Many of the

smaller municipalities outside these large urban areas, in the north and west of the country, have much smaller shares of foreign-born residents (less than 10%).

In 2022, 8% of the population of Finland were born abroad. Municipalities with higher shares of foreign-born residents include suburbs of Helsinki, such as Vantaa (21%) and Espoo (19%). In Helsinki, 16% of the population was born outside of Finland. Of the other large cities, 12% of the population of Turku were born abroad, as were 9% of Tampere. More northern and eastern municipalities have small shares of foreign-born persons, including several with entirely native-born populations.

By 2022, the share of Denmark's population who were foreign-born had risen to 13%. In several suburban municipalities around Copenhagen, the share of foreign-born residents was 15% or higher. In Copenhagen as a whole, the share was 21%.

In 2023, 88.6% of Greenland's population were born in Greenland, 7.3% in Denmark, and 4.1% elsewhere. Of the five regions in Greenland, Sermersooq, which includes the capital Nuuk, had the lowest share of native-born residents (82%), the highest share of Danish-born (11%) and the highest share born elsewhere (6%). In all of the other municipalities, 92% or more of the population were born in Greenland. In 2022, 15% of the population of the Faroe Islands were foreign-born. In Åland, 20% of the population were foreign-born in 2022. In the capital city of Mariehamn, 23% were born outside of Finland.

Change in foreign-born populations: The recent growth in foreign-born populations differs among the Nordic countries, regions and municipalities. Map 3.2 shows the percentage-point change in foreign-born populations by region and municipality between 2000 and 2022. During this period, much of both the absolute and percentage-point increases in the foreign-born populations took place in suburbs around the capital cities and other large urban centres. However, with few exceptions, every municipality across the Nordic Region saw increases in foreign-born populations.

In Iceland, the foreign-born population increased from 5% to 20%. The largest percentage-point increases in the foreign-born populations were in municipalities in the southwest, which had small populations and small foreign-born shares. Of the larger municipalities, Reykjanesbaer and the Capital Region had the largest absolute and percentage point increases.

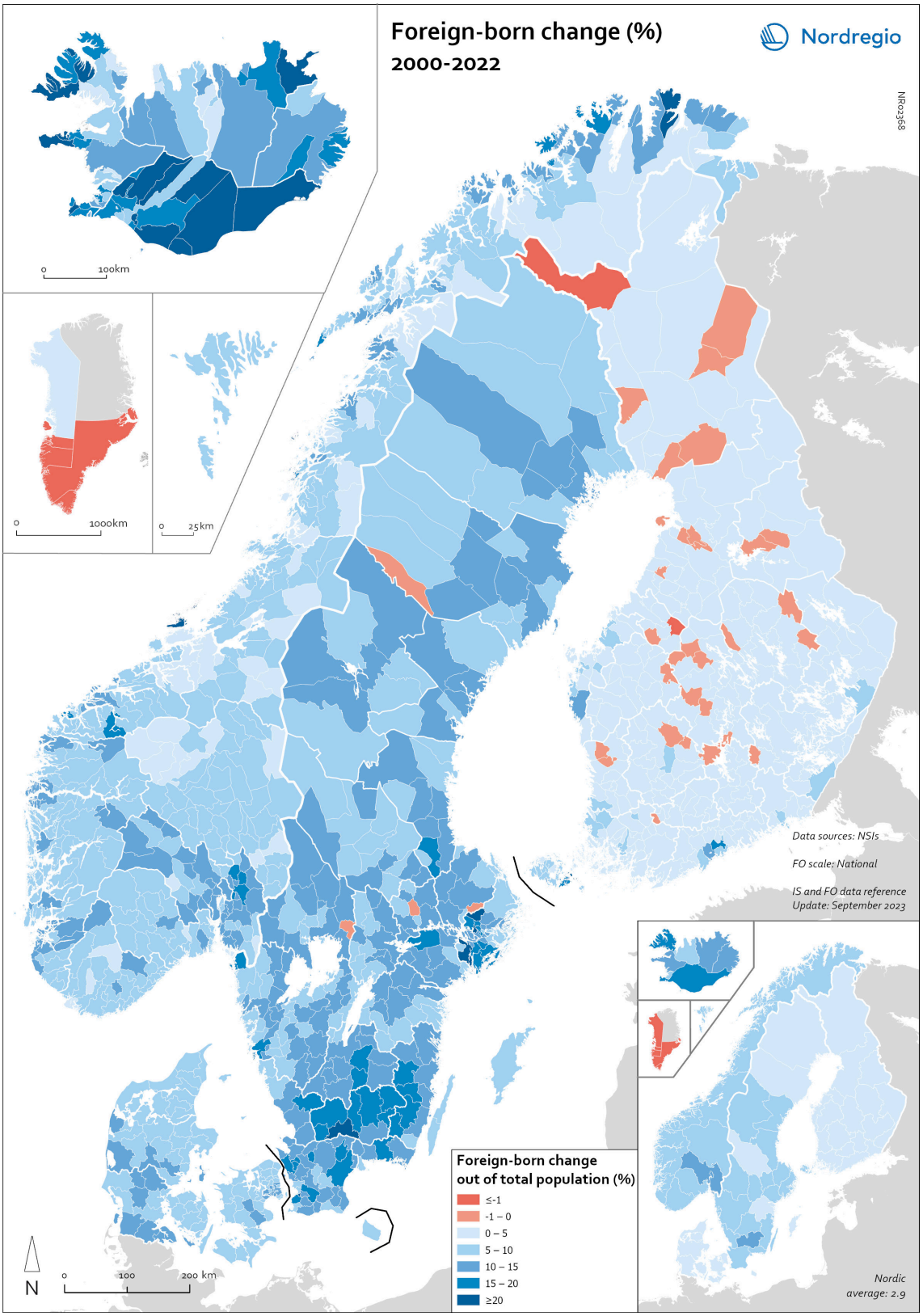
The foreign-born population in Norway grew from 7% to 17%. The municipalities with significant increases in foreign-born populations include several suburban areas near Oslo, as well as scattered municipalities elsewhere that had small foreign-born shares in 2000. The percentage of foreign-born residents in Oslo increased from 16% to 28% between 2000 and 2022. No municipalities experienced

a decline in foreign-born population during this period.

The share of foreign-born residents in Sweden increased from 11% to 20%. The largest percentage-point increases in the foreign-born populations occurred in suburban municipalities near Stockholm and in southern Sweden, as well as other large urban centres. Of the three large urban centres, Malmö had the largest percentage-point increase of foreign-born residents, from 23% to 36%. Gothenburg increased from 19% to 29%, while Stockholm had a smaller increase, from 19% to 27%. Smaller increases were seen in the northern and peripheral municipalities.

In Finland, the foreign-born share increased from 3% to 8%. The increases were concentrated in suburban municipalities near Helsinki, many of which had larger foreign-born populations. The share of foreign-born residents in Helsinki increased from 7% to 16%. Approximately two-thirds of municipalities outside of the larger urban areas saw either declines or small percentage-point increases in the share of foreign-born residents.

In Denmark, the foreign-born share increased from 7% to 13%. Like the other Nordic countries, the largest percentage-point increases in the foreign-born populations were in suburban municipalities near the capital. The percentage of foreign-born residents in Copenhagen increased from 16% to 21%.



Map 3.2: Change in the foreign-born population by municipality (2022)
Source: Nordic NSIs

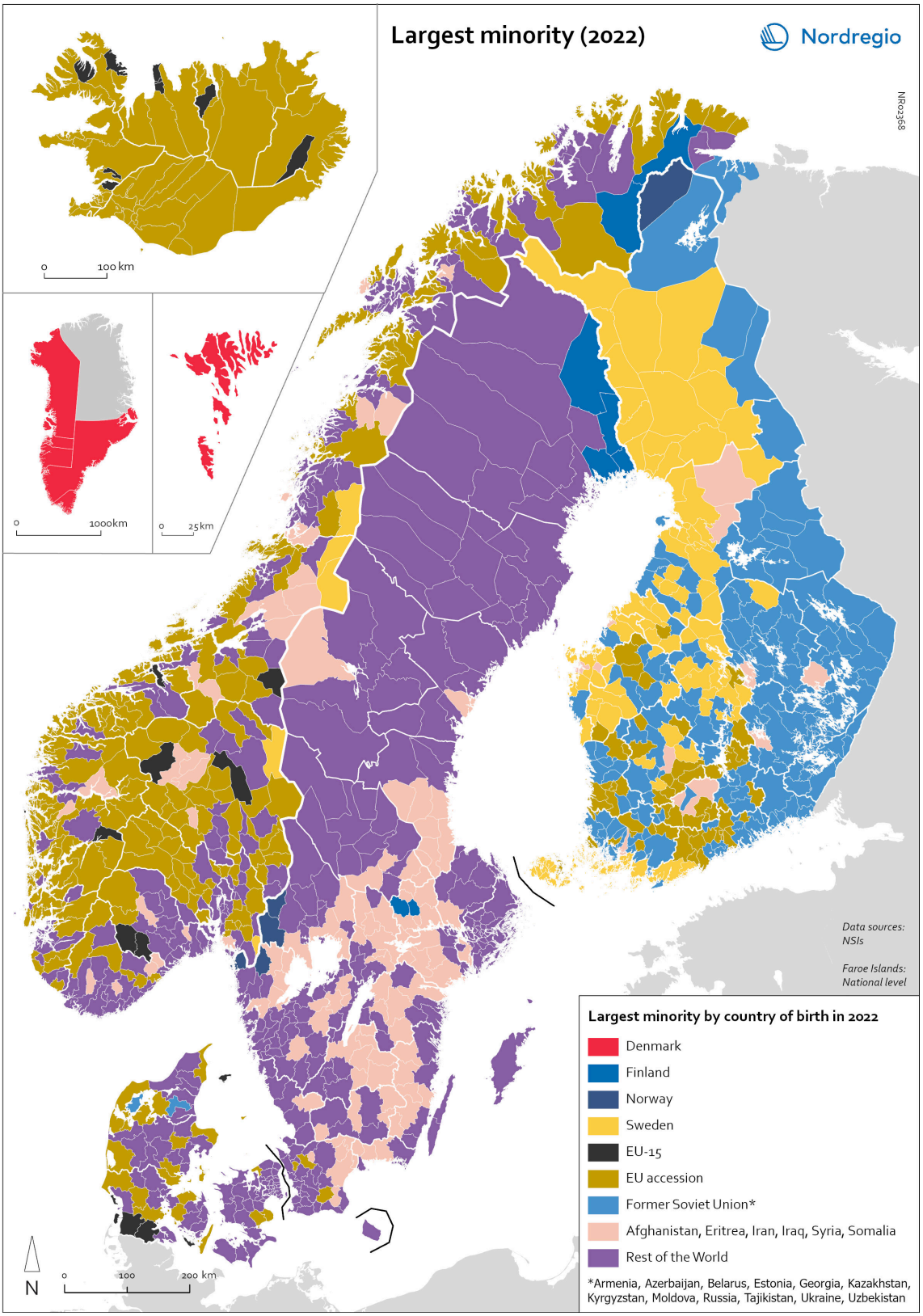
Largest minority group: Using country of birth as an identity marker reveals an interesting geographic pattern of minority populations at the municipal level. Map 3.3 shows the country of birth of the largest minority group in each municipality. Even with the increase in migration, native-born populations remain the largest group in each municipality (i.e. Swedish-born people are the largest group in every municipality in Sweden). They also constitute the majority in each municipality, with the exception of one small municipality with a majority-minority population.

For visual simplicity, countries of birth are grouped. The four large Nordic countries are shown separately. The EU15 countries and EU accession countries constitute separate groups. The countries of the former Soviet Union (minus the Baltic states) are another group.[10] Afghanistan, Eritrea, Iran, Iraq, Somalia and Syria together constitute a group of countries from which many of the migrants to the Nordic countries came as refugees over the past decade.

People born in Finland are the largest minority group in many regions near the Finnish border in northern Sweden, as well as a group of municipalities around Stockholm. In several border municipalities in Sweden, people born in Norway are the largest minority group. Swedish-born persons are the largest minority group in most municipalities in northern and western Finland (by percentage). People born in one of the EU15 countries form the largest minority group in southern Denmark, near the border with Germany, as well as a few other scattered municipalities in southern Sweden and Norway.

Following several EU expansions starting in 2004, many people from the EU accession countries have entered the Nordic countries as economic migrants. Persons from EU accession countries now constitute the largest minority group in nearly all municipalities in Iceland, many municipalities in southwest Norway, several in northern Norway, many in southern Sweden, just across the Öresund strait from Denmark, and numerous municipalities in southern Finland. In Iceland, 10% of the population is from one of the EU accession countries. The largest group are from Poland at 6% of the population of Iceland. This is a remarkable increase in the non-native population, given that as recently as 1998, only 4% of the population of Iceland were foreign-born.

10. The map shows the largest minority group in 2022, the latest year for which data was available for all of the Nordic countries. The war in Ukraine began in February 2022, so the data does not include those who left Ukraine and arrived in the Nordic countries as asylum seekers.



Map 3.3: Largest minority by country of birth (2022)
Source: Nordic NSIs

In Finland, 94,121 persons were classified as being born in the former Soviet Union (FSU). Of these, 63,885 or two-thirds listed the FSU as their place of birth without specifying the successor state; 20,499 said they were born in Russia, and 5,367 were from Ukraine. The second-largest group of FSU-born persons were those from Estonia, 47,198 – however, these are classified in the EU accession group. Persons born in the former Soviet Union are the largest minority group in most municipalities in southeast Finland.

In 2015, Sweden was one the largest recipients of people arriving as refugees. In total, there were 162,000 asylum applications, equivalent to 1.6% of the population (Nordic Council of Ministers 2024). The effects of this influx are still present, as persons born in Afghanistan, Eritrea, Iran, Iraq, Somalia and Syria are the largest minority group in many municipalities in the south of Sweden. Persons born in other countries make up the largest minority group in many municipalities in northern Sweden and southern Norway.

As mentioned above, there has been a decline in the percentage of foreign-born citizens in Greenland. At present, the population is 89% native-born, with 7% born in Denmark, 4% born elsewhere, and persons born in Asia making up 2% of the population.

In the Faroe Islands, 84% of the population is native-born, and 8% were born in Denmark. People born in the Philippines are the third-largest group. They are primarily migrant workers, specifically participants in the marriage market for Faroese men (Ísfeld 2019). This is due to gender disparity in the Faroe Islands, with 108 men for every 100 women (Statistics Faroe Islands 2024). People from the EU accession countries only make up 1.2% of the population, the majority of whom were born in Poland and Romania.

The share of Åland's population born in Sweden has increased from 5% of the population in 2000 to 10%. Like the other Nordic regions, Åland has also seen increases in the number of people from EU accession counties. There are currently 400 people born in Latvia and 450 born in Romania residing in Åland (Statistics and Research Åland (ÅSUB) 2024).

Concluding remarks

This chapter focuses on selected aspects of the 'diversity explosion' in the Nordic Region during the past few decades (Frey 2018). It provides an overview of the geographic aspects of the increased diversity. Further analysis can be done at different geographic levels, e.g. focusing on neighbourhoods or using more detailed data other than simply place of birth.

People don't just migrate to the Nordic countries; they move to specific places within these countries. Where they move and how they settle is important to their integration. Increases in immigration at the national level also mean that increases are taking place at regional and municipal levels. Many smaller and peripheral municipalities, which until relatively recently were quite homogenous, have seen influxes of migrants from abroad. Most have welcomed these newcomers as they help to counter population decline, ageing demographics and labour market shortages. The nature of the interactions between these newcomers and their host communities determines whether their integration is successful or unsuccessful.

While most migrants successfully integrate into the Nordic countries to which they relocate, many do not. This is especially the case when they segregate from the population of the host countries. Spatial segregation is often associated with other aspects of segregation, in terms of schools, workplaces and social activities. It is crucial to have information and knowledge of the geographic patterns of immigration in order to develop effective policies related to segregation.

Managing migration is a complex challenge, and it is crucial to consider the geographical aspects. While each of the Nordic countries has its own specific migration history, they have all experienced similar trends in recent decades in the form of large increases and diffusions of migrants. Comparative analyses of patterns of geographic settlements across the Nordic countries can, therefore, inform the development of effective migration and integration policies.

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LABOUR MARKET

LABOUR MARKET

EMPLOYMENT • GREEN TRANSITION • SKILLS





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What kind of labour market trends are the most prevalent in the Nordic Region at the moment? How has the labour market recovered since the pandemic? Do we have the necessary skills and competences to remain competitive in the future? And how is the green transition shaping the labour market? The Labour Market section tackles the latest developments of the labour market from different perspectives.

CHAPTER 4: THE NORDIC LABOUR MARKET AFTER THE PANDEMIC

Like the rest of the world, the Nordic labour markets were severely hit by the effects of the pandemic. While COVID-19 was a shock to the labour market, its impact was much shorter-lived than that of the financial crisis. In terms of employment rates, recovery was quick, and the rate for the Nordic Region reached its highest level in at least twenty years in 2022. Sectors badly affected by the pandemic, such as accommodation and food service, bounced back, but employment rates in others have also gone up, e.g. the information and communication, public administration and defence sectors. One of the pandemic's most visible effects on the labour market was the greater opportunities for remote work. While remote work has continued since the pandemic, most workers (63%) have still never worked from home.

CHAPTER 5: CHALLENGES OF LABOUR PROVISION AND SKILLS PROVISION

This section focuses on 'skills matching' and 'skills provision' from a perspective of educational planning, as well as demographic and generational differences in a labour market characterised by megatrends and rapid change. While the differences in labour shortages are spread across sectors, ages and geography, the Nordic labour markets all have very high employment rates.

The report identifies three factors that cause skills' mismatches'. Factor 1: In the last three decades, the Nordic system of post-secondary education attainment has changed significantly. University degrees used to be the almost exclusive preserve of a small, often elite and primarily urban group, but over 40% of the population are now graduates. Factor 2: Demographics or an ageing population – the 'greying of Europe'. An ageing population also means increasing healthcare needs and more support jobs. Factor 3: Automation, digitalisation and technological adaptation are three of the most important drivers behind changes to the labour market in the Nordic Region and globally. The Nordic Region is at the forefront of efforts to maximise the potential for digitalisation and digital integration. Accessing the skills and employees necessary for this transition is crucial for national and regional development.

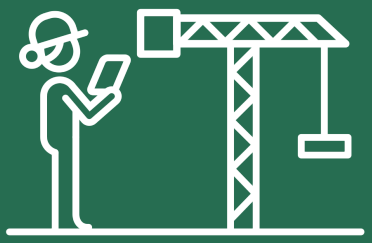
CHAPTER 6: GREEN TRANSITION OF THE LABOUR MARKET

New climate policies and the need for a green transition are among the megatrends impacting the labour market. This involves transitioning from jobs that contribute to high levels of greenhouse gas emissions and negative environmental effects and emissions towards jobs that support the environment and promote social equity. During this transition, new jobs will be created, others in sectors dependent on fossil fuels will be reformed or phased out. This section looks at the effects of the green transition on the labour market from a geographical perspective. It begins with a discussion of how the green transition affects the labour market and the concepts of green and brown (polluting) jobs. In 2021, 25.2% of total employment in the Nordic Region was classified as green. This is higher than the OECD average of 17.6%. Although higher than the European average, there are differences at the regional and municipal levels among the Nordic countries. The Nordic Region has a higher proportion of green and brown jobs than the EU average, which indicates that the Region is competitive in terms of green innovation, but there is still a need for structural change.

CHAPTER 4:

THE NORDIC LABOUR MARKET AFTER THE PANDEMIC

AUTHOR: Gustaf Norlén
MAPS AND DATA: Gustaf Norlénn



Introduction

The Nordic Region has had a joint labour market, with free movement between the countries, since 1954. The similarities in how the national labour markets are regulated means that people often refer to 'the Nordic model'. The most important feature of the Nordic model is that it is built on self-regulation and negotiation between labour market parties without too much state involvement. The role of the state in the negotiations varies slightly between the countries – for example, Finland has more of a focus on tripartite dialogue. The self-regulatory system has led to a competitive business sector, a low risk of wage-induced inflation and good conditions for workers regulated by collective agreements. The state provides a strong welfare system, including state-subsidised unemployment funds and transitional agreements for skills enhancement. Denmark, in particular, is known for its flexicurity system, which makes it easy for companies to lay off staff, but at the same time, the state provides good benefits and reskilling opportunities for workers (Kjellberg 2023; Brandal et al. 2013). This model is dependent on a high level of labour force participation, and the Nordic Region has had one of the highest employment rates in Europe for a long time, especially for women and older adults (defined as over 55).

Like the rest of the world, the Nordic labour markets were severely hit by the effects of the pandemic. However, while the effects of the pandemic were 'deep, far-reaching and unprecedented' (ILO 2020), most of the effects were isolated to the first wave in spring 2020. During this period, 70% of the employed people in the world lived in lockdown or were subject to severe mobility restrictions, and this figure rises to 90% when we include countries and regions that recommended decreased mobility (ibid.). During the pandemic, the Nordic governments introduced or expanded furlough systems and other support mechanisms that mitigated

the impact compared to many other countries. The Region has subsequently experienced a 'v-shaped' recovery from the pandemic, with a strong labour market (Jokinen & Norlén 2022).

This chapter provides an overview of the labour market since the pandemic, with a focus on the labour force participation rate for groups and regions. It concludes by looking at what happened to remote work after the pandemic.

Strong labour market recovery after the Covid-19 pandemic

The Covid-19 pandemic had a significant impact on the labour market in two main ways. Firstly, employers faced challenges related to being unable to operate from their workplaces due to lockdowns and restrictions. Secondly, the labour market was disrupted in both supply (due to interruptions in the supply chain) and demand (resulting from lockdowns and changes in consumer behaviour). During the initial wave of the pandemic, travel to work in the Nordic Region declined by 45%. In Sweden, 42% of those in employment worked at least some of the time from home. However, a majority of the workforce in the Nordic Region worked in occupations that did not allow for transitioning to remote work, and many workers were laid off, either in the short term (furlough) or permanently. In the first wave of the pandemic, 9% of the Nordic labour force faced short-term layoffs, although furlough systems mitigated the effects on unemployment levels. Unemployment primarily affected specific sectors, including accommodation, restaurants and transport. However, in some sectors, such as public administration, information/communication and the financial sector, there was no significant overall impact on employment (Jokinen & Norlén 2022).

Many measures and support schemes were introduced during the pandemic. These proved beneficial in the short term and mitigated the economic impact on households and society (Tapia & Tragotsis 2022). This meant that while the impact on employment was far-reaching, it was mainly concentrated in the first wave of the pandemic. In fact, following the pandemic, the number of people in employment reached record highs in all of the Nordic countries, as well as in Greenland and the Faroe Islands. In total, there are more than 14 million people in work in the Nordic Region. Figure 4.1 shows the employment rate (for those aged 20–64) between 2005 and Q3 2023. The effects of the pandemic took the form of a fairly steep decline in most countries, followed by a quick rebound in what has been called a 'v-shaped' recovery. By comparison, the recovery from the financial crisis in 2008/2009 was much slower. Employment rates in Denmark, Finland, Sweden, Greenland and the EU as a whole are the highest they have been in 20 years. In Norway and the Faroe Islands, employment rates are almost back to their previous peak. Figure 4.1 shows the employment rate for the 20–64 age group. It should be noted that the proportion of people over 65 in work is also rising.

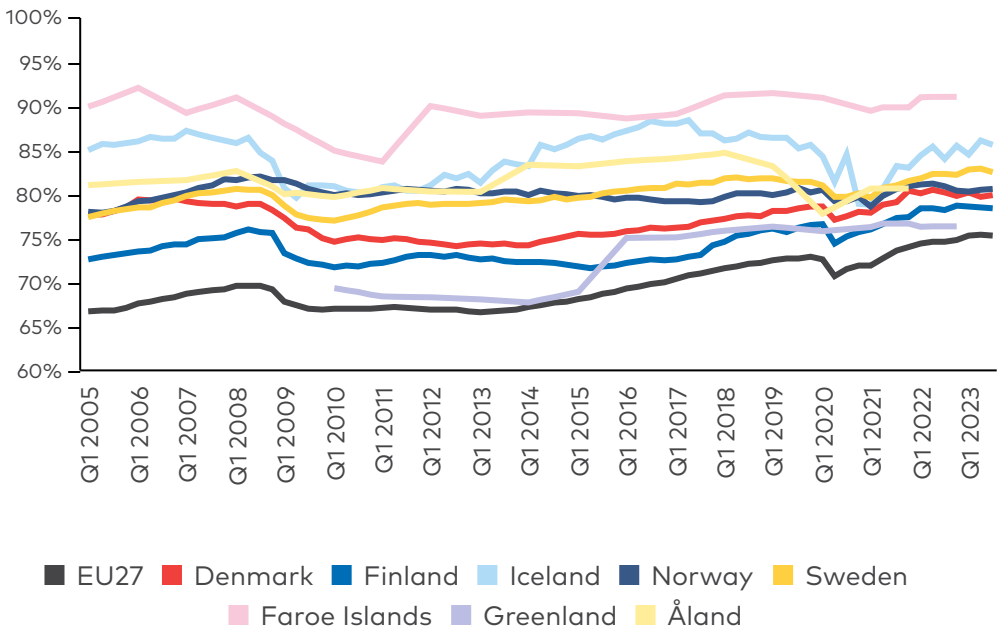


Figure 4.1: Employment rate (20–64 years), Q1 2005–Q3 2023.
Source: Eurostat and NSIs (Labour Force Survey, except GL and AX)

The high employment rates indicate the strong demand for labour after the pandemic, not only in the Nordic Region but in all of the OECD countries (Causa et al. 2022). This high demand has led to higher rates of employment, including in groups that have previously had less contact with the labour market, such as people born abroad (Konjunkturinstitutet, 2023). The tight labour market is driven by megatrends such as demographic and technological change, as well as climate change and the green transition (ILO 2017; Alsos and Dølvik 2021). However, the labour market is also linked with economic cycles, and there is often a delay before the employment effects are felt (Duval, Eris & Furceri 2011). Although it is not yet visible in the employment statistics, there are early signs of a downturn, especially in sectors such as construction and trade (Regeringskansliet 2023; SSB 2024a; Valtioneuvosto 2023).

Employment by sector since the pandemic

The impact of the pandemic on employment was primarily focused on a few sectors, mainly transport, accommodation and food services (Jokinen & Norlén 2022). Table 4.1 shows the percentage change in employment by sector between 2020 and 2022. Since 2020, there has been a recovery in the accommodation and food service sector in all countries. All of the Nordic countries also saw an increase in the information and communication sector, as well as in public administration and defence. Every country except Sweden saw an increase in the health sector. Otherwise, the development has been more scattered across the countries.

	EU27	Denmark	Finland	Sweden	Iceland	Norway	Faroe Islands	Greenland	Åland
A. Agriculture, forestry and fishing	-12.3	-1.8	3.7	2.0	7.6	8.9	15.7	-5.6	13.9
B. Mining and quarrying	-8.1	-27.5	6.3	6.9	n/a	11.9	23.8	17.8	-8.3
C. Manufacturing	-0.2	4.5	1.3	-1.7	-3.2	-0.2	-6.8	7.0	11.6
D. Electricity, gas, steam	1.6	7.8	-6.5	7.5	-13.6	2.5	7.7	-4.4	1.9
E. Water supply, sewerage, waste management	2.5	-1.9	25.0	-3.5	85.7	43.4	n/a	-4.4	3.3
F. Construction	5.9	8.7	-2.0	-5.5	22.9	4.3	-1.5	13.8	14.4
G. Wholesale and retail trade	3.2	7.3	7.2	-5.7	5.6	-0.9	2.0	5.5	1.0
H. Transportation and storage	4.8	-2.1	1.9	-12.5	29.4	6.3	2.1	3.3	6.4
I. Accommodation and food service activities	9.9	8.5	28.3	13.1	15.5	28.6	22.3	25.4	36.2
J. Information and communication	11.7	12.6	3.1	16.6	2.1	12.6	-1.3	-8.5	5.9
K. Financial and insurance activities	1.9	1.8	-9.2	12.2	-20.0	21.5	-1.7	-0.5	1.5
L. Real estate activities	8.3	-6.0	3.5	10.9	22.2	21.9	n/a	8.4	1.4
M. Professional, scientific and technical activities	7.9	0.1	-3.2	15.6	-14.1	6.1	n/a	11.6	0.0
N. Administrative and support service activities	8.6	-4.2	23.1	10.4	25.9	6.7	6.9	-13.0	0.6
O. Public administration and defence; compulsory social security	0.2	3.6	1.2	13.5	9.0	7.5	6.5	1.0	-16.0

P. Education	4.2	-0.8	-2.6	1.3	5.2	2.0	4.0	1.0	2.3
Q. Human health and social work activities	5.0	6.0	1.0	-0.1	6.4	1.6	4.2	1.0	-1.4
R. Arts, entertainment and recreation	9.4	10.7	-2.5	-10.2	26.2	9.2	-1.2	4.3	-3.1
S. Other service activities	4.2	2.9	12.0	0.9	37.8	-4.6	n/a	n/a	3.4

Table 4.1: Employment by sector, percentage changes (2020–2022)
Note: Red = decrease; green = increase
Source: Eurostat Labour Force Survey and NSIs (FO, GL & AX)
Note: AX: 31.12 2021.

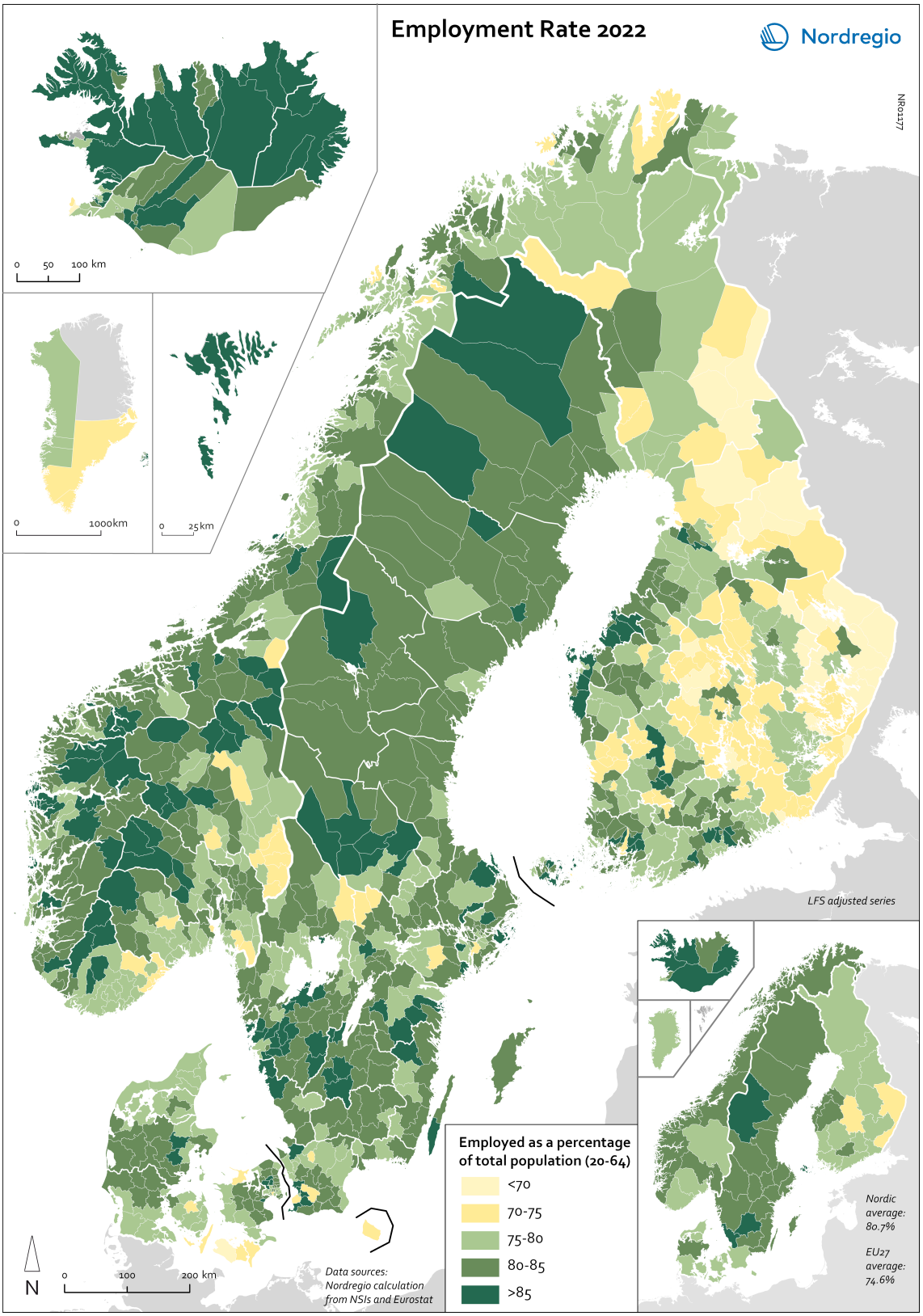
Regional patterns and variations

Although the general picture is one of strong recovery and high employment rates, there are still national and regional variations. At a national level, all of the Nordic countries have employment rates higher than the EU average (74.6%). The highest rates (measured for the age group 20–64 years in November 2022) were in the Faroe Islands (93%), Åland (86%) and Iceland (83%), followed by Sweden (82.2%), Denmark (80.1%), Norway (80.9%), Finland (78.4%) and Greenland (75%). Of the EU countries, only the Netherlands (82.9%) had a higher employment rate than Sweden in 2022.

As shown in Map 4.1, most of the regions and municipalities had employment rates above 75% (the green areas on the map) in 2022, meaning that three-quarters of people aged 20–64 were in work. In addition to the Faroe Islands, Iceland and Åland, the Swedish regions of Jämtland-Härjedalen, Halland and Jönköping also had employment rates of more than 85%. The only regions with employment rates under 75% were the Finnish regions of North and Southern Karelia and Keski-Suomi.

On a municipal level, the highest employment rates were found in rural municipalities, mainly in Iceland and the Faroe Islands, as well as some municipalities in Österbotten in Finland (such as Pedersöe and Korsholm). Of the intermediate municipalities (between urban and rural), the highest employment rates were in the Swedish municipalities Habo (Jönköping), Hammarö (Värmland), Nykvarn (Stockholm), Gällivare (Norrbotten), Kungsbacka (Halland), Svedala (Skåne) and Mosfellsbær (Höfuðborgarsvæðið) in Iceland. Of the urban municipalities, the employment rate was highest in Garðabær and Kópavogur in the Capital Region of Iceland, Tyresö and Täby in the Stockholm region, Partille in Västra Götaland in Sweden, and Bærum and Rælingen in Viken in Norway.

The lowest employment rates were in rural municipalities in eastern and northern Finland, e.g. Rautavaara in Pohjois-Savo and Puolanka in Kainuu, but also Lolland in Region Sjælland, and Hasvik in Troms og Finnmark. That rural municipalities have both the highest and lowest employment rates is partly explained by their small populations because a few individuals can make a big statistical difference. Rural municipalities, in general, are more single-industry dependent and, therefore, more affected by disruptions in these industries. On average, however, rural municipalities have slightly higher employment rates than urban and intermediate areas. Of the Swedish municipalities, Lund stands out due to its low employment rate. It is a big university city, and students account for a large share of the population, which shows another limitation of the employment rate as the single indicator of a well-functioning labour market. Other urban areas with employment rates under 75% include Jyväskylä, Turku, Tampere, Oulu and Lahti in Finland, Brøndby and Odense in Denmark, and Malmö in Sweden.



Map 4.1: Employment rate (2022)

The employment rate in Finland has long been lower than in the other Nordic countries. This has been explained by higher structural unemployment, a lower share of workers in the public sector, lower labour force participation among older adults, and lower spending on labour market policies (Valtioneuvosto 2022; FFC 2021). While the employment rate is still lower in Finland than in the other Nordic countries, it has been rising faster during the last couple of years. All Finnish regions and almost all municipalities have higher employment rates than before the pandemic. A big part of this is due to those who have entered the labour market but were previously inactive, i.e. not actively looking for a job (Valtioneuvosto 2022). It can also be noted that Finland is the only Nordic country to have a declining working-age population – compared to 2013, there are now 80,000 fewer people in the age group 20–64 years.

Box 4.1. Labour market statistics

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

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

Employed: A person who did some work, minimum one hour, during the reference week, or who was not at work, but had a job from which they were temporarily absent.

Unemployed: Someone who was not employed during the reference week, but who is currently available for work within two weeks, is actively seeking work (within four weeks from 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 + unemployed.

While the Labour Force Survey constitutes the official labour market statistics and is comparable between countries, it is survey-based, and therefore it is not possible to break down the findings to the lowest geographical level (e.g. municipalities). National registers are the other source of labour market data.

The register data is based on records of all individuals within the countries, and therefore allows for detailed breakdowns. However, it is not possible to make exact comparisons between the countries since the data collection methods and definitions vary slightly. For our municipal maps, we have, therefore, harmonised the register data so that it corresponds to the labour force survey.

Indicators for measuring labour market performance

Employment rate: People in employment as percentage of the population in a certain age group.

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

In this chapter, 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, which focuses on those who are immediately available for the labour market, it conceals the part of the population that neither is in employment nor looking for a job.

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 individual and societal level, full employment can also mean that it is difficult for companies to find the right competences, which can slow down growth. It can also mean that very few are in higher education, which could in the long run lead to problems related to the competences needed for the labour market of the future. It should also be noted that many labour markets consist of more than one municipality, a local labour market is the geography where supply and demand of labour meet.

Source: Eurostat (2023, 2024a, 2024b)

Labour force participation for different groups: Gender, age and foreign background

The pandemic mainly affected groups already in precarious positions, such as young people, immigrants and those with lower levels of education (Jokinen & Norlén 2022; Sánchez-Gassen et al. 2021). These groups were overrepresented in the occupations and sectors that were hardest hit by the pandemic but also, in general, tended to have a weaker connection to the labour market. The same pattern has been visible in other crises, such as after the financial crisis in 2008/2009 (Monastiriotis & Laliotis 2019). This section focuses on labour market trends by country of birth, gender and age.

Foreign-born

The category 'foreign-born' is quite heterogeneous and consists of everything from labour migrants to refugees – two groups who face quite different conditions and have different connections to the labour market. The Labour Force Survey allows for the analysis of differences in labour market participation, differentiated by country of birth. Map 4.2 shows the employment rate in 2022 for those born in an EU country (top left) and those born outside of the EU (bottom left), as well as the change in employment rate between 2020 and 2022 for those born in the EU (upper right) and outside the EU (lower right).

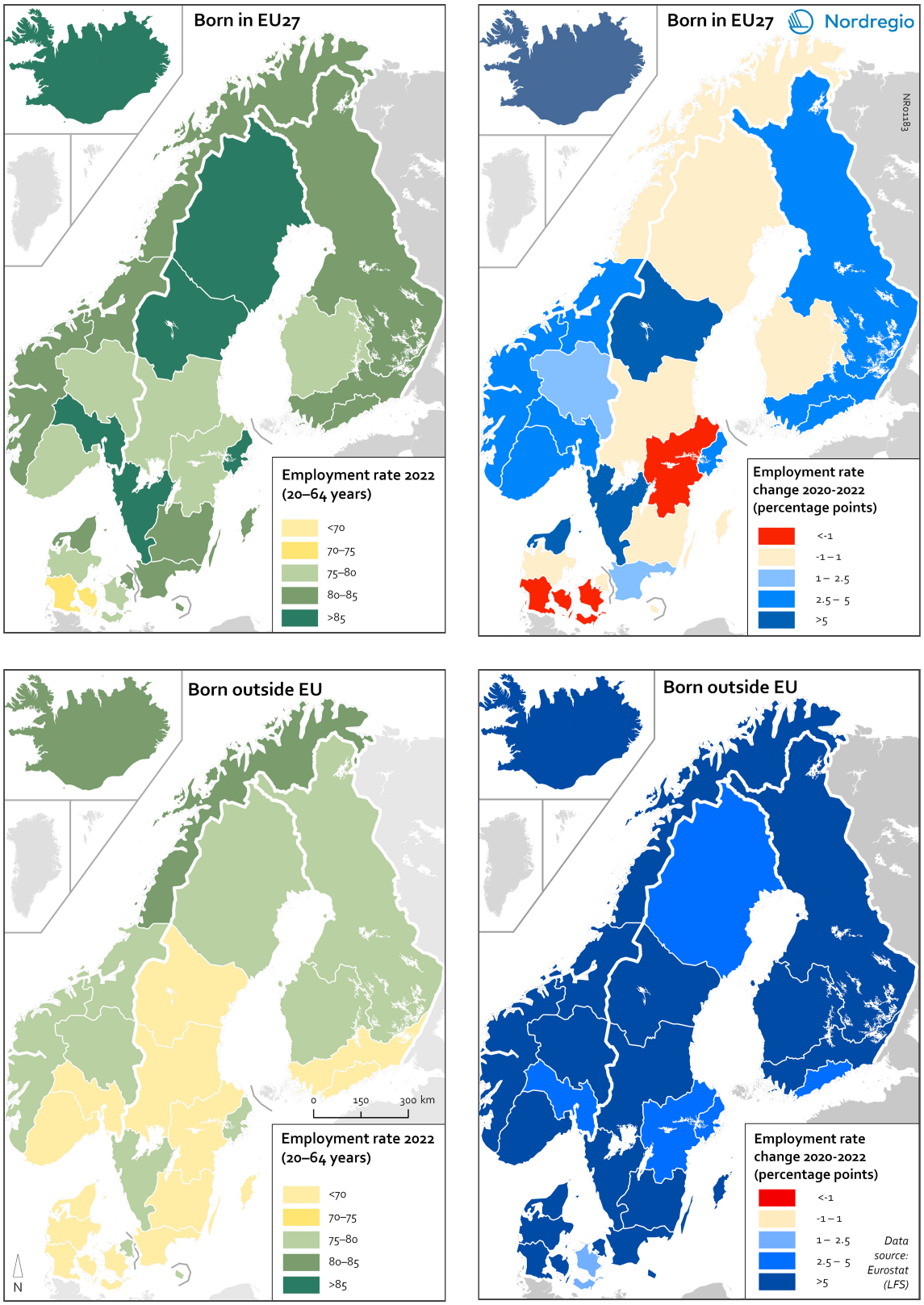
The employment rate for people born in another EU country – a group that includes a large proportion of labour migrants – has been on par with the employment rate for native-born people for a long time. As can be seen in the top-left figure in Map 4.2, in 2022, all NUTS2 regions except Southern Denmark had an employment rate of 75% or more for this group. The highest employment rate was observed in the Swedish NUTS2 regions of Middle Norrland, Stockholm and Western Sweden, followed by Oslo in Norway and Iceland.

The employment rate for people born outside of the EU (a group that largely consists of refugees) has been lower for a long time than that of native-born people and those born in the EU. While the employment rate for people born in non-EU countries is still lower than for natives (a 15 percentage point difference (pp) in Sweden, 11 pp in Norway, 7 pp in Denmark and Finland, and 2 pp in Iceland), this gap has been closing in the last couple of years since the pandemic.

Between 2020 and 2022, the employment rate for those born outside of the EU rose almost eight percentage points in Denmark (to 72%), seven in Finland (70%), six in Iceland (81%), and five in both Norway (70%) and Sweden (69%). This means that all the countries except Iceland recorded their highest employment rate for this group since 2000.

The highest employment rates for those born outside of the EU in 2022 were found in Northern Norway (82%), Iceland (81%), Copenhagen Region (Hovedstaden) (76%) and Stockholm (74%). In the southern parts of Finland and Norway and most of Denmark and Sweden, the employment rate is still below 75%. However, all regions saw an increase since the pandemic. Northern Norway and Innlandet in Norway, Etelä Suomi in Finland, Southern Denmark and Northern Jutland in Denmark, and Northern Middle Sweden all had an increase of more than ten percentage points between 2020 and 2022.

The increased employment rate for foreign-born people, and especially for those born outside the EU, can be explained by the high demand for labour and the fact that much of the labour reserve consisted of foreign-born people. In Sweden, for example, more than half of all unemployed people are born abroad (SCB 2023). Previous studies have shown that it takes 6–8 years before a cohort of foreign-born people reaches the highest degree of employment (Østby & Gulbrandsen 2022). The refugees who arrived during the refugee crisis in 2015/2016 are now reaching that stage. Studies in Sweden show that the increase is mainly in lower-paid jobs. This contrasts with the native-born population for whom growth has mainly been in high-paid jobs (Konjunkturinstitutet 2023).



Map 4.2: Employment rate in 2022 and change in employment rate 2020-2022 by country of birth.

Gender

The Nordic model, with its focus on full labour market participation, alongside policies such as subsidised childcare and generous parental leave, has significantly boosted female employment rates (Måwe 2019; Kangas & Kvist 2018). The rates are among the highest in Europe, although other European countries have caught up in recent years. In 2022, the Faroe Islands had the highest female employment rate in Europe, at 90.2%, followed by Iceland (82.1%). Estonia also performed strongly (80.4%), with the Netherlands, Lithuania, and Switzerland recording rates comparable to those in the Nordic Region.

Research suggests that previous economic crises, such as the financial crisis, mainly affected jobs predominantly held by men. One contributing factor is the dominance of men in the private sector, which tends to be more susceptible to economic shocks (Jaba et al., 2015). This trend is reflected in Figure 4.2, which illustrates the percentage point disparity in employment rates between men and women.

After 2008, this gap decreased in most countries. However, the effects of the pandemic seem to have been less clear. In 2022, only Greenland recorded a higher employment rate for women than for men. Åland has consistently displayed a higher employment rate for women over many years. Otherwise, the most notable observation from these figures is that very little has happened in terms of the difference between female and male labour market participation. The clearest trend is that the differences between male and female employment are decreasing across Europe as a whole.

Although the Nordic Region's labour force participation is relatively balanced, there are gender differences in terms of occupational preferences, and these differences are often evident in educational choices. Although women outnumber men in higher education overall, approximately 70% of those in STEM fields (science, technology, engineering and mathematics) are men (Jansson & Sand, 2021). Only 17% of the workforce in Sweden, Finland and Norway are employed in occupations with a gender balance between 40–60%. These occupations include architects, lawyers and university teachers. Among the most female-dominated occupations (more than 90% female) are early childhood educators, childcare workers and nurses. Conversely, vocational occupations like electricians, plumbers, carpenters, mechanics, housebuilders, drivers and mechanical engineers remain largely male-dominated (more than 90% male[11]).

11. Own calculation's based on NSIs.

Country	Male employment rate (%)	Female employment rate (%)	Employment gap (percentage point)
Faroe Islands	91.8	90.2	1.6
Iceland	87.3	82.1	5.2
Estonia	83.3	80.4	2.9
Åland	81.1	80.2	0.8
Sweden	85	79.2	5.8
Netherlands	86.9	79	7.9
Lithuania	79.4	78.6	0.8
Norway	83.7	78	5.7
Finland	79	77.8	1.2
Switzerland	85.9	77.8	8.1
Denmark	82.8	77.4	5.4
Germany	84.6	76.8	7.8
Greenland	76.1	76.7	-0.6
European Union	80	69.3	10.7

Table 4.2: Female and male employment rates for Nordic and selected European countries.
Source: Eurostat (Labour Force Survey) and NSIs (GL, FO & AX)

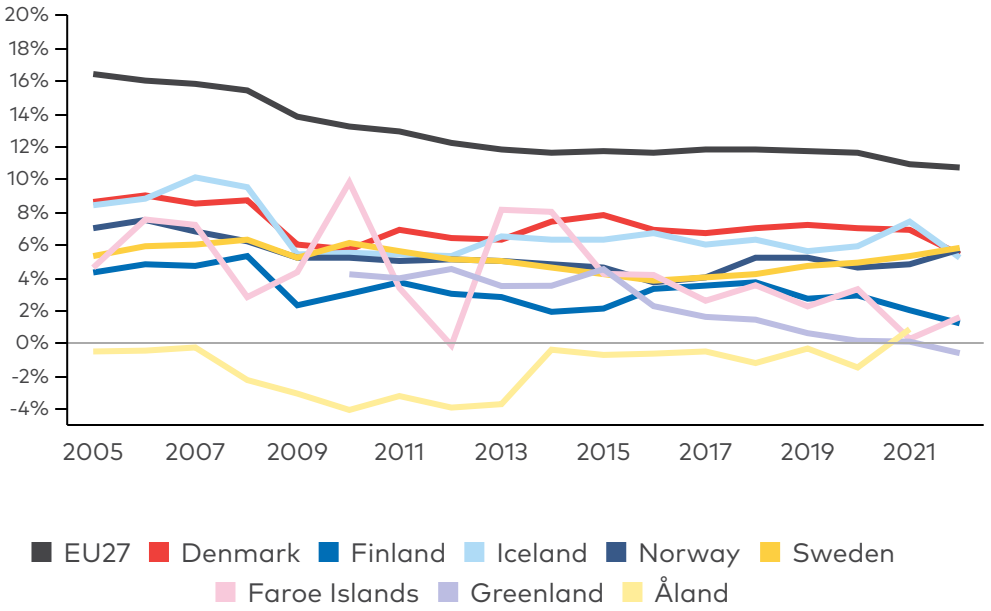


Figure 4.2: Employment rate difference in percentage point between male and female
Source: Eurostat (Labour Force Survey) and NSIs (GL, FO & AX)
Note: 0 = same employment rate for male and female.
Above 0 = higher employment rate for males.
Below 0 = higher employment rate for females.

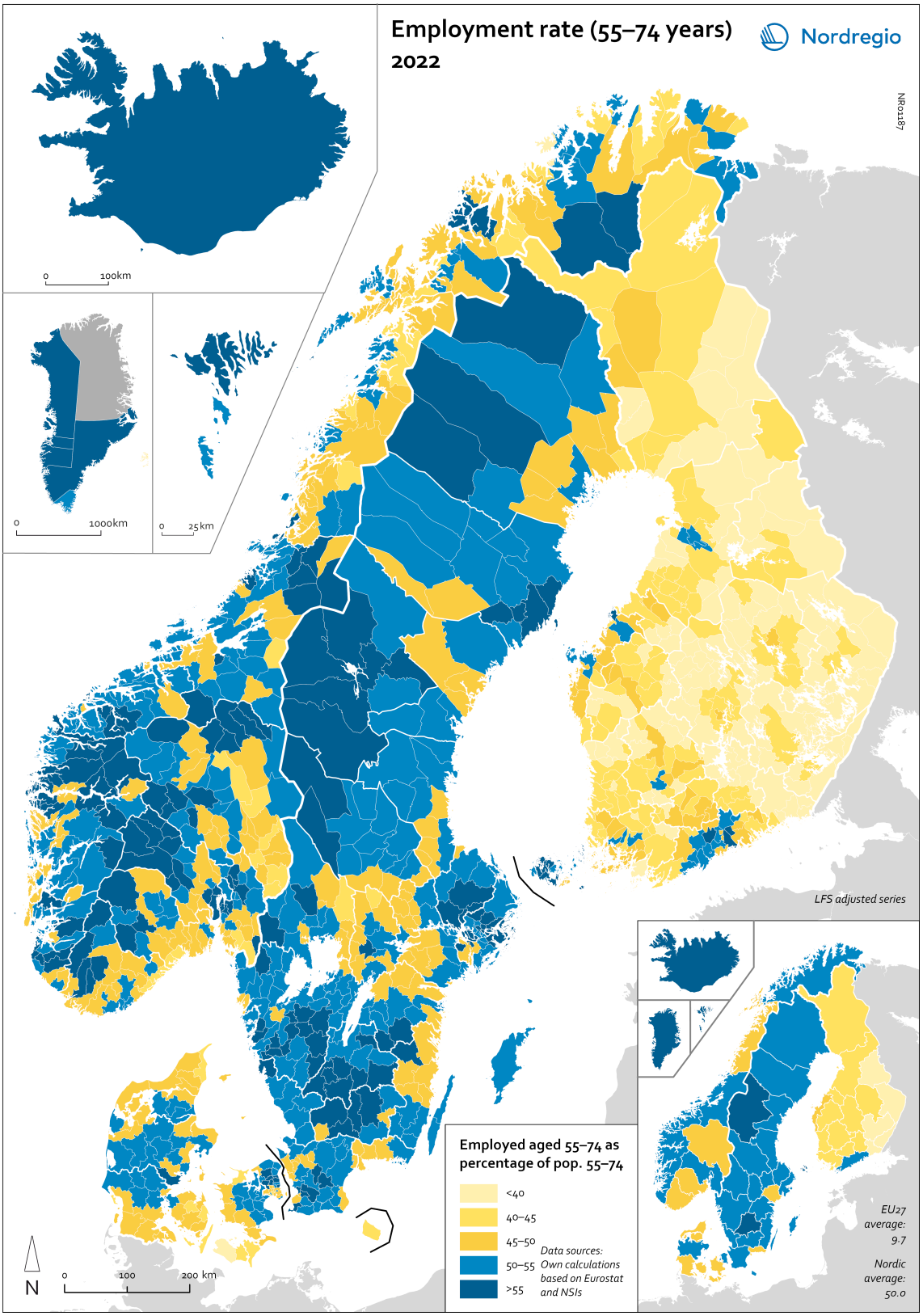
Age

The impacts of the pandemic were keenly felt by young people (OECD, 2023). In the Nordic Region, individuals aged 15–24 experienced a significant reduction in total hours worked of approximately 10% from 2019 to 2020. This decrease was slightly more pronounced in Denmark and Finland and somewhat less so in Norway. In addition, the number of young people classified as neither in employment, education, nor training (NEETs) also rose during the pandemic (Andersen, Holden & Honkapohja 2022). Since a high proportion of the people in this age group are studying, the NEET rate may be a more useful indicator. Between 2020 and 2022, the NEET rate has decreased in all of the Nordic countries except Norway and Denmark. Youth unemployment also rose in Norway, primarily because more young people were actively looking for jobs (SSB 2024b).

Older adults (55+) were less affected by the pandemic. In general, this age group has a stronger attachment to the labour market, and a higher proportion work in occupations where remote work was possible (König & Seifert 2022). For quite

some time, the Nordic Region has boasted a higher employment rate among older adult workers compared to the rest of Europe, although this gap has narrowed somewhat in recent years. In 2022, 75.5% of the Nordic population aged 55–64 were employed, whereas the EU average stood at 62.3%, representing a difference of 13 percentage points. In 2012, however, this difference was 21 percentage points, and in 2002, it was 29.

Map 4.3 illustrates the employment rate for those aged 55–74 in 2022. It shows variation between the Nordic countries, with Finland exhibiting a lower employment rate for this age group. The highest rates were observed in the Faroe Islands (62%), Greenland (61%), Åland (56%), and the Swedish regions of Jämtland-Härjedalen (55%) and Jönköping (54%).



Map 4.3: Employment rate of older adults (55–74 years) 2022

Remote work after the pandemic

One of the pandemic's most significant effects on the labour market was that it increased the possibilities for remote working – most of the people who could work from home did so. In Sweden, where monthly LFS data was published, the share of people working at home peaked at 42.7% in January 2021 (Norlén et al. 2022). However, not all jobs can be done remotely, and differences in occupational structure meant that the share of people working from home was bigger in urban than rural areas (Eliasson 2023). The speed and relative ease of this shift raised two questions related to regional development: Will remote work be the new normal? And if people are able to live farther from their workplace, will this change movement patterns?

Regarding the first question, following this up over time is challenging, as there is a lack of comparable and reliable data. The most comparable source is the Labour Force Survey, which has included a question on remote work for a long time. According to the LFS, before the pandemic (2019), 15% of workers in the EU and 28% of workers in the Nordic Region (usually or sometimes) worked at home. In 2021, the share had increased to 25% in the EU and 38% in the Nordic Region before dropping slightly in 2022 to 23% in the EU and 37% in the Nordic Region. As Figure 4.3 shows, in 2022, 46.1% worked at least partly from home in Sweden, with 44.3% in Iceland, 43.8% in Norway, 41.3% in Finland and 35.5% in Denmark.

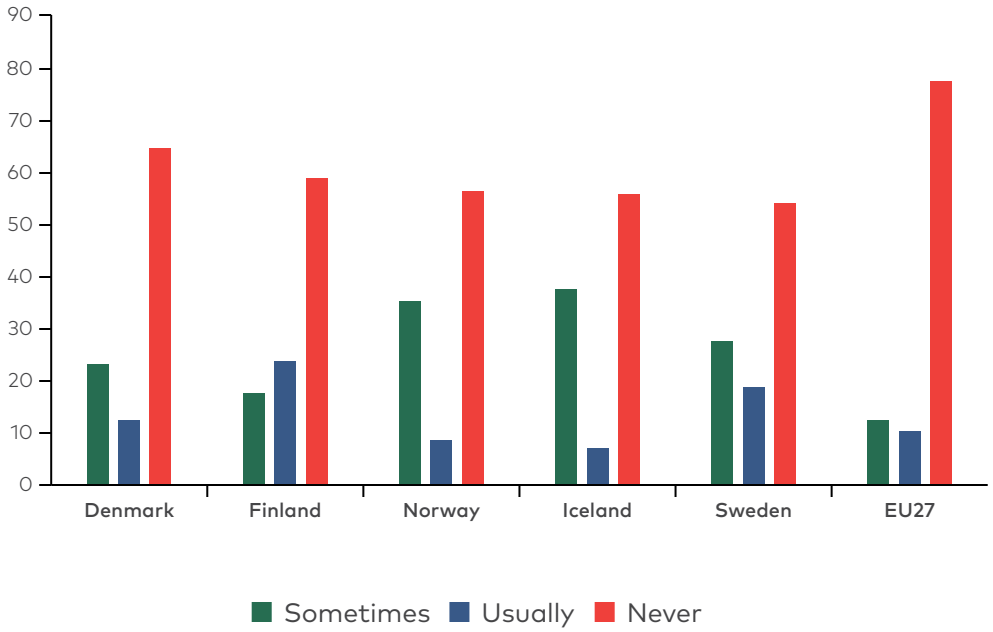


Figure 4.3: Share of employed persons working from home (2022)
Source: Eurostat

The regional data available for Norway (KDD 2023) and Sweden (Eliasson 2023) shows that there are still significant differences between urban and rural areas. For example, in Norway in 2022, the share of those working from home was almost twice as high in Oslo (~60%) than in Møre og Romsdal (~30%) (KDD 2023). In all of the countries except Finland, the share of those who worked from home *sometimes* is higher than that of those who did so *usually* (defined *as* over half of the time). This is interesting, as it means that those who only *sometimes* work remotely still need to live fairly close to their workplace.

Regarding changes in movement patterns, there have been signs of increased outmigration from the cities during the pandemic and increased in-migration, mainly to smaller and medium-sized cities and suburbs of bigger cities, as well as some more attractive rural municipalities (Tønnessen 2021; Randall, Jensen & Vasilevskaya 2022; Eliasson 2023). As highlighted in Chapter 1 of this report, in 2022, there was a shift in internal net migration, which again turned positive in inner urban areas (except in Norway) and towards pre-pandemic movement patterns. This suggests that, at least in terms of internal migration, the new normal is similar to the old normal.

The effects of a more flexible labour market, with greater opportunities for remote working, can also be seen in other areas. As highlighted in two recent Nordregio reports on the effect of remote work on planning in urban (Granath Hansson & Guðmundsdóttir 2024) and rural (Bogason, Brynteson & Salonen 2024) areas, hybrid work, in which workers split their time between urban and rural areas, is here to stay. This creates both opportunities and challenges for different regions. For example, municipalities can use remote work as a strategy to attract people with the right skills. Hybrid work can also create opportunities to live in more than one location – i.e. workers may choose to reside in a second home for some of the time (ibid).

Concluding remarks

This chapter has looked at the development of the labour market since the pandemic. While the pandemic was a shock to the labour market, its impact was much shorter-lived than that of the financial crisis. In terms of employment rates, the labour market quickly recovered, and the employment rate for the Nordic Region reached its highest level in at least 20 years in 2022. Sectors that were badly affected by the pandemic, such as accommodation and food service, bounced back, but other sectors, too, have seen increased employment, e.g. the information and communication sector and public administration and defence.

Employment rates for foreign-born people have increased more than for the native population, rising 5–8 percentage points in the Nordic countries between 2020 and 2022. This means a record-high employment rate for people born abroad (outside the EU). The employment rate for older adult workers has also increased in the last decade. This means that groups that previously had little contact with the labour market are now in work, which is indicative of a tight labour market.

This high level of employment and the labour shortages that it implies are attributable both to factors related to the economic cycle and to the megatrends that affect the labour market in the long term. For more about the megatrends and reasons for the labour shortages, see Chapter 5 and Chapter 6 of this report.

One of the pandemic's most visible effects on the labour market was the expansion of opportunities for remote work. While remote work has continued since the pandemic, most workers (63%) still never work from home. There have been some post-pandemic trends involving changes in migration patterns, but it is too early to say whether these constitute a short-term effect or something more permanent.

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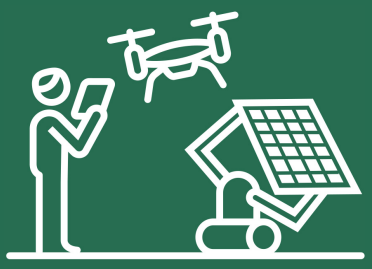
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CHAPTER 5:

CHALLENGES OF LABOUR SHORTAGES AND SKILLS PROVISION

AUTHORS: Eva Maersk and Gustaf Norlén
MAPS AND DATA: Gustaf Norlén



Introduction

Labour shortages, high employment rates (see Chapter 4) and difficulties in recruiting are indicative of a tight labour market in the Nordic Region. In fact, labour shortages have been a hot topic and a major challenge for many countries, regions and municipalities in the last couple of years. While policymakers across the Nordic Region and Europe have sought to address this issue via educational initiatives and labour market reforms (Kananen 2012: Poutanen 2023), 'skills mismatch' and 'skills shortages' have been identified as important barriers to growth in the Nordic labour markets.

Concepts such as 'skills matching' and 'skills provision' position the problem as stemming from a mismatch or lack of balance in the skills of graduates, usually young people, who are deemed either over- or undereducated (Næss & Wiers-Jenssen 2023) relative to the needs of companies. However, while research shows that 'skills matching' is indeed an important, even crucial, component of an active labour market, researchers also point to labour shortages in general and skills provision in particular as complex, often inter-disciplinary issues (McGuinness et al. 2018), and that the responsibility for finding solutions 'should fall onto job seekers, schools and employers' (Brunello and Wruuck 2021: 17). This makes it difficult not only to assign responsibility but to identify and implement policy strategies.

The scale of the labour shortages and their high degree of geographical, social and sectoral diversity (Alsos and Dølvik 2021) further illustrate the complexity of this issue. At the same time, the shortages illuminate the strong links to broader demographic (mega)trends in the Nordic Region (Rauhut et al. 2008), as well as

digitalisation (Randall et al. 2018) and the green transition (Lee et al. 2019). However, new research is focusing on solving the problem of skills mismatch through upskilling and reskilling, usually with an emphasis on older employees (Li 2022). This highlights an important generational dimension in skills provision. In other words, the problem of labour shortages should be addressed carefully and with a high degree of awareness of the different perspectives from demand to supply to generations and geography.

In this chapter, we focus on 'skills matching' and 'skills provision' from a perspective of educational planning, as well as demographic and generational differences in a labour market characterised by correlating megatrends and rapid change. The chapter starts with addressing the issue of labour shortages and the situation right now. The focus is then shifted to the factors behind labour shortages and the mismatch between supply and demand in the labour market, with a special focus on the role of education and training.

How bad is it? Labour shortages by sector, age and geography

Sectors, trends and labour demand

While the differences in labour shortages are spread across sectors, age and geography, the Nordic labour markets as a whole are characterised by very high employment rates. As described in Chapter 4, the distribution is, with a few outliers, closely linked to the urban-rural divide – with the highest employment rates found outside of urban areas and the highest unemployment rates found in rural areas, e.g. in the eastern regions of Finland. In general, the trend of declining numbers of employed people in rural areas is expected to continue due to rising retirement rates in the majority of the municipalities. Combined with the accelerated need for digitalisation since the pandemic, geographical inequalities are contributing to challenges in certain areas and sectors (see Chapter 4).

Apart from the aftermath of the financial crisis, the pandemic has had the biggest impact on both employment rates and shifting trends in job creation, which reflect the needs of the digital transition. However, the impact seems to be unevenly distributed between sectors. During the pandemic, employment fell in the transport, tourism, accommodation and food service sectors in all of the Nordic countries. Employment in accommodation and food service has bounced back in all of the countries since 2020. The biggest relative increase was in Finland and Norway (+0.7 percentage points). In addition, the widespread difficulties in recruiting qualified employees to match the needs of the construction industry, ICT and healthcare have been raised not only in the Nordic Region (OECD 2021) but across the EU as a whole. The 2023 Employment and Social Developments in

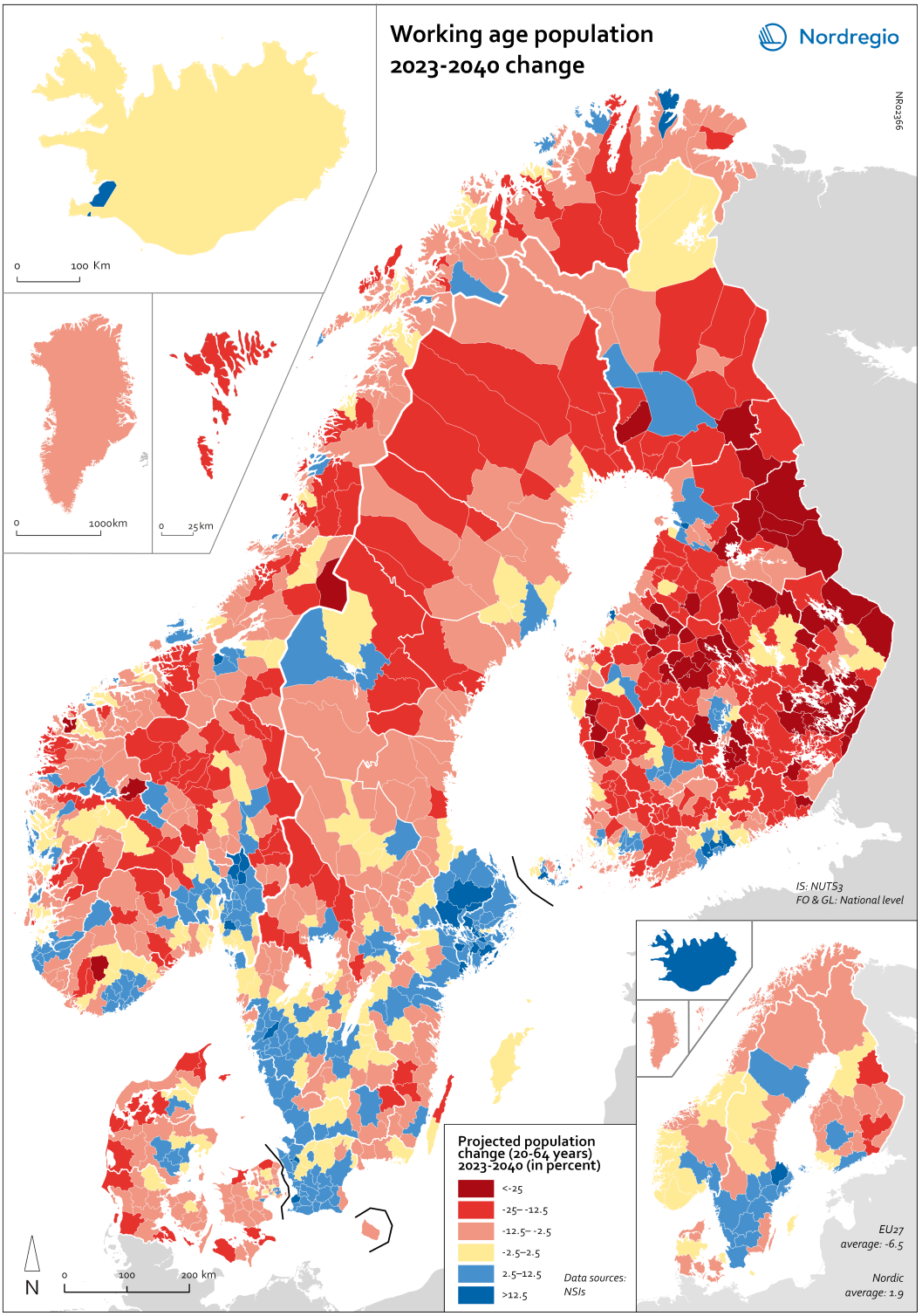
Europe report (European Commission 2023) concludes that labour shortages will not only persist but get worse at all levels of skills and education in the next few years. This calls for solutions to the labour supply that are tailored to specific sectors and specific places in the future.

Demography, geography and labour supply

As many Nordic local labour markets have very low rates of unemployment, the real additional labour supply is to be found in groups that are currently outside of the labour market, i.e. those that are neither in employment nor looking for a job. In most of the Western world the working-age population is decreasing (here defined as 20–64 years). In the EU, this age group is expected to decrease by 6.5% between 2023 and 2040. Only five EU countries – Malta, Luxembourg, Ireland, Sweden and Belgium – are expected to enjoy growth in the working-age population during this period. However, in the Nordic Region as a whole, the working-age population is expected to grow slightly, with an average increase of 1.9%.

As Map 5.1 shows, the distribution is quite varied, with considerable differences both between and within the countries. The biggest increase is expected in Iceland (28%), followed by Sweden (5.8%), Åland (3.9%) and Norway (0.6%). Decreases are expected in Finland (-0.5%), the Faroe Islands (-2.6%), Denmark (-3.2%) and Greenland (-11.4%). This development is in addition to the decreases already experienced by Finland since 2013 (see Chapter 4).

In general, the trend of growing populations in cities and decreasing populations in rural areas is expected to continue. The regions that are expected to have the highest working-age population growth include Höfuðborgarsvæðið in Iceland, Uppsala (+13%), Stockholm (+12%), Skåne (+9%), Halland (+7%) and Västra Götaland (+6%) in Sweden, Uusimaa (+8%) and Pirkanmaa (+5%) in Finland, and Oslo and Viken in Norway (+5%). In addition, Copenhagen municipality (+5%), Rødovre (+9%) and Vallensbæk (+6%) in the Hovedstad region in Denmark are expected to see significant increases. However, it is expected that the working-age populations in most municipalities in the Hovedstaden region will decline. The Finnish regions of Satakunta, Etelä-Karjala, Kainuu, Kymenlaakso and Etelä-Savo and Greenland are all expected to see a decrease in the working-age population of more than 10%. Across the Nordic Region as a whole, it is expected that rural municipalities will see a 5.8% decline, whereas the urban municipalities will grow by 7.3%, and the semi-urban municipalities will have a stable labour supply. This trend will be further accelerated by developments in the average age of employees.



Map 5.1: Projected working age population change (2023–2040)
Note: The projections are based on the main assumptions of the NSIs. The assumptions may, therefore, differ between countries.

Figure 5.1 shows the age of employees across the whole Nordic Region in 2022. Most notably, many in the age group 65–69 are still employed, even though most have reached the qualifying age for retirement (the earliest being 62 in Sweden and Norway; the latest, 67 in Denmark). The qualifying age for retirement is rising in most of the Nordic countries due to economic concerns and increased longevity. These factors may also explain why more women and men over 70 are still working.

In the other age groups, there are more men than women working. The difference is most pronounced in the younger ages which might be explained by the fact that women, in general, start working later than men after participating in tertiary education. In terms of the future Nordic workforce, those aged 55–59 are the most interesting, as they are, at present, the biggest group in the workforce, but many of them will retire within the next decade. This will not only leave vacant spots to be filled, but is likely to increase the imbalance between urban and rural areas, as finding the labour supply to replace this group will be a significant challenge for rural regions.

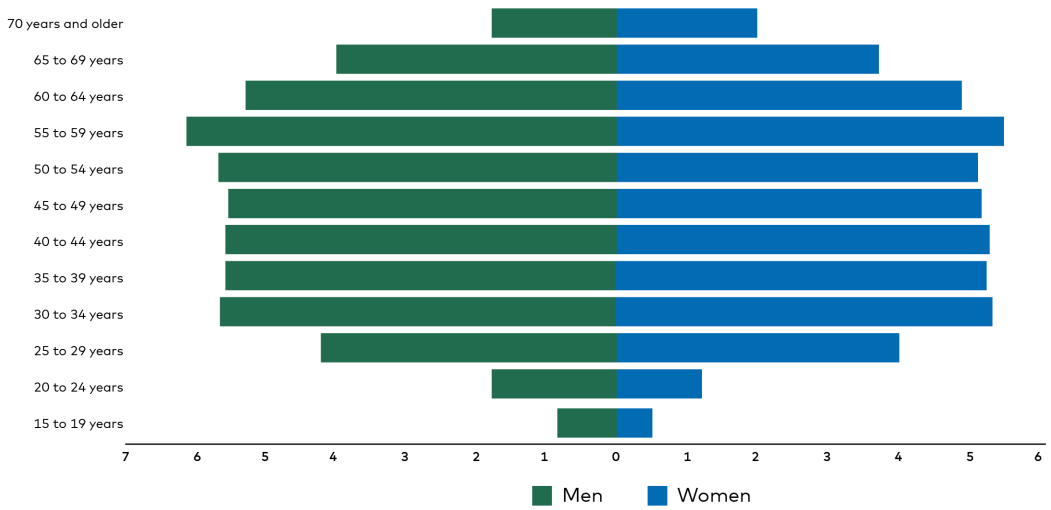
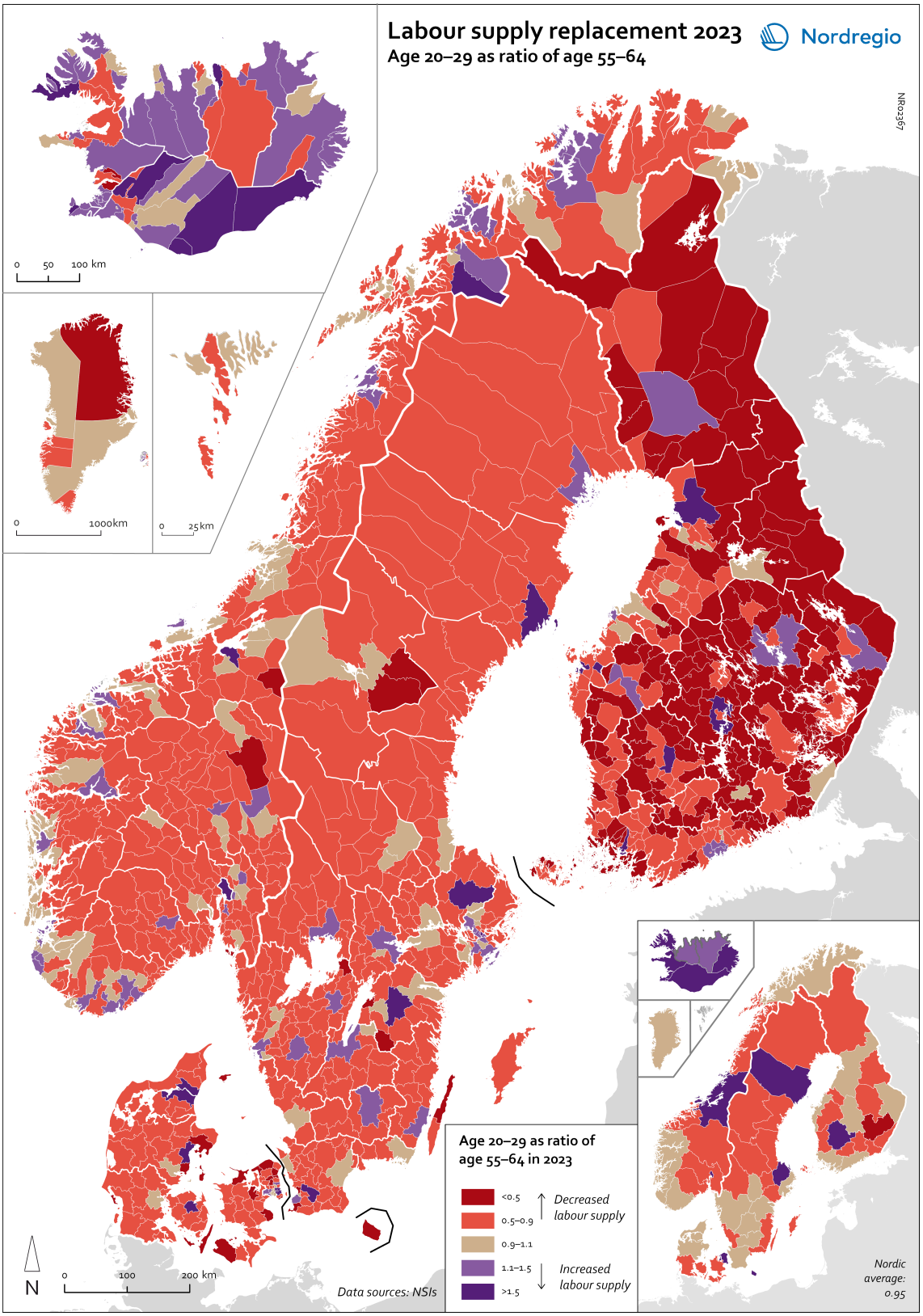


Figure 5.1: Employment by age group for the Nordic Region.
Sources: Own calculations based on data from NSIs and Nordic Statistics.

Map 5.2 shows the ratio between the age groups 20–29 and 55–64 at the municipal level (big map) and regional level (small map). This indicator compares those entering the labour market and those exiting it. A ratio of 1 means that there are equally as many people in the age group 20–29 as in the age group 55–64. A ratio of less than 1 means that fewer people are entering than exiting the labour market. A ratio of more than 1 indicates that more are entering than exiting.

For the Nordic Region as a whole, the ratio is 0.95, meaning that there are slightly fewer people in the age group 20–29 than 55–64. Iceland is the only country with a ratio above 1 (Iceland: 1.3; Greenland: 0.99; Denmark: 0.97; Norway: 0.95; Finland: 0.94; Sweden: 0.93; Faroe Islands: 0.88; Åland: 0.63). All of the Icelandic regions, as well as the capital regions of Norway, Denmark and Finland, have a ratio above 1. In Sweden, the highest ratios are in Uppsala (1.25), Västerbotten (1.14) and Östergötland (1.03), while the ratio in Stockholm is below 1 (0.95). The lowest ratios are found in Etelä-Savo (0.62) and Åland (0.63) in Finland, Sjælland (0.63) in Denmark, Västernorrland (0.74) in Sweden, and in Vestfold og Telemark (0.78) and Viken (0.77) in Norway.

However alarming these trends and developments are, they are neither new nor undescribed. An analysis of the factors and policy strategies that are influencing these developments enables adjustments to be made to future trends.



Map 5.2: Labour supply replacement

Why are we here? Factors causing and correlating in the 'mismatch'

Factor 1: The 'reap what you sow' of educational policy in the Nordic countries

The current mismatch can be at least partly attributed to the knock-on effects of the last 20 years of educational planning in the Nordic Region and the EU. In the last three decades, the Nordic system of post-secondary education attainment has changed significantly. While university degrees were previously almost exclusively attained by a small, often elite and primarily urban group, they are now obtained by more than 40% of people aged 25–34 (Eurostat 2024). In other words, the entire education system is moving towards massification and widening participation (Finn & Holton 2019). This change is substantial but not unforeseen.

In 2021, the Council of the European Union approved the 'Resolution on a strategic framework for European co-operation in education and training towards the European Education Area and beyond (2021-2030), which includes a target that at least 45% of people aged 25–34 years should have gained a tertiary educational qualification (a Bachelor's or Master's degree) by 2030. This benchmark originated in the EU's early 'Education and Training' strategies, most notably the 'Bologna process' (The Bologna Declaration 1999), which set a benchmark of 40% of persons aged 25–34 should have tertiary educational attainment in 2020. In 2022, the Nordic countries reached the 2030 target level for the share of people aged 25–34 with a tertiary qualification (Norway: 55.6%, Sweden: 52.4%, Denmark: 49%, Finland: 40.7%, Iceland: 40.2%) (Eurostat 2024).

At the same time, vocational training has not been a part of the strategic benchmarking of EU educational policies until recently. While initiatives have been implemented across the Nordic Region (see Nordic Council of Ministers 2023) these attempts have been sporadic. Only recently have vocational education and life-long training received the same status as higher-education benchmarking (Agostini & Capano 2012). Newer policy initiatives focus primarily on gender segregation in the Nordic vocational education and labour market sector (Nordic Council of Ministers 2022). While policymakers across the Nordics have worked to address this issue, research and grey literature point to several correlating factors, like physical conditions at vocational training institutions (DEA 2022) and experiences of unattractive working environments (Burr 2021). Social conditioning is another factor, i.e. parents encouraging their children to reach a higher educational level than they themselves achieved. This often includes an aspect of gender bias, as parents are far more likely to encourage sons rather than daughters to pursue vocational education (Reisel et al. 2019). This gender segregation, in terms of occupational choice, is seen across the Nordic labour markets (see Chapter 4).

Factor 2: Demographics

An ageing population – the so-called 'greying of Europe' or 'the "agequake" of the Nordics' (Hörnström & Roto 2013) – is not a new phenomenon. In 2019, the OECD identified the ageing population as one of the most important factors in relation to future labour shortages (OECD 2019). An ageing population also means increasing healthcare needs and more support jobs, which coincides with a decreasing number of younger people who choose for an education and careers in healthcare or similar areas.

Most of the Nordic countries have implemented reforms aimed at making 'welfare education' accessible and attractive in response to future demographic challenges. Another strategy has been to digitalise the health sector throughout the Nordic Region (see Lundgren et al. 2020). However, this does not appear to be turning the tide due to long-term demographic changes as Map 5.1 shows that a majority of Nordic municipalities will experience a declining number of people of working age in the run-up to 2040. There will also be major differences between municipalities, with rural municipalities throughout the Nordic Region experiencing more than a 25% decrease in working population, while most urban or semi-urban areas will experience a minor decrease or increase (between -2.5% and 2.5%). This means that more attention needs to be paid to demographics and the multi-generational effects on the labour supply.

Factor 3: Acceleration, digitalisation and the green transition

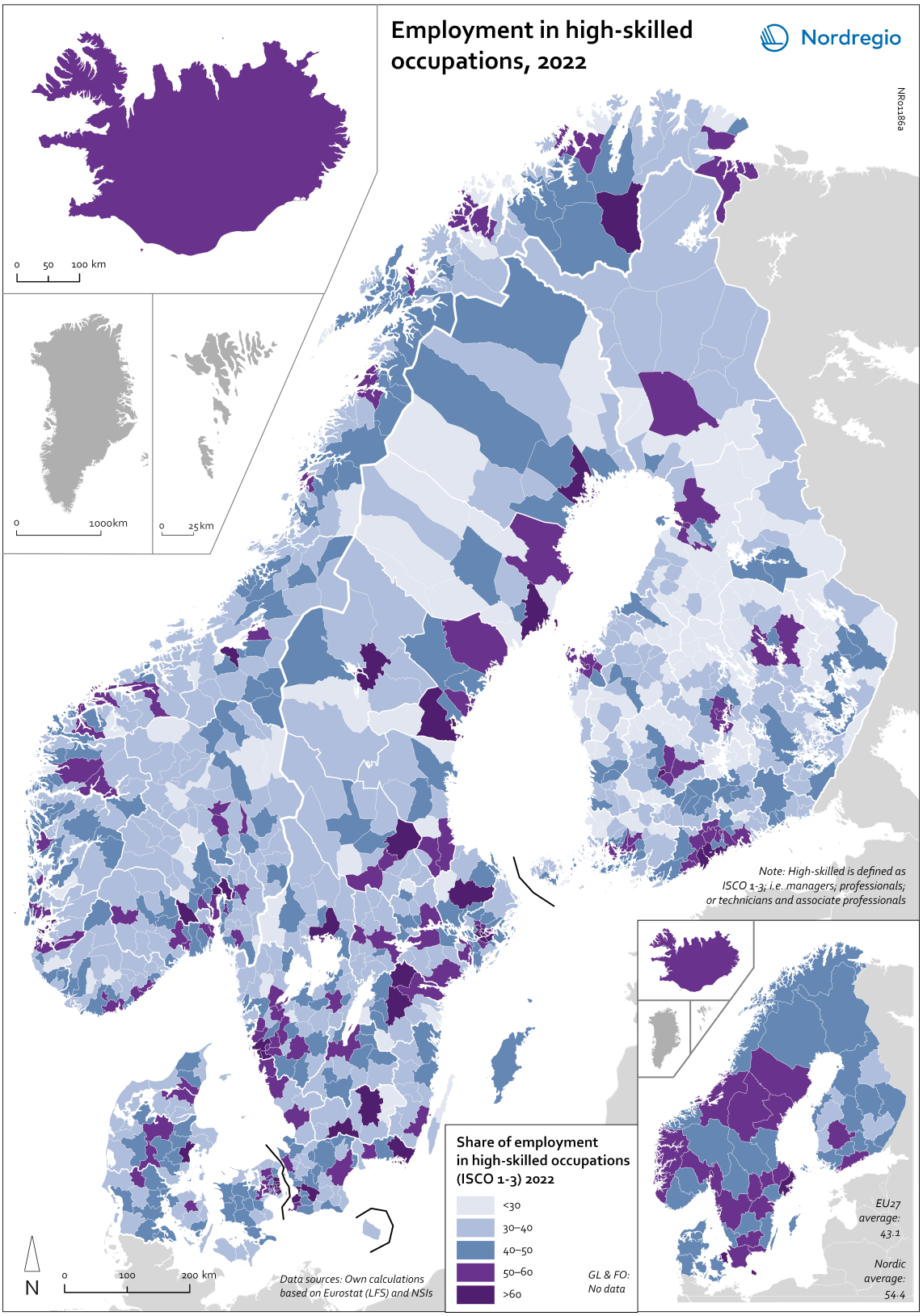
Automation, digitalisation and technological adaptation are three of the most important drivers for labour market changes globally and in the Nordic Region (Eriksson & Andersson 2023). The Nordic Region is at the forefront of efforts to maximise the potential of digitalisation and digital integration, e.g. via the Nordic-Baltic declaration aimed at enhancing co-operation on digitalisation (Nordic Council of Ministers 2017). Accessing the skills and employees necessary for this transition is crucial for both national and regional development (Berlina & Randall 2019).

From an international perspective, the World Economic Forum estimates that the three most important labour market competences in the next five years will be creative thinking, analytical thinking and technological literacy – and that six out of ten current workers will need additional training in these skills ('The Future of Jobs' 2023). At the Nordic level, Eriksson & Andersson (2023) identify an increasing need for social and digital skills and note that this trend is also influenced by the disruptions and innovations that emerged during the Covid-19 pandemic.

This trend has both positive and negative impacts on the Nordic countries. Overall, more than half of the workers in the Nordic Region (54%) are employed in high-skilled occupations. Based on data on employment by occupation, Eurostat defines ISCO classes 1–3 as 'high-skilled' labour. This includes the groups' managers (ISCO 1), professionals (ISCO 2) and technicians and associate professionals (ISCO 3).

Map 5.3 displays the share of high-skilled workers (ISCO 1-3) as a share of the total number of workers (ISCO 1-9). The EU average of high-skilled workers is 43%, and the Nordic countries are at the top of the rankings – 49.5% in Finland, 51.1% in Denmark, 54.2% in Norway, 54.5% in Iceland and 58.9% in Sweden.

On a regional level, the highest share is in the capitals and bigger cities, such as Stockholm (72%), Oslo (71%), Hovedstaden (Copenhagen) (60%), Uppsala (60%) and Uusima (Helsinki) (59%). The lowest shares are in the Finnish regions of Etelä-Pohjanmaa, Keski-Pohjanmaa, Satakunta and Etelä-Savo (less than 40%). However, this does not necessarily mean that employers will have a greater chance of successfully recruiting high-skilled workers in the future, partly because those in this group already have jobs and partly due to generally lower investments in education (Agostini & Capano 2012).



Map 5.3: Share of employment in high-skilled occupations (2022)

Where are we? Analysis and cases

Given the range of factors contributing to the skills mismatch and the various challenges associated with specific sectors and geography, labour shortages, in general, are not easy to measure or address. One way of looking at the unmet demand for labour is through the job vacancy ratio, which measures the number of vacant positions as a share of the total number of positions (vacant and occupied). Figure 5.2 shows a major increase in job vacancies after the pandemic. This was particularly pronounced in Norway, which also had a high job vacancy ratio for a longer period, indicating a structural imbalance between supply and demand.

As Figure 5.2 shows, there are signs that the job vacancy ratio may be in decline, which suggests that the hot labour market may be approaching its peak. There are already reports of a slower labour market in sectors such as construction and trade. The labour shortage related to the megatrends is not affected in the same way – this includes the demand for healthcare and other care workers related to the ageing population. Technological change, too, implies a need for new skills, including new jobs created in relation to the green transition. More attention must be paid to these factors and how they both affect and produce the labour shortage.

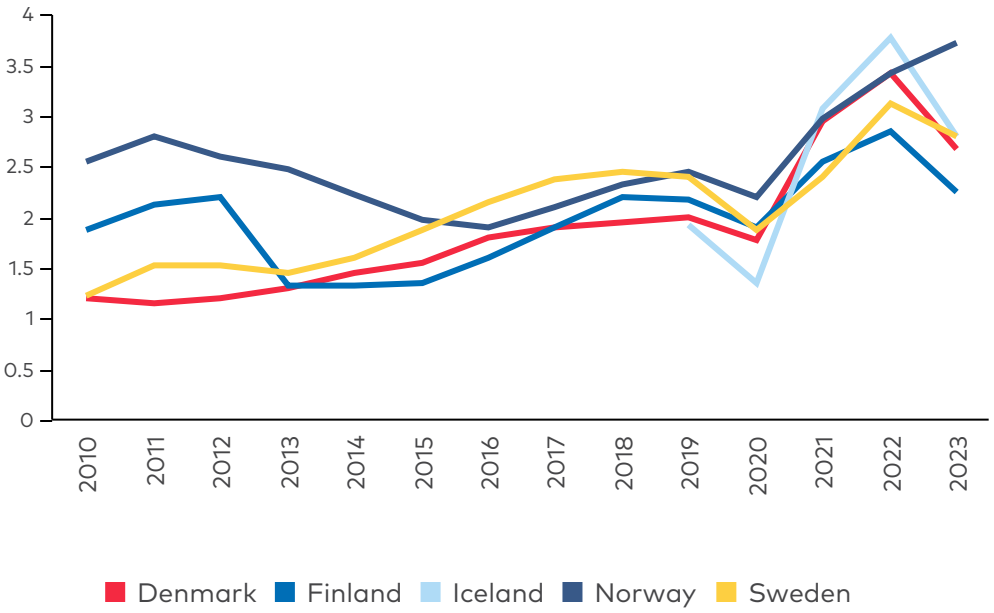


Figure 5.2: Job vacancy ratio
Source: Eurostat

Case 1: Educational levels by generation

The successful implementation of the Bologna Process and the derived increase in educational levels of young people in the Nordic Region coincides with large numbers of the 'baby boomer' generation leaving the labour market. This generation has a significantly lower level of education than the current 24–35 age group – i.e. those who are now entering the labour market. This trend can be seen across the Nordic Region.

All of the Nordic countries have a higher share of people who completed tertiary education than the EU average. The highest share is in Sweden (48.6%), followed by Norway (47.8%), Iceland (42.9%), Finland (42.7%) and Denmark (42.1%). Finland has the highest share of vocationally trained people (38.8%), followed by Denmark (32.4%).

Looking more closely at the data reveals a generational stratification of educational levels. Data from Eurostat shows that, in 2022, it was far less common for younger people (25–34) to be vocationally trained (level 4) (DK: 22%, NO: 19.4%, ICE: 15.0%, SWE: 22.4% and FIN: 37.3), compared to older age groups (DK: 40.8%, NO: 31.5%, ICE: 32.6%, SWE: 34.1% and FIN: 43.5%). The highest shares of vocationally trained people are in the Finnish regions, followed by Nordjylland, Sjælland and Syddanmark, all of which are higher than the EU average.

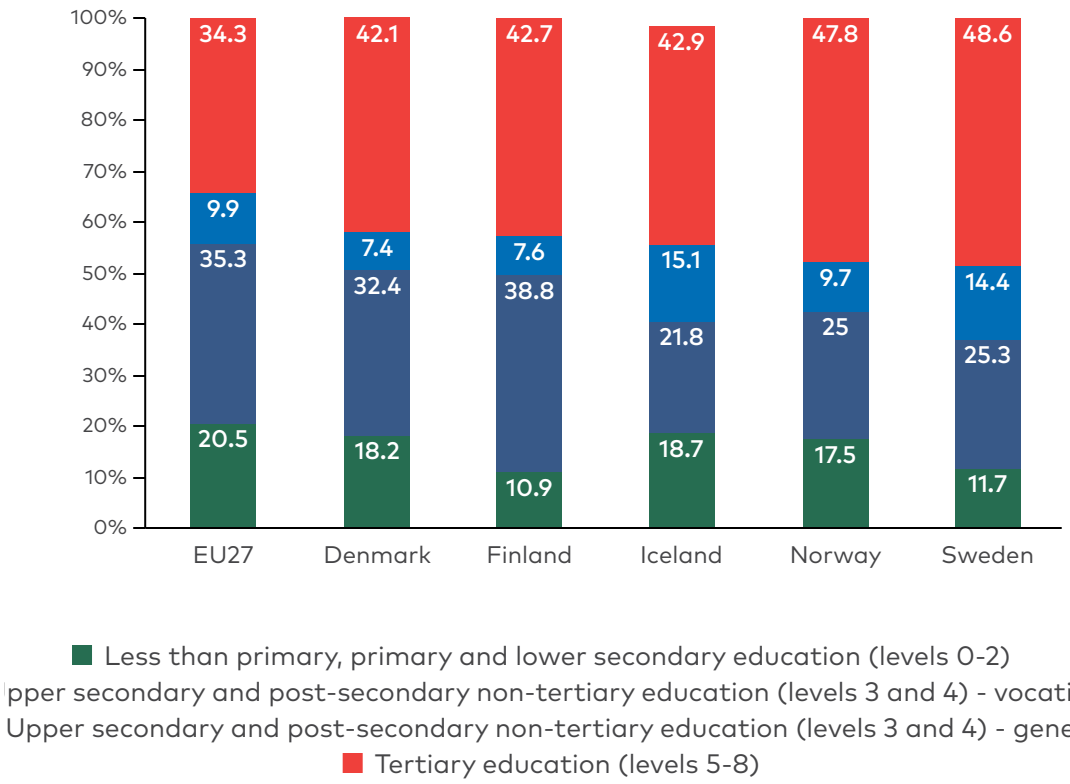
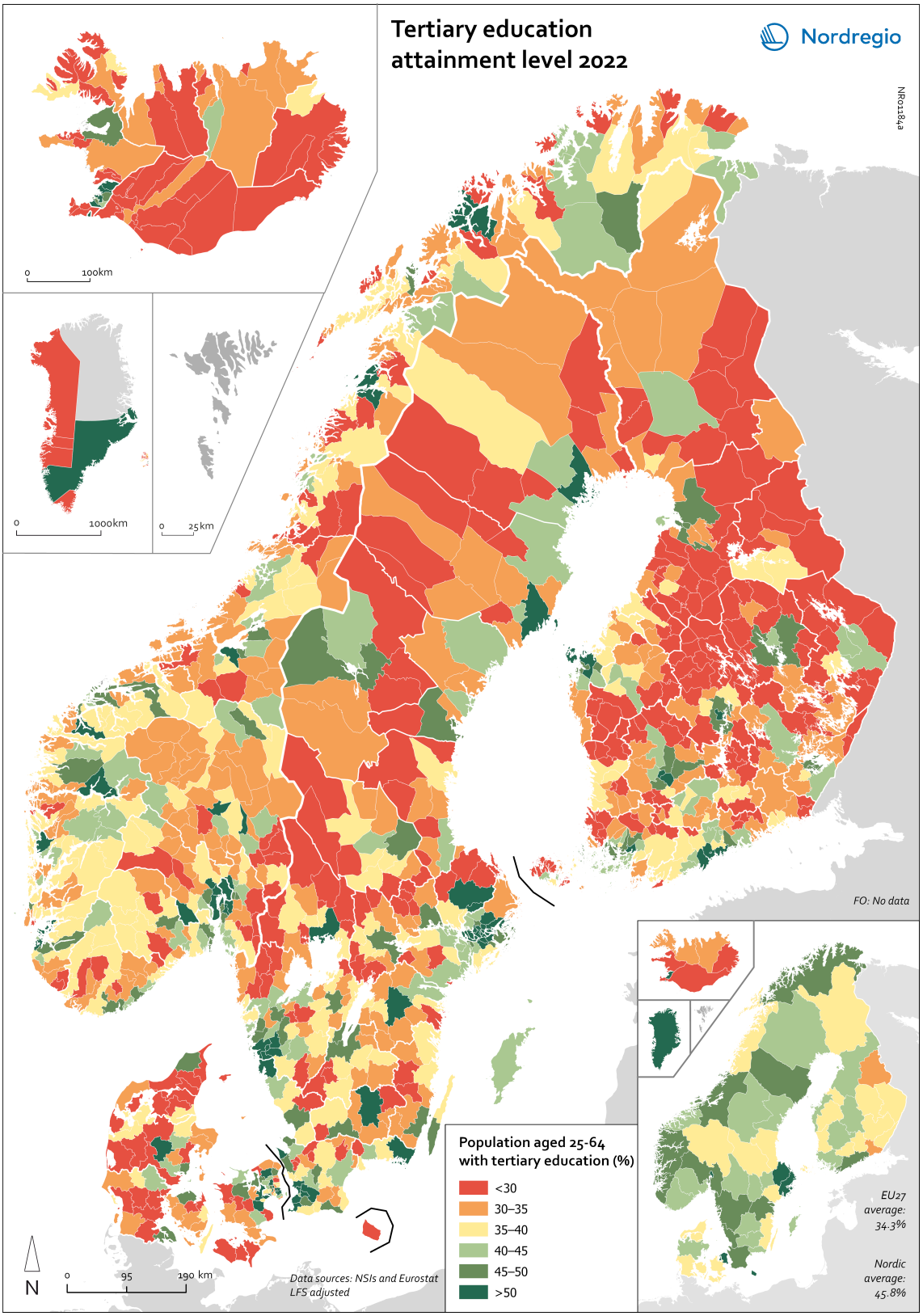


Figure 5.3: Educational attainment among those aged 25–64 in 2022, percentage of total population
Source: Eurostat

The lowest shares are in the capital regions of Stockholm (17%) and Oslo and Viken (19.6%). When a decreasing number of people obtaining a vocational education correlates with an increase in vocationally trained employees leaving the labour market, a 'skills mismatch' gap occurs. Young people now have a higher chance of graduating with a Master's degree than previous generations – which also means that they have a lower chance of only acquiring a primary or lower secondary education. This tendency can be interpreted in multiple ways. While some researchers have deemed this process to be an example of 'degree inflation' (Van Damme 2022), others point to structural inequalities, low salaries and physically demanding jobs (DEA 2022) or young people being heavily influenced by both their parents' socioeconomic status and their early experiences at school (Larsen 2017). These factors result a reproduction of social norms where vocationally trained young people tend to stay outside of urban regions, as opposed to academically oriented young people who tend to leave rural areas for cities (Maersk 2022).

Map 5.4 of tertiary education attainment shows a very different distribution of skills related to education, as well as big differences both within and between the countries. There is a big urban-rural divide in terms of tertiary education, with the capital regions of Oslo (66%), Stockholm (58%), Copenhagen (Hovestaden) (51%), Reykjavik (51%) and Helsinki (Uusimaa) (49%) standing out with particular high share of tertiary educated population. Conversely, rural regions such as Iceland outside of Reykjavik (30%), Kymenlaakso (34%), Kainuu (34%), Etelä-Savo (35%), Satakunta (35%) in Finland and Syddanmark (35%), Midtjylland (36%) and Nordjylland (36%) in Denmark are among the regions with the lowest share of tertiary educated population.



Map 5.4: Share of population (aged 25–64) with tertiary education

Case 2: Lifelong learning and upskilling: What is the situation in the Nordic Region?

Due to the generational skills gap, the concepts of lifelong learning, upskilling and reskilling have attracted renewed attention. Lifelong learning has received increasing recognition over the last ten years for its potential in the areas of educational and workforce policy development across the EU and the Nordic Region.

The World Economic Forum estimates that more than 1 billion people worldwide need to be reskilled by 2030 to meet the needs of the rapidly changing labour markets. However, the concept of lifelong learning is still fairly vaguely (or at least broadly) defined, including in the Nordic countries. According to Eurostat, 'Lifelong learning encompasses all learning activities undertaken throughout life with the aim of improving knowledge, skills and competences, within personal, civic, social or employment-related perspectives. The intention or aim to learn is the critical point that distinguishes these activities from non-learning activities, such as cultural or sporting activities' (Eurostat).

In a Nordic context, lifelong learning often refers to adult learning, usually in the form of enhancing (often 'low-skilled', see, e.g. Helsinger et al. 2023) adults' basic skills through formal education, or via 'reskilling' or 'upskilling'. The concept's unclear definition makes it difficult to analyse the current state of the Nordic Region as a place of lifelong learning. Reskilling and upskilling are usually measured and tracked within specific sectors (see, e.g. 'The EC Skills Agenda 2020', which focuses on reskilling within the green and digital transitions, or the Association of Nordic Engineers' analysis of Nordic digital upskilling initiatives (Schmidt 2021). Based on Eurostat's broad definition, lifelong learning can be measured through 'participation in all purposeful learning activities, whether it is formal, non-formal or informal'. However, when we apply this definition to Eurostat's data, there is no clear evidence of any increase in participation rates in education and training since 2013 (see Figure 5.4).

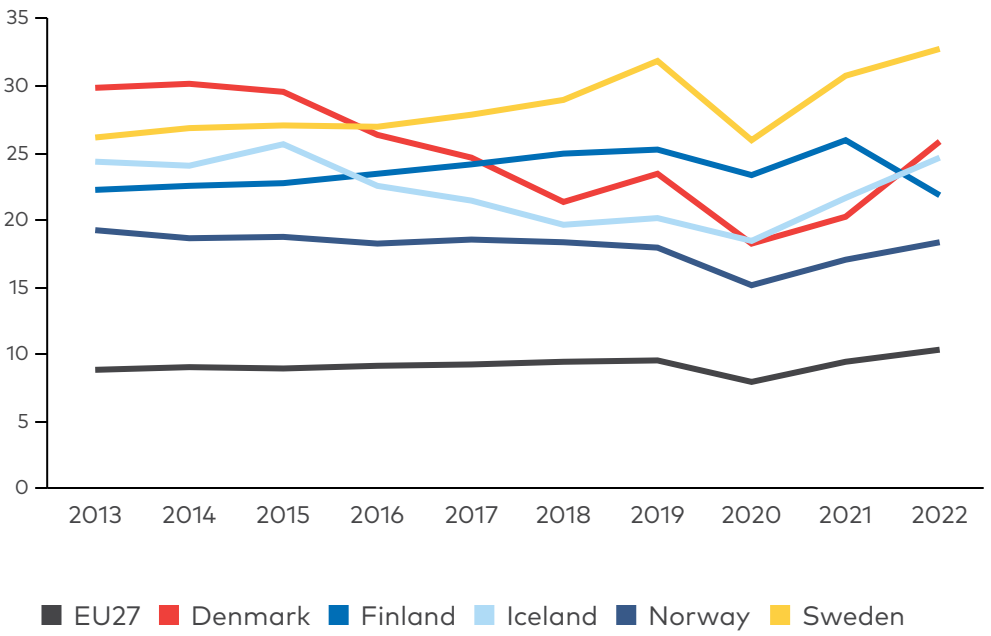


Figure 5.4. Participation in education and training
Source: Eurostat

Where do we go from here? A look at future demands

Unpacking the nuances, underlying concepts and trends related to skills mismatch and labour shortages highlights the complexity of the problem and the need for solutions that are sensitive to demographic, spatial and temporal changes and paradoxes. The problem of attracting healthcare workers is much greater in rural municipalities than in urban ones, but the challenges seem to vary between rural municipalities, too. Educational levels differ not only between generations, but also by geography and educational field. In addition, while labour shortages have attracted increasing political attention, the number of people outside of the labour market seems to be decreasing, albeit minimally and slowly. Even though demand for labour is historically high, people outside of the labour market often face multiple barriers on their way to employment. New research shows that 21% of potential members of the workforce in the Nordic countries have 'little or no connection to the labour market'. In particular, young people, older people, people with disabilities and immigrants are at risk of losing their attachment to the labour market (HBS Economics and VIVE 2022). While the analyses and cases presented here highlight the need for local, regional and national innovation, including these groups will play a pivotal role in dealing with labour shortages more broadly.

In other words, labour shortages are due to various correlating (mega)trends, which take different forms according to the place and context in which they occur. However, they also highlight the significant potential and paradoxes that arise when labour markets make only incremental changes in relation to inclusion and innovation within lifelong learning and upskilling. The relatively small cohort of younger people entering the labour market will increase competition for skilled workers and is likely to lead to a new normal in which the attractiveness of workplaces is a key factor. As the qualifying age for retirement increases, young graduates are already planning to take 'gap years' and breaks throughout their working life instead of at its end. All of these considerations mean that more innovation is needed – not only for the green transition but throughout the labour market as a whole. Given the long gestation period of educational reforms, the Nordic Region will not solve the challenges of labour shortages through traditional educational means alone, regardless of how successful such initiatives may be. Instead, lifelong learning, as a way of exploring or increasing skills while remaining outside of traditional education systems, can be a guiding light for new forms of informal and formal skills enhancement that match the needs of the labour market. While upskilling and reskilling are, at first glance, much and more dynamic than traditional obtainment of education, this approach also requires that companies make a greater contribution than the Nordic social contract traditionally expects of them. Exploring the potential of lifelong learning and the underlying paradigm shift will require new strategies in terms of collaboration and division of responsibility between private-sector companies, educational institutions and actors within the public sector.

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CHAPTER 6:

GREEN TRANSITION OF THE LABOUR MARKET

AUTHORS: Gustaf Norlén and Karina Berbert
MAPS AND DATA: Karina Berbert and Gustaf Norlén



Introduction

Climate change and the need for a green transition are among the megatrends impacting the labour market (ILO 2017; Dølvik & Steen 2018). A green transition implies a shift from an economy based on fossil fuels to a green economy, defined as 'an economic context in which prosperity and social equality increase, while pressures on the environment and ecological damage simultaneously decrease' (Cedergren et al. 2022; 6). In terms of the labour market, this involves transitioning away from jobs that contribute to high levels of greenhouse gas emissions, negative environmental impacts and emissions, and towards jobs that support the environment and promote social equity. During this transition, new jobs will be created, ones dependent on fossil fuels will be reformed or phased out, and the skills required for existing jobs may change (Vandeplas 2022).

It is widely agreed that this transition is necessary. According to a representative survey, 71% of the Nordic population are worried or very worried about climate change (Tapia et al. 2023). All of the Nordic governments have set ambitious targets for reducing greenhouse gas emissions and are committed to both the Paris Agreement (2015) and the EU climate law Fit for 55, which stipulates that the countries are legally bound to reduce their emissions by 55% (compared to 1990 level) by 2030 (EU Commission 2023). The green transition is also widely supported by business organisations and trade unions in the Nordic Region. This support was formalised in a Memorandum of Understanding on the Green Transition in 2023 (NCM 2023). The Memorandum, the Paris Agreement (UN 2015) and the European Green Deal (EU Comission 2019) all highlight that the impacts of the green transition differ between different regions and social groups.

This chapter looks at the effects of the green transition on the labour market from a geographical perspective. It begins with a discussion of how the green transition impacts the labour market, as well as the concepts of green jobs and brown (or polluting) jobs. The discussion then turns to the geographical distribution of brown/polluting and green jobs. The chapter concludes by looking at gender differences and future trends related to 'green industrialisation' and its dependency on fossil-free electricity production.

The green transition and green jobs

Phasing out fossil fuels and transitioning to a green economy will have major impacts on the labour market. In the short term, it is thought that the effects will be most pronounced in the energy-related sectors. However, in the medium and long term, the effects are expected to be felt in the economy more broadly due to a general structural adjustment, including in production systems (Cedergren et al. 2022).

There have been several attempts to assess the overall employment impacts of the green transition. Most of these macroeconomic assessments predict relatively small overall impacts, between -0.3% to 0.5% by 2030 across the whole EU (Vandeplas et al. 2022). An assessment of the Nordic Region showed that while the overall impact on employment of policies related to the green transition is expected to be small (less than 1%), the impact was greater on occupations related to private and public consumption services. Other occupations, such as engineering, metal machine trades as well as electrical trades, were all expected to grow. There were also differences within countries, as some regions were expected to create more jobs than others. According to the Nordic assessment, no major effects were anticipated in terms of salary levels or age distribution (Dixon et al. 2023).

There have been numerous different approaches to classifying jobs according to how 'green' they are, and a whole literature has emerged in this field (Stanef-Puică 2022; Kuai 2021). Typically, the classifications distinguish between *green*, *brown* and *white* jobs. Green jobs are those that reduce the impact on the environment, brown jobs are actively polluting, and white jobs are those with a relatively neutral environmental impact. Most jobs are considered white (Vandeplas 2022). While colour-coding jobs is not new, the concept of green jobs emerged around 2008 with the 'Green Jobs Initiative', started by different UN organisations and the ILO (Stanef-Puică, 2022). Since then, there have been many attempts to define green jobs by researchers and international institutions, such as the United Nations Environmental Programme (UNEP 2008), the International Labour Organization (ILO 2015), Eurostat (2016), Statistics Sweden (SCB 2017), and the Organization for Economic Co-operation and Development (OECD 2023b). While their approaches differ, they all agree that green jobs are those that: (i) address

environmental damage to air, water, soil, waste, noise, biodiversity and landscapes, including cleaner technologies and products that prevent or minimise pollution; (ii) address resource depletion, leading to resource-efficient technologies and products, the main purpose of which must be environmental protection or resource management. The 'Green Jobs Initiative' also stressed that a green job should not only contribute to the environment but also be a decent job (Stanef-Puică 2022).

Operationalising the green job concept is not easy, as it depends on the classifications that underlie standard labour market statistics. The concept of 'green' is also a moving target since what was once considered green may not be considered so in the future (Wøien & Peter 2021). There are two main approaches to quantifying the green jobs concept – they may be defined on the basis of sector or by tasks performed by occupations. Both approaches have their strengths and weaknesses, and only a few sectors and occupations can be described as entirely green or brown (Kuai 2021). In this chapter, we will look at green and brown jobs from different perspectives. The next section focuses on brown jobs, which we measure using emissions data by sector. After that, the focus then shifts to the geographical distribution of green jobs, where we follow the approach set out by Vona et al. (2018), which focuses on green tasks in specific occupations. Vona et al. (2018) describe green occupations as those that require specific skills, especially in engineering and management, for creating and implementing environmental technologies and practices.

The green transition and the labour market – what is a brown job?

Just as for green jobs, there are different methods for defining 'brown' or 'polluting' jobs – e.g. by sector or by occupation (Vandeplas 2022; Vona 2018; OECD 2023b). One way of assessing the environmental impact of the labour market is to look at the greenhouse gas emissions that it produces. Emissions data can be broken down by economic sector, which makes it possible to look at emissions by types of jobs.

In 2022, greenhouse gas (GHG) emissions per person employed in the Nordic Region were 15.7 tonnes. This is higher than the EU average of 13.5 tonnes. There are also fairly big differences between the Nordic countries, with higher emissions per person employed in Iceland (28.6), Denmark (23.1) and Norway (20.5) and lower emissions in Finland (15.7) and Sweden (8). On the other hand, the emissions per person employed have decreased faster in the Nordic Region than for the EU as a whole. In the last decade, emissions per person employed fell by 24% in the Nordic Region compared to the EU average of 22%. The biggest decrease (32%) was in Finland (see Figure 6.1).

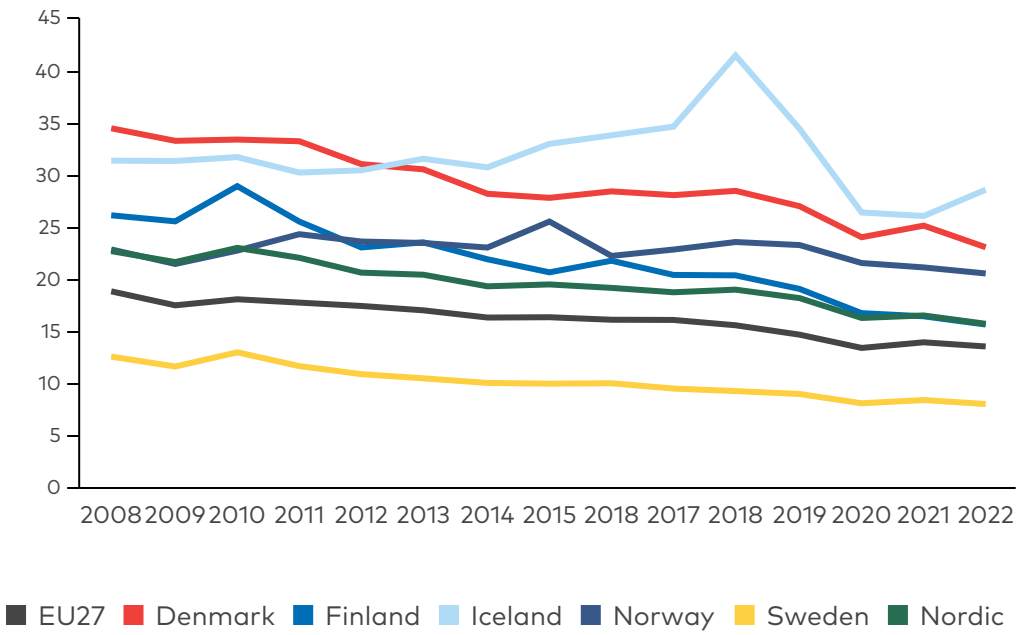


Figure 6.1: GHG emissions per person employed
Source: Own calculations based on Eurostat

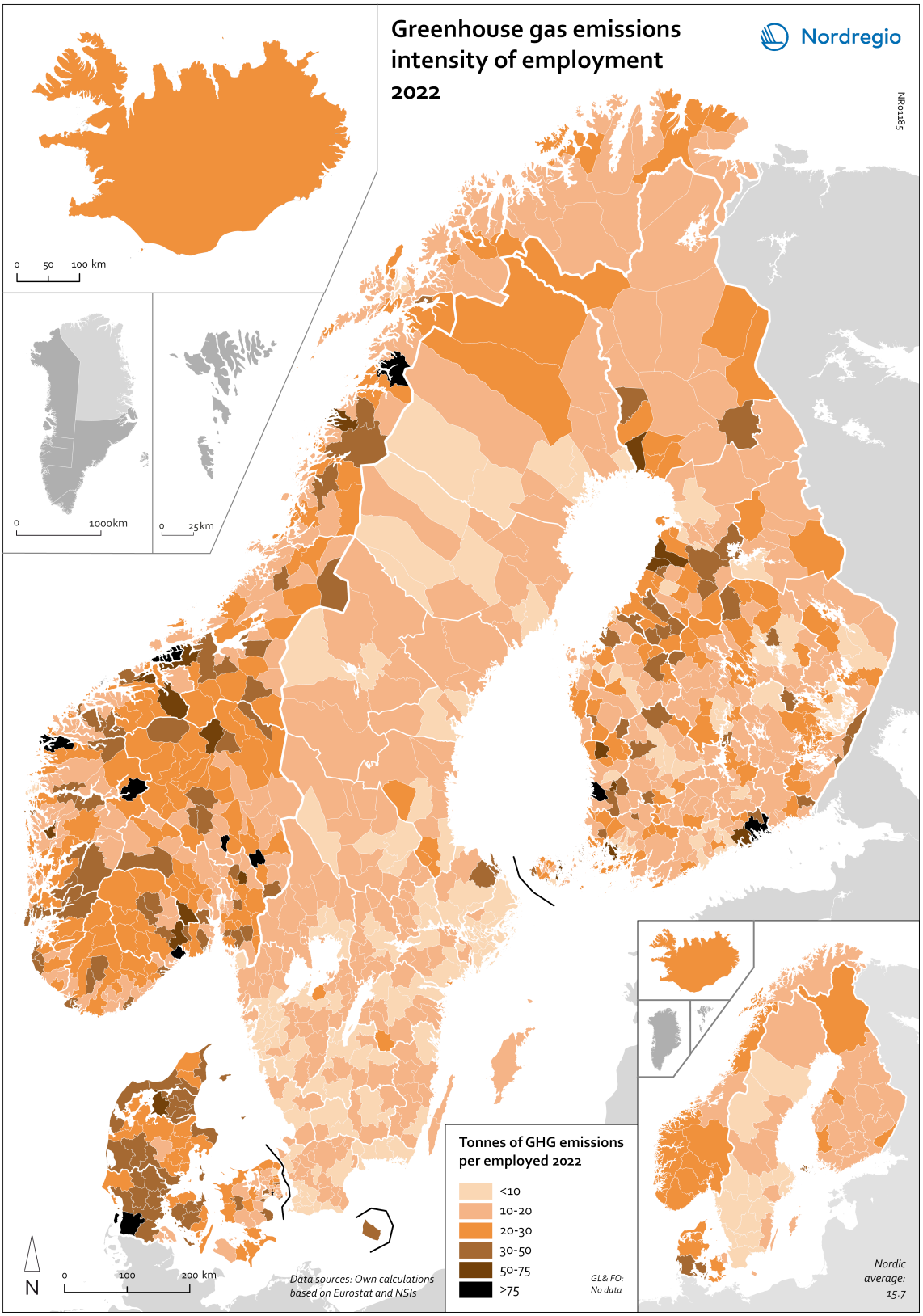
The sectors with the highest emissions per worker vary slightly between the countries. In Sweden and Norway, the sector with by far the highest emissions per worker was the manufacture of petroleum coke and refined petroleum products. However, it should be noted that the number of workers in this sector is small. In Denmark, the highest emissions by person employed could be found in water transport; in Finland, in electricity, gas, steam and air-conditioning supply; and in Iceland, in the manufacture of basic metals. In general, the highest-emitting sectors with the most workers were transport (including water and air), agriculture and food production, mining and manufacturing. These sectors are important for the economy and for a working society, and most of these jobs cannot just be phased out. Instead, new methods and new skills are needed in order to phase out emissions without also eliminating the jobs.

By calculating the average emissions per person employed and per sector[12] we could use municipal employment by sector data to assess the average emissions per person employed in each municipality (Map 6.1). The results are an estimation based on the assumption that all jobs in the same sector have the same GHG emissions. On a regional level, the highest emissions per person employed can be found in Åland (40 tonnes), followed by Southern Denmark (31 tonnes), Satakunta in Finland, Iceland (29 tonnes) and Vestfold og Telemark in Norway (28 tonnes). The lowest emissions per worker could be found in the Swedish regions of Stockholm (5 tonnes), Blekinge (7 tonnes) and Jönköping (8 tonnes). In Åland, more than 70% of the emissions come from water transport, which can be explained by its position as a hub for ferry traffic between Sweden and Finland.

The municipalities with particularly high emissions per worker are dominated by certain high-emitting sectors, e.g. transport (e.g. Brøndby, DK), agriculture (e.g. Tønder, DK), refineries (e.g. Porvoo, FI) and manufacturing (e.g. Oxelösund, SE). Overall, emissions per worker are higher in rural areas (24 tonnes) compared to 18 tonnes for intermediate areas and 13 for urban areas.

According to the task-based method used by Vona (2017) and OECD (2023b), 15.1% of all employment in the Nordic Region is classified as polluting jobs. This is 3.4% higher than the OECD average of 11.7% (OECD 2023b). The task-based method also reveals a higher share of brown/polluting jobs in rural areas (ibid.). As a result, rural areas are subject to greater pressure for structural change. However, studies show that the skills needed for brown jobs are quite similar to those needed in the rest of the economy, and as such, the prospects are good for reintegrating workers into the labour market (Vandeplas 2022).

12. Based on two-digit employment by sector (NACE) data.



Map 6.1: Greenhouse-gas emissions per person employed

Box 6.1: Methodology – identifying and quantifying green jobs

While there are different approaches to defining green jobs, the most commonly used method in the literature is the task-based approach developed by Vona et al. (2017). This is also the method that has been applied in this chapter, as well as in a recent OECD report (OECD 2023a). Vona et al.'s method is in turn inspired by Dierdorff et al. (2009), who used the US-based Occupational Information Network (O*NET) to provide a detailed mapping of skills and tasks related to green jobs and the green transition. Vona et al. (2017) use this classification of skills to elaborate a measure of 'greenness' for each occupation. Four general occupational categories emerge as particularly green, in the sense that they include many green skills and green tasks: engineering and technical; operation management; monitoring; and science.

Vona et al. (2017) based their method on US O*NET and SOC (Standard Occupational Classification) data, which was later translated into the International Standard Classification of Occupations (ISCO) that is used in Europe. The result is a typology in which each of the 437 four-digit occupations in the ISCO classification is categorised on the basis of its green tasks. According to this translation, 83 of the occupations involve green tasks. Access to detailed data on municipal-level occupations made it possible to present the results on regional and municipal levels for Sweden, Norway, Denmark and Finland. For Iceland and the Faroe Islands, national data has been used. The period of analysis for each country varied according to data availability. This report looked at the most recent year in which comparable data was available for all of the Nordic countries, i.e. 2021.

A final harmonisation step was implemented to ensure consistency with the OECD study, which used the same method, but on the NUTS2 level (OECD 2023a). This step aggregated the green and brown classifications and values at NUTS2 level, after which the adjustment factor was calculated. This factor indicates the extent to which the OECD reference values differ from the current values, and as such serves as a multiplier that can adjust current results toward reference values. The adjustment factor was then applied to the quantification (in %) of green and brown occupations at the municipal level, and the values for green and brown employees per municipality were adjusted.

There is no perfect way to assess green jobs. Some of the weaknesses of this method include the information that is lost in translation, as the classification from O*NET is first translated into six-digit SOC and then to four-digit ISCO. The reasons why a certain occupation is considered green (or not) are, therefore, not always intuitive. The classification also produces a binary result – an occupation is either considered green or not. This is, of course, a simplification, as greenness also varies within occupations.

Examples of the main ISCO/O*NET jobs connected with green occupations include: software and system developers, landscape architects, recycling and reclamation workers, refuse and recyclable material collectors, energy auditors/sustainability specialists, business salespeople, planners and investigators, office assistants and secretaries, specialist trade, management and organisational developers, primary school teachers, electrical engineers, etc.

The geography of green jobs

In 2021, around 3.4 million jobs, or an average of 25.2% of total employment in the Nordic Region was classified as green, according to the task-based approach used by Vona (2017) and OECD (2023b). This is 7.6 percentage points higher than the OECD average of 17.6% (OECD 2023b). The highest share of green jobs could be found in Sweden (26.6%), followed by Norway (26.3%), Finland and Denmark (both 23.6%) and Iceland (23%). Although higher than the European average, there are differences at the regional and municipal levels among the Nordic countries regarding the share of green jobs.

In general, urban areas exhibit a greater prevalence of green jobs – on average 28% in urban areas compared to 21% in rural areas. Especially the capital regions stand out, except for Rogaland in Norway the regions with the highest share of green jobs were all capital regions – ranging from 27% green jobs in Hovestaden (Copenhagen) to 30% in Stockholm.

In Sweden, municipalities within the Stockholm region, such as Sundbyberg, Upplands-Bro, Stockholm, Nykvarn and Solna boast a share of green jobs exceeding 30%. But also some more industrial municipalities, like Burlöv in Skåne (34%), Gnosjö in Småland (32%) and Ludvika in Dalarna (31%) surpass the 30% mark in green jobs. Taking a closer look at the regional level numbers, the variations are significant. Between Stockholm (30%) and Kalmar (21%) there is a nine-percentage-point difference.

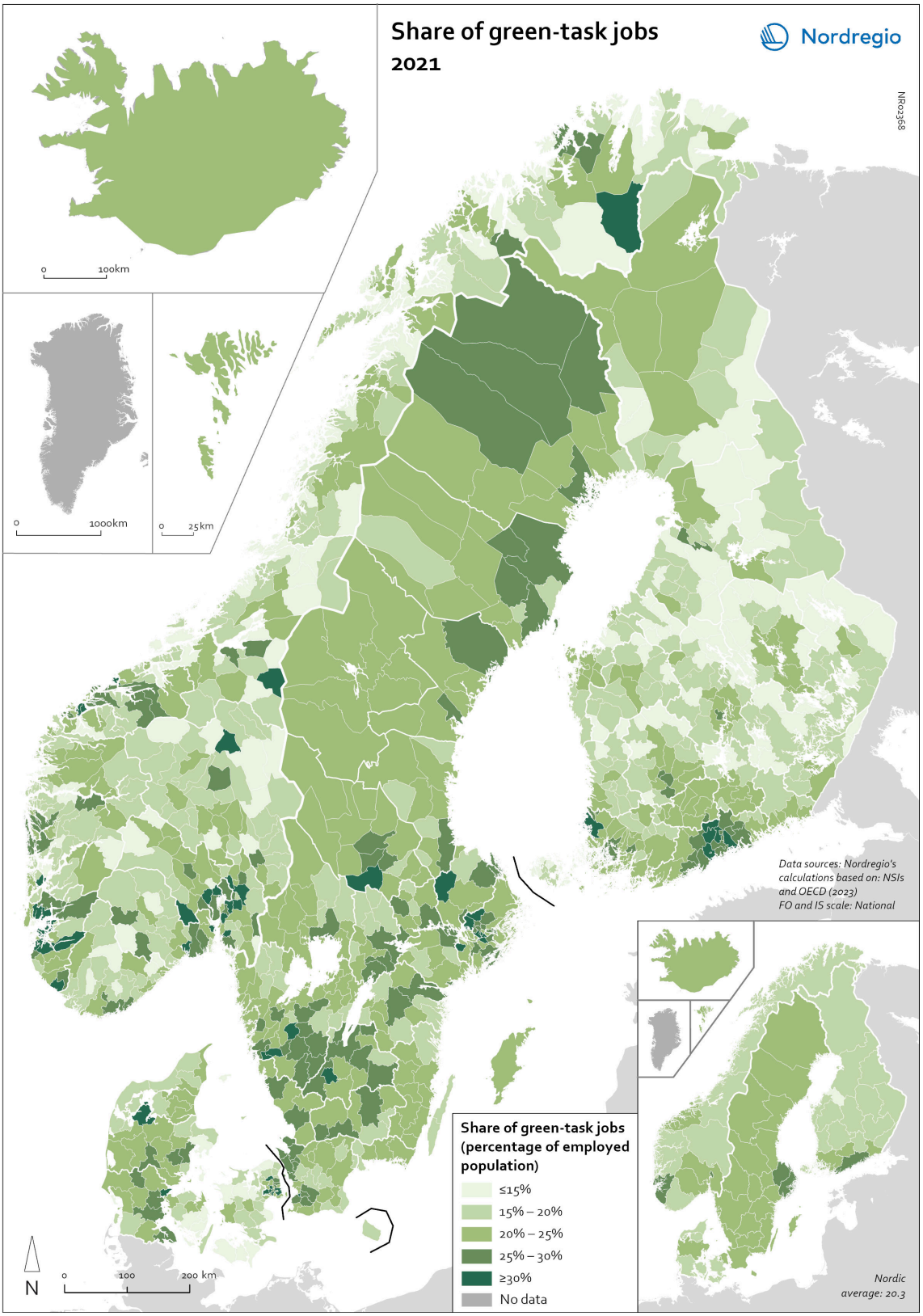
In Norway, municipalities with the highest share of green jobs include Bærum, Kongsberg and Lier in Viken; Sandnes, Sola, Stavanger and Sokndal in Rogaland and Ulstein and Aukra in Møre og Romsdal. At the regional level, the share of green jobs varies from 32% in Rogaland to 20% in Innlandet. Rogaland is the center of the oil and gas sector in Norway, but has actively worked towards creating more green jobs, relying on their big production of fossil-free electricity and skilled workforce from the oil and gas industry. (Førland 2023).

In Finland, most of the municipalitis with a high share of green jobs are located in the capital region (Uusimaa). These include Kauniainen, Sipoo, Espoo and Vantaa (all with shares over 30%). Other municipalities that stand out are for example Uusikaupunki (33%) in Varsinais-Suomi and Pirkkala (29%) and Lempäälä (28%) in Pirkanmaa. In Uusikaupunki there are many jobs in the vehicle industry and paper industry – both with ambitious goals for reducing the environmental impact. The Helsinki region (Uusimaa) is the region with the highest share of green jobs (28%) and Etelä-Savo is the region with the lowest share (17%).

In Denmark, the highest share of green jobs can be found in Allerød (41%), Høje-Taastrup (36%), Ballerup (32%), Brøndby (30%) and Copenhagen (30%) in the Copenhagen region. Other municipalities that stand out include Skive in Midtjylland (31%), and Frederica in Syddanmark (31%). At the regional level, the share of green jobs varies between 27% in Hovedstaden (Copenhagen) to 17% in Sjælland.

Iceland and the Faroe Islands were analysed at the national level due to a lack of detailed data on employment categories. The share in both countries is 20–25%, which indicates a significant number of green jobs, above the EU average.

As map 6.2 shows, there are significant regional disparities regarding the distribution of green jobs, with a higher share in urban regions. One of the reasons for this is that the green transition is in an early phase and there is a demand for new skills and innovations. The green jobs are therefore correlated with higher education and a skilled workforce (OECD 2023b). Consequently, emerging activities have a greater chance of being related to sustainability or the green economy when they are geographically based in diversified economic centres (Hardy et al. 2018).



Map 6.2: Share of green-task jobs (2021)

Despite the focus on high skilled jobs in urban areas, the green transition is also expected to create many vocational jobs (Persson Thunqvist et al. 2023), and investments in green industries are taking place also outside capital regions, e.g. in the north of Sweden (Wallin 2021; Danbolt 2023). The challenge is to find the right skills, both high-skilled work and vocationally trained, that are needed. In Sweden, for instance, the Västerbotten region, which is known for its robust industrial tradition, is collaborating with the Swedish Job Security Council (TRR) to assist individuals who have become unemployed, including as a result of the pandemic (Wallin 2021). This initiative has allowed for the reallocation of unemployed workers, which has strengthened the green economy. In addition, sustainability-focused companies have established factories in the region, attracting both workforce and development initiatives.

Gender differences in green jobs

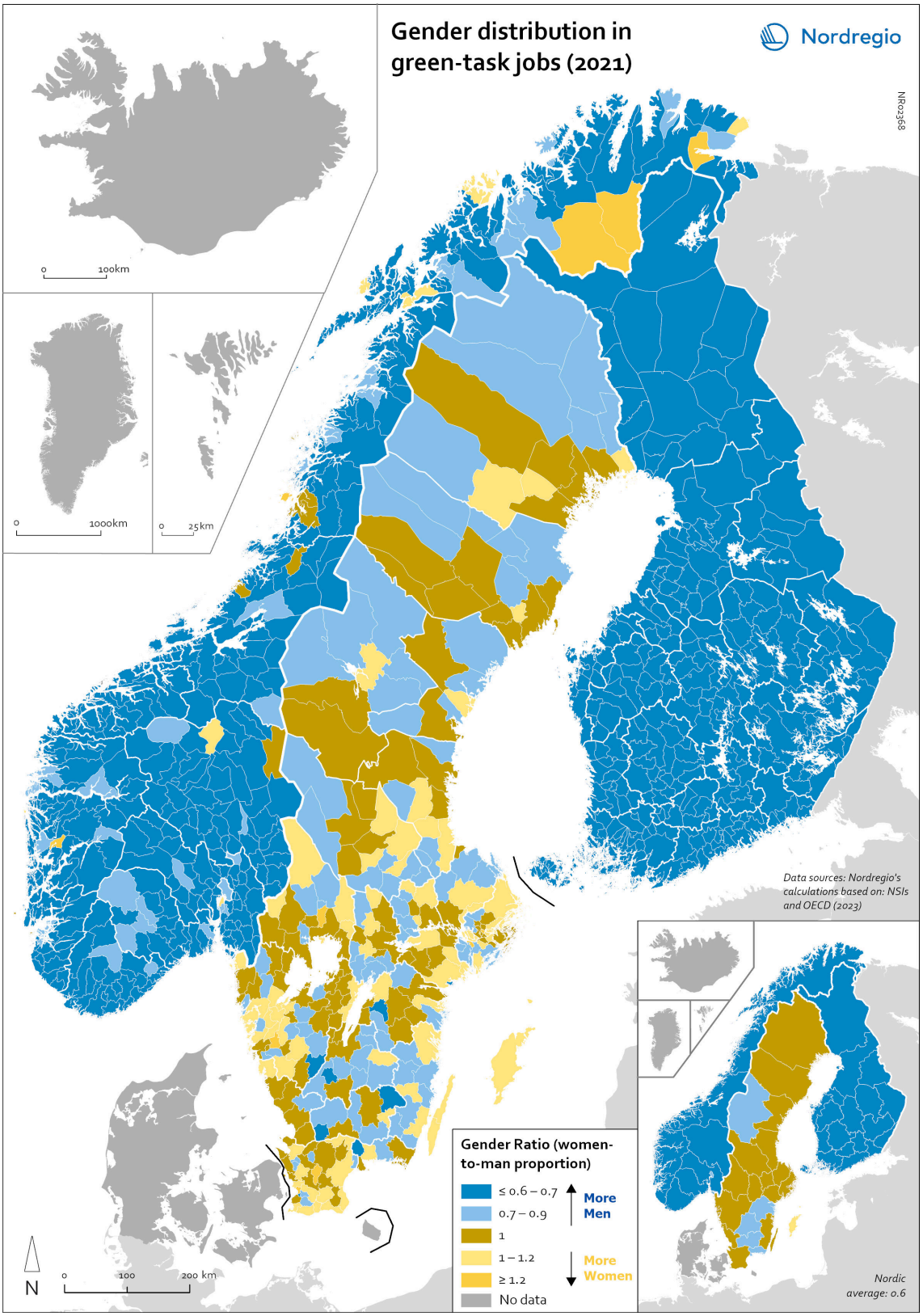
Women face several obstacles to equal participation in the green economy. One key challenge is gender-based occupational segregation, which may increase as the green sector expands. Other challenges include deep-rooted cultural and societal expectations, a lack of policies that address gender equality and transformation, inadequate opportunities for training and mentorship, and unevenness in asset ownership (Danbolt 2023). Although the Nordic countries are above the OECD average for female workers in green jobs, Nordic women remain underrepresented in the green economy (OECD 2023b; Danbolt 2023).

This unevenness is shown in Map 6.3, where blue shades indicate a higher number of men in green occupations (values below 1), while yellow indicates a higher number of women (values higher than 1). The balance between both men's and women's distribution is identified by the value 1, which is represented in ochre. The top ten green occupations in which women outnumber men vary in different countries. Examples include assistants and secretaries, primary school teachers, financial assistants, nurses, home carers, home health carers, and other occupations identified via the green job classification method (Vona et al. 2018). On the other hand, men are predominant in occupations such as software and system developers, management and organisational developers, and civil engineering occupations.

These differences in occupation types contribute to the underrepresentation of women in STEM-related occupations and are indicative of current challenges related to green transition outcomes. Studies have shown that efforts to address climate change tend to have an overall positive impact on employment, especially in male-dominated sectors, including the energy, industrial and agricultural sectors. At the same time, the services sector, which is predominantly female, suffers the most significant negative impacts on employment (Sand 2023).

Furthermore, it is evident that metropolitan and surrounding areas have been at the forefront of green job creation. In these areas, there have been significant efforts to narrow the gender gap, thereby influencing the spatial distribution of men and women across this sector. This trend may be attributed to the fact that these areas have a higher concentration of skilled professionals, which leads to an increased demand for green jobs – and, consequently, more opportunities (Danbolt 2023).

In Sweden, municipalities in the Stockholm region, as well as Värmland, Skåne and Västra Götaland, have a slightly higher number of women in green jobs than men. The municipalities with a higher number of women presented a gender distribution ratio of 1.1–1.5. Similarly, in Norway, municipalities in the Oslo, Troms og Finnmark, Nordland and Vestland regions have more women in green occupations, with ratios of 1.6–1.03. In Finland, the gender distribution ratio was the lowest, at both municipal and regional levels, when compared to Sweden and Norway – most notably, Uusimaa, Etelä-Pohjanmaa and Keski-Suomi, with ratios of 0.6–0.5.



Map 6.3: Gender distribution in green-task jobs (2021)

Green industrialisation and green energy

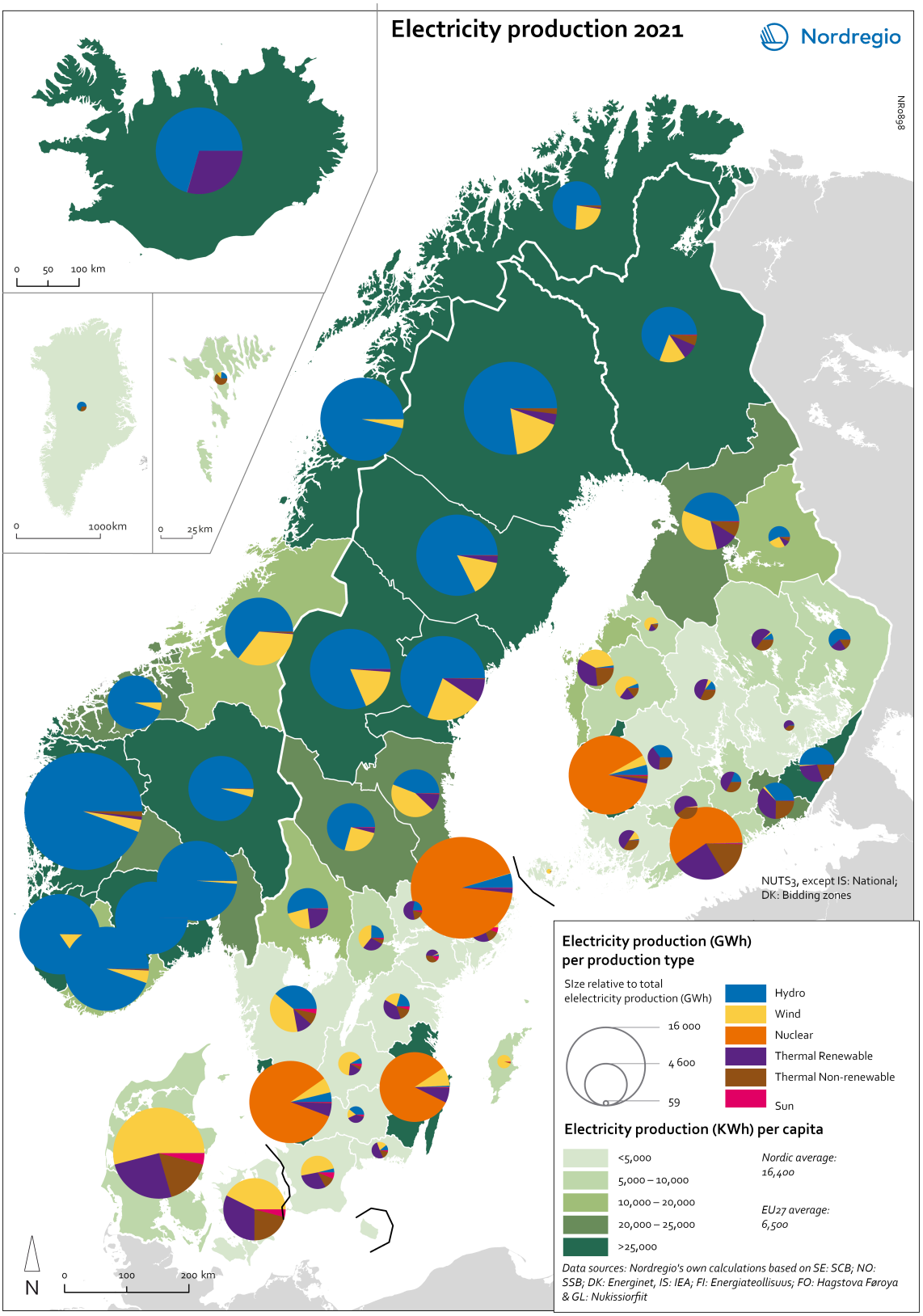
In addition to the previously mentioned difficulty in assessing and measuring green jobs, it should also be noted that green-job typologies measure the situation at the time of the latest available statistics. As such, they do not give a full picture of the jobs that will be created by the green transition. The green transition of the labour market is at an early stage, and many investments in 'green industrialisation' are taking place right now. This has sometimes been referred to as 'the green industrial revolution' (Pareliussen & Purwin 2023).

In Sweden, but also to some extent in Norway and Finland, this development is mainly taking place in the northern part of the countries. In Sweden, for example, large-scale investments are being made in industries related to the green transition – around EUR 110 billion in Västerbotten and Norrbotten alone in the next few years (Larsson 2022). This is mainly occurring in sectors such as green steel, battery production and mining. In 2023, Norway launched a 'Green Industrial Initiative' so that the country would lead the way in green innovation and investment. Similar initiatives are underway in the other Nordic countries.

Naturally, this process of green industrialisation requires labour – according to different assessments, between 20,000 to 25,000 workers are needed in the new industry jobs in Northern Sweden. As an indirect consequence, there will also be a need for up to 30,000 jobs in other sectors (Larsson 2022; Teknikföretagen 2023; SKR 2023). Attracting skilled workers is a major challenge for the regions. Other challenges include providing the right education and training programmes to ensure that the workers have the right skills and securing the transport infrastructure, housing and urban planning necessary to attract people to these areas (Larsson 2022).

A prerequisite for these investments is the availability of predictable and relatively cheap fossil-free electricity (Larsson 2022). The Nordic Region is well positioned here since 96% of Nordic electricity production comes from fossil-free sources – 73% from renewables (mainly hydropower) and 17% from nuclear power in 2021.[13] Iceland and Norway have the highest electricity production per capita in the world, and Norway and Sweden have been net exporters of electricity in most years during the last few decades. As seen in Map 6.4, the regions with the highest electricity production per capita are in Iceland, Northern Sweden, and Northern and Western Norway. Both Finland and Denmark are net importers of electricity, but both countries have rapidly transitioned away from fossil fuels.

13. 2021 was the latest year with full data coverage at regional level. In 2023, a new nuclear reactor, Olkiluoto 3, came on stream in Finland.



Map 6.4: Electricity production (2021)

Despite the relatively high electricity production per capita in the Nordic Region from an international perspective, it is expected that electricity demand will increase significantly. In Sweden, projections show that 70 TWh more electricity will be needed in 2030 – an increase of around 40% compared to the country's electricity generation in 2022. The biggest increase in demand is expected in the transition to fossil-free steel production, but demand is also expected to rise in the paper industry, chemical industry, hydrogen production, technical industries and mining. Most of this increased demand is expected in the northern part of Sweden (SKGS 2023).

Concluding remarks

This chapter has looked at the green transition from a geographical perspective. While it is clear that the green transition will have big impacts on the labour market, it is difficult to predict the precise form these impacts will take. According to the typologies presented, the Nordic Region has a higher share of both green jobs and brown jobs compared to the EU average. This indicates that the Nordic Region is competitive when it comes to green innovation, but also that there is still a need for structural change. The maps on emissions per person employed and green jobs indicate that there is a higher share of jobs with high emissions in rural areas and a higher share of green jobs in urban areas. This implies that rural areas are subject to greater pressure in relation to restructuring the labour market.

However, the green transition is still at an early stage. Investment in green industrialisation is expected to create many new jobs, not least in more remote areas. Finding people with the right skills to fill these vacancies will be a major challenge, especially considering the labour shortage across the economy as a whole (see Chapter 5). In addition, all of the Nordic countries are undergoing the same transition, and therefore (to some extent) they are competing for the same labour. Green industrialisation is also dependent on a big and predictable supply of fossil-free electricity production. While the Nordic Region is a global leader in terms of electricity production per capita, more output will be required to satisfy future demand.

Lastly, it should be noted that concepts such as 'green industrialisation' and 'green jobs' should be used with care since what is considered green is a moving target. For example, the previous focus on the bioeconomy has been criticised since activities that are nature-based are not necessarily good for the environment – cf. the controversies surrounding land-use management and biodiversity loss (Khan et al. 2021). While some industries will help to lower CO_2 emissions, there may be other environmental concerns related to these activities. One example of this is mining – many processes related to green industry require rare earth minerals, but extracting these can have a major environmental impact.

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THE NORDIC ECONOMY

THE NORDIC ECONOMY

REGIONAL, BUSINESS AND HOUSEHOLD PERCPECTIVES





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Achieving sustainable, long-term regional development requires that economic, environmental, and social aspects are all taken into consideration and support each other. In this chapter, we focus on the Nordic economy via three different aggregated levels of analysis – regional, business and household. While these perspectives are intertwined, close examination of each one will clarify and bring new dimensions to developments in the various Nordic regions.

A substantial body of literature argues that using only economic indicators to explain regional development is, at best, unnuanced, but also risks giving a misleading impression of the development status of the Region or neglecting regional variation in the impacts of different activities. Therefore, these economy chapters' analyses utilise three different types of indicators – economic, social, and environmental – for each of the three aggregated levels of analysis. By approaching the economy in this manner, the aim is to achieve a holistic understanding of the economies in the Nordic Region.

CHAPTER 7: REGIONAL PERSPECTIVE ON THE ECONOMY

GDP in the Nordic countries grew by 3.5% between 2021 and 2022. However, the per capita GDP in the Nordic Region was much higher than the EU average – $80,406 compared to $57,098, with Norway having by far the highest figure. Intra-regional inequality quantified by Gini coefficient is growing in the Nordic countries, both between and within regions. While Denmark's urban regions have higher growth in per capita GDP, the regional patterns in other Nordic countries are less related to urbanisation, e.g. Finland's northern and less populated regions have the highest growth. Throughout this period, Sweden and Greenland had the highest levels of income inequality, Norway and the Faroe Islands the lowest, with Denmark, Finland and Åland in the middle. Research has argued that the high Gini coefficient in Greenland reflects both the small size of the population and the relatively large proportion employed in the informal economy and that the increase in inequality in Sweden was due to the diminished significance of social transfers within the working-age population and the resulting decrease in relative income levels experienced by the lowest quintile.

The highest municipal income disparities were observed in the capital city regions of Denmark, Finland and Sweden, each of which had Gini coefficients around 0.6. These municipalities also have some of the highest income levels in their respective countries. Data on territorial GHG (greenhouse gas) emissions from 1990 to 2021 was collated for each Nordic country. While emissions have surged in Iceland, a contrasting macro trend is evident in Denmark, Finland, and Sweden, where reductions have been consistently observed, the pace of which has been accelerating since 2010. Norway initially registered an increase, but it started to taper off in 2020. All the Nordic countries have exceeded the EU's overall climate goals, with several of them on track to achieve carbon neutrality between 2035 and 2045.

CHAPTER 8: BUSINESS PERSPECTIVE ON THE ECONOMY

This section adopts a business-level perspective to analyse important economic, social and environmental indicators. SMEs form the backbone of the Nordic economy, comprising about 90% of companies and over half of people in work. Innovation measured by expenditure on both R&D and non-R&D innovation by SMEs shows regional variations. While urban regions have higher concentrations of SMEs involved in product innovation, more non-urban SMEs are involved in process innovation than in product innovation in the Nordic Region. The rate of business bankruptcies is a core indicator of the robustness of the economy from a business perspective and also since Nordic and international businesses have been impacted by the COVID-19 pandemic and rising inflation in recent years. Despite challenges

during the COVID-19 pandemic, the Nordic countries fared relatively well in terms of bankruptcy rates. However, when job-retention schemes ended, the number of bankruptcies went up, as did inflation and interest rates.

Territorial GHG emissions vary at regional level because the countries and regions have different resources, energy mixes and production structures and, therefore, different emission patterns and climate goals. From 2017 to 2021, the Nordic regions cut their per capita GHG emissions by 11.3% on average, with an overall average fall of 8.7% over the same period. This trend is evident in Denmark, as well as in southern Sweden and southern Finland – densely populated areas that have taken steps toward expanding district heating and reducing carbon intensity. In regions historically reliant on fossil fuels for heat and power, emissions have continued to fall. Regardless of past trends, coal, oil and gas are still major components of primary energy consumption structures in the Nordic countries. Even if significant progress has been achieved in terms of generating renewable energy, substantial decarbonisation challenges remain in all of the Nordic countries because of fossil-based energy mixes (Sweden, Finland and Denmark), oil production (Norway) and industrial processing (Iceland)..

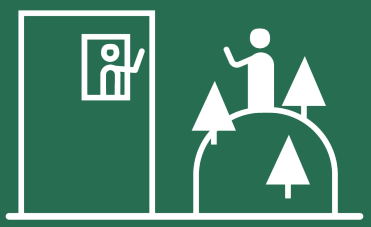
CHAPTER 9: HOUSEHOLD PERSPECTIVE ON THE ECONOMY

This section looks at economic, social and environmental indicators from a household perspective. As far as purchasing power is concerned, Norway still has the highest income, although the differences between the countries have changed. Since 2015, Denmark has had a steady increase in household income, while Finland, Sweden and Åland have seen no increase – and in the last year, even a decrease – in purchasing power. The Faroe Islands and Greenland were slightly higher, reaching the level of Finland in 2022. Iceland's purchasing power increased in 2022 but was still at the lowest level among the Nordic countries. All the Nordic countries have cut their consumption-based emissions significantly by around 30–50% since 2000. The results also show significant variations between municipalities when it comes to the composition of emission sources. Urban municipalities have a higher-than-average carbon footprint due to air travel, people in rural areas use more cars, and in the northern part of Sweden, a larger proportion of the emissions is caused by heating. The highest carbon footprints are in urban municipalities, followed by those with high levels of tourism, while the lowest are in municipalities within commuting distance of a small town.

CHAPTER 7:

REGIONAL PERSPECTIVE ON THE ECONOMY

AUTHORS: Karen Refsgaard, Sigrid Jessen and Carlos Tapia
GIS AND MAPS: Maria Bobrinskaya and Kamila Dzhavatova



The region as a unit of analysis: What is meant by a regional perspective?

This section aims to shed light on some of the economy's most important economic, social, and environmental dynamics from a regional perspective.

Regions can be classified according to various distinct yet often overlapping typologies, each of which may delineate regions along physical, cultural, economic, functional, and administrative lines. In this section, we approach regions via an administrative lens. Depending on data availability, we focus on the municipality level (Local Administrative Units (LAU) 1 - 2) and the regional level based on the Nomenclature of Territorial Units for Statistics 2–3 (NUTS2–NUTS3). When studying regional development, we not only examine trajectories within the different regions but also compare regions of the Nordic countries.

Our findings on regional inequality illustrate the importance of making both intra- and inter-regional comparisons. In recent years, numerous researchers have argued that many countries have experienced rising inter-regional inequality since the 1980s (e.g. Storper 2018). In the following, we show that the same tendency can also be observed in the Nordic countries, both between and within regions. However, the specifics of these trajectories also vary across the Nordic Region.

Economic aspects of the regional economy: Growth and regional inequality in the Nordic Region

This section analyses economic change and inter-regional inequality, as well as innovation in a regional context.

Historically, the assessment of the economic development of nations, regions and cities has relied on metrics related to output, consumption or income, such as Gross Domestic Product (GDP). GDP measures the additional economic value created by the production of goods and services in a country within a given timeframe minus the value of production process inputs (OECD, 2024).

Figure 7.1 shows GDP growth for the European countries. While their GDP grew by an average of 3.4% between 2021 and 2022, the Nordic countries' GDP grew by 3.5%. By 2022, the average EU per capita GDP was USD 57.098, while the corresponding Nordic average was USD 80.406 (OECD, 2024). Both GDP levels and growth rates differed between the Nordic countries in 2021–2022 – Iceland had the highest increase in GDP, at 8.9%, while Finland had the lowest, at 1.3%. Norway had the highest level of per capita GDP in 2022, at USD 121.263, while Finland had the lowest, USD 62.720.

Between 2022 and 2023, the GDP growth rate fell in many EU countries. During this period, the EU growth rate average was 0.4, while the corresponding rate for the Nordic countries was 0.84 (ibid.). The individual rates for the Nordic countries varied, with Finland at -1%, Sweden -0.2%, Norway 0.5%, Denmark 1.8% and Iceland at 4.1% (Eurostat, 2024a).

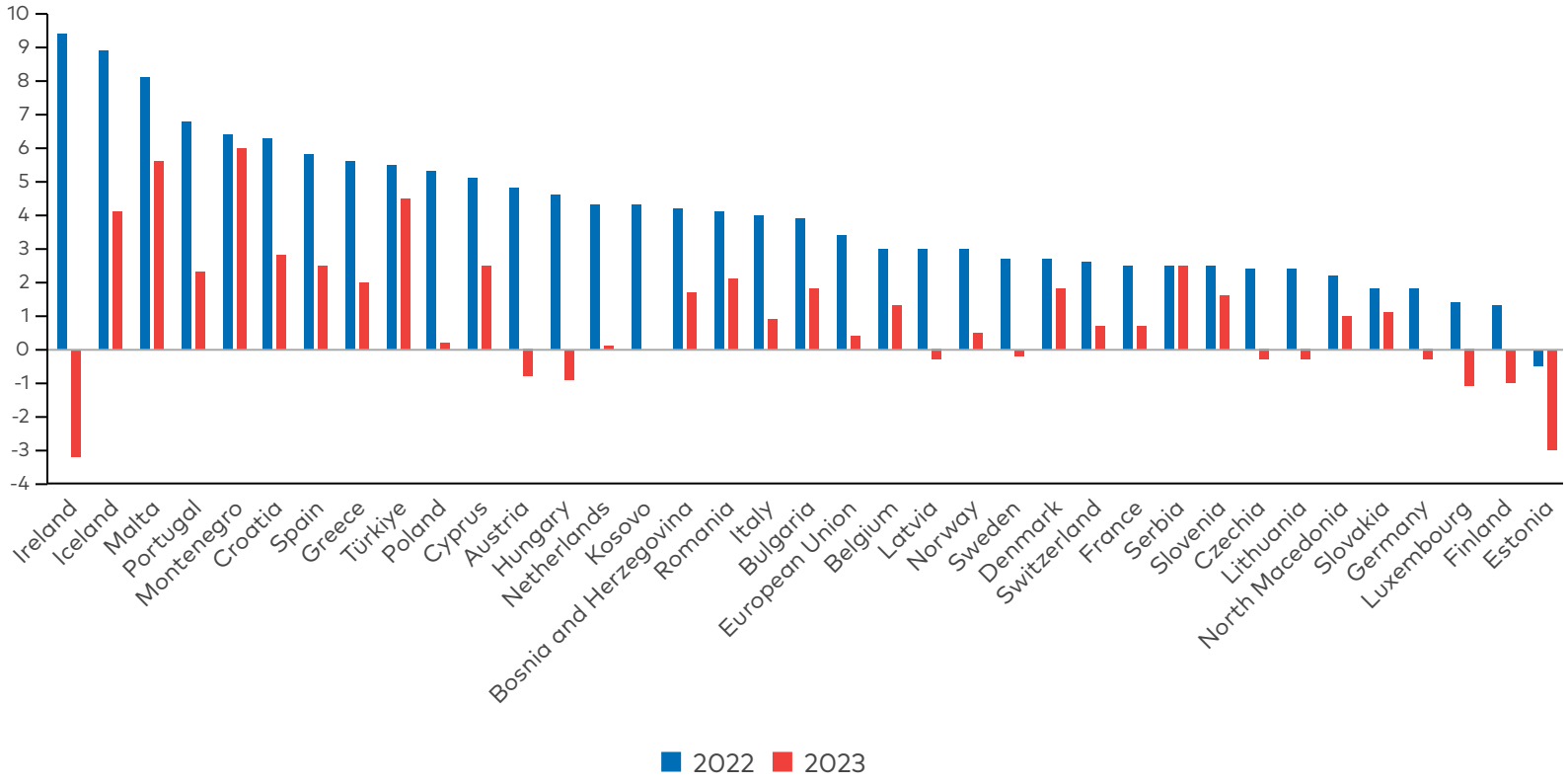
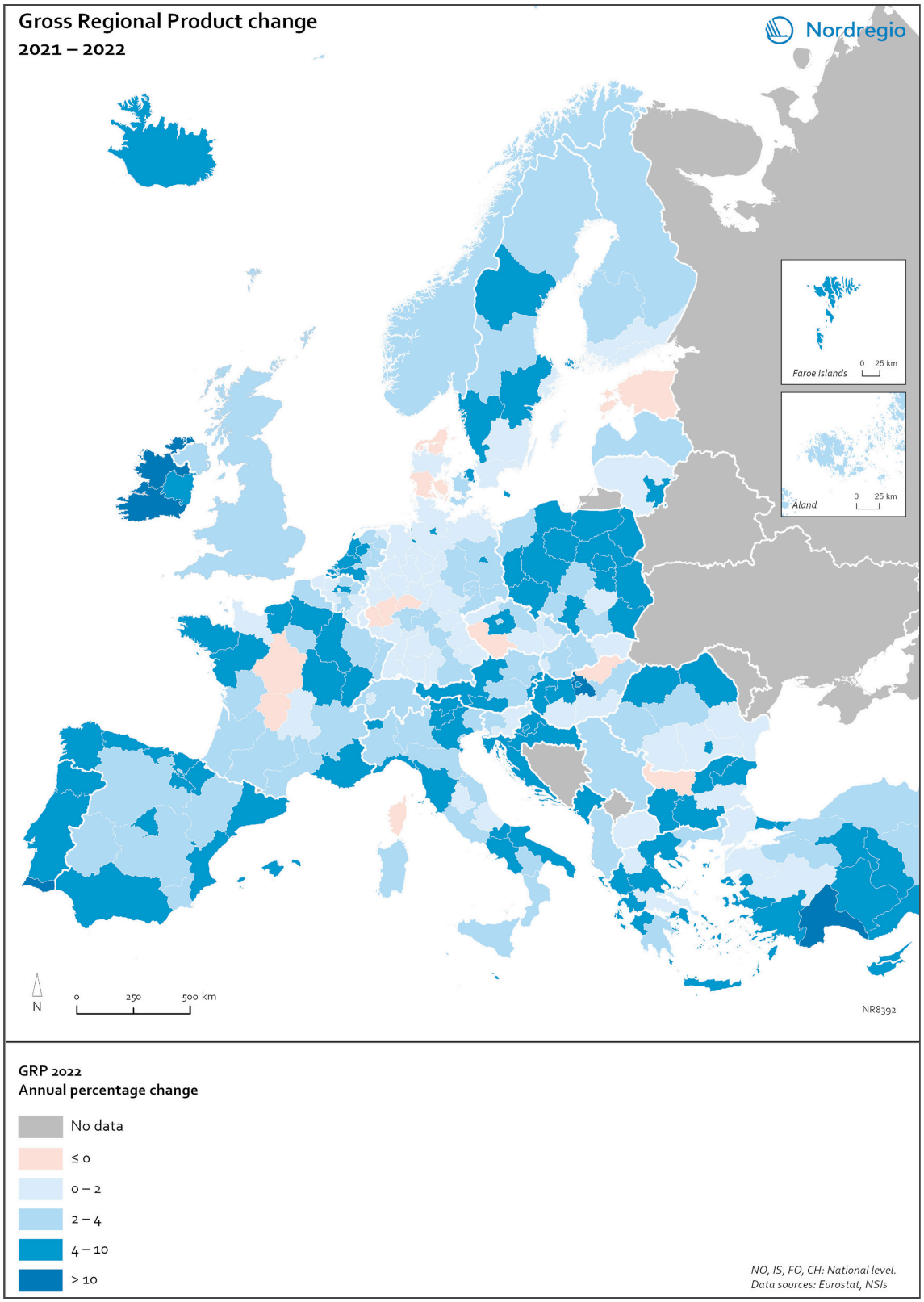


Figure 7.1: Real GDP annual change in 2022 and 2023 (%)
Source: Eurostat & NSIs

Map 7.1 shows the percentage growth in regional GDP, also called the Gross Regional Product (GRP). In Denmark, the Capital Region (including Copenhagen) had the highest growth. The Midtjylland region, which includes the second-largest city, Aarhus, was the second-fastest growing. Two regions, Northern Jutland, and Southern Jutland, both had falling GRP. These trends align with the levels of GRP in Denmark, where the Capital Region's figure is approximately six times greater than that of Northern Jutland.

For the other Nordic countries, the regional pattern seems to be less closely linked to urbanisation. In Finland, for example, the highest growth of GRP between 2021 and 2022 is found in the northern and less populated regions. However, the GRP in the Capital Region of Finland is approximately 10.5 times higher than in Northern Lapland. The same pattern is evident in Sweden, where Middle Norrland has had the biggest GRP increase, potentially driven by the development of green economies, including the production of lithium-ion batteries (Tadaros et al. 2022). While a one-year period is too short to reach a definitive conclusion regarding persistent economic regional convergence, it will be interesting to follow and investigate this trend in greater detail in the future.

GDP and GRP are commonly used indicators for economic development, but both have been criticised for not showing how economic progress or decline is distributed across people or geographic areas (e.g. Gray et al. 2013). Nor do they consider changes in production input or non-economic characteristics, e.g. changes in the stock of natural resources or environmental quality. The following section, therefore, looks at several different innovation indicators, as well as other social and environmental indicators, to present a more holistic picture of the state of the regional economies.



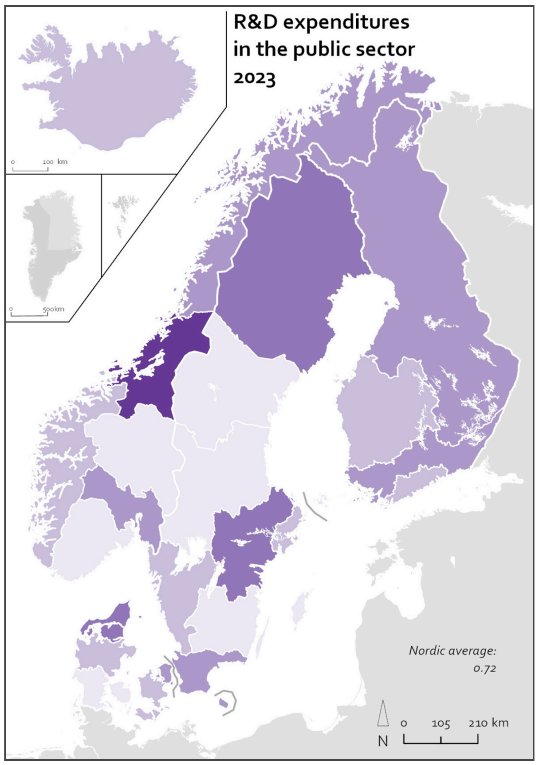
Map 7.1: Gross Regional Product change in 2021–2022 (%)

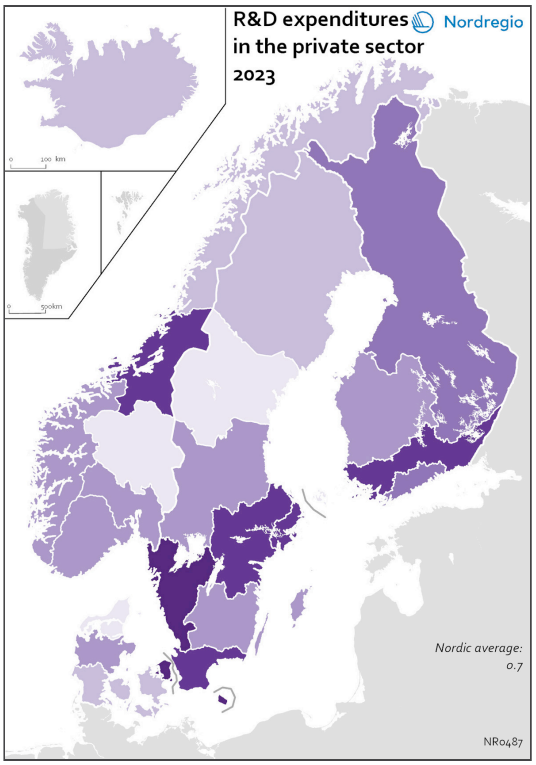
Regional accumulations of innovative activities in the Nordic regions

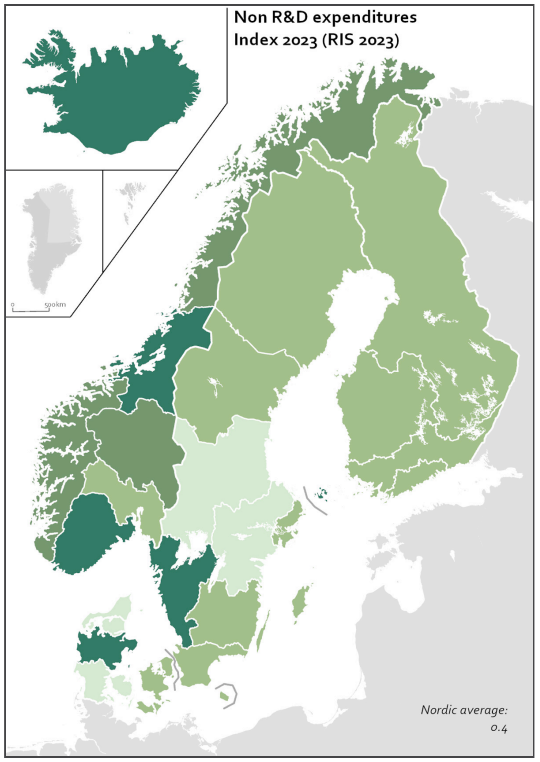
Several researchers (e.g. Schumpeter 1939) have long linked innovation processes to economic growth. It has been suggested that the unequal distribution and diffusion of technologies and innovation activities have been the main drivers of rising regional economic inequalities in many Western countries (including several Nordic countries) since the 1980s (e.g. Storper 2018). However, while the prevailing narrative has been that innovation was a largely urban phenomenon, both earlier (e.g. Asheim and Isaksen 1997) and more recent evidence indicate that innovation does exist outside of the main urban centres, but often in different forms and sizes (e.g. Parrilli & Heras 2016; Doloreux & Shearmur 2023). As such, in this section, we study various innovation activities across regions.

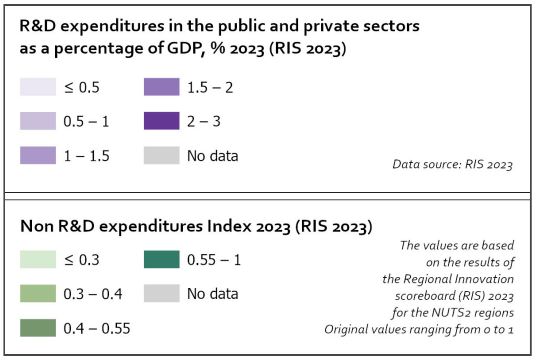
Innovation activities can be differentiated across multiple dimensions, e.g. whether they are related to incremental or radical changes, or to product or process innovation, and whether the innovation is driven by know-what and know-why as in the Science-Technology-and-Innovation (STI) or know-how and know-who as in Doing-Using-Interacting (DUI) innovation modes (Jensen et al. 2007). However, regional innovation processes are notoriously difficult to measure (e.g. Nelson et al. 2014). One typical way of approximately gauging the level and quality of innovation activity is to look at the resources used in the innovation process, including both research and development (R&D) and non-R&D expenditures. Expenditure is just one input into the innovation process and may not describe the success of the innovation process or the type of innovation that emerges from it, but it can indicate strategic decisions related to innovation activities.

Maps 7.2a, 7.2b and 7.2c show R&D expenditures in the public and business sectors as a percentage of regional GDP, along with non-R&D innovation expenditure in Small and Medium Enterprises (SMEs) as a percentage of turnover. Together, these metrics offer a comprehensive understanding of the innovation landscape and provide insights into governments' and higher education institutions' commitment to foundational research, as well as the competitiveness and dynamism of the business environment and SMEs' innovation capacity. By considering investment in both R&D and non-R&D activities, these indicators illustrate a broad spectrum of innovation drivers, from basic research to market-driven initiatives, and underscore the diverse pathways through which innovation fosters economic growth and social progress.









Map 7.2a, 7.2b, 7.2c: R&D and non-R&D expenditures in the public and private sector. **Source:** Regional Innovation Scoreboard, calculated as all R&D expenditure in the government sector and the higher education sector, denominated by regional GDP

First, Map 7.2a showcases R&D expenditure in the public sector as a percentage of GDP in the Nordic countries in 2023. In that year, the European level of R&D expenditure in the public sector, as a percentage of GDP, was 0.78%. By comparison, the Nordic average was 0.9%. While the more urban regions, in general, lead the Nordic regions, this is not always the case, as shown by the variation between the frontrunners.

The leading region is Trøndelag (including Norway's third-largest city, Trondheim), with 2.30% of regional GDP. It is in third place in the EU as a whole. The next regions are Övre Norrland with 1.77%, Northern Jutland with 1.54%, Östra Mellansverige with 1.52%, and Hovedstaden with 1.49%. A common feature of most of the top-ranking regions is that they host universities and other higher education institutions known for innovation practices. Most Nordic regions have not seen significant increases or decreases in public R&D spending between 2016 and 2023.

Map 7.2b focuses on the private sector's investment in research and development activities and depicts R&D expenditure in the business sector as a percentage of regional GDP. A higher percentage suggests a greater emphasis on innovation by businesses, potentially leading to the creation of new products, processes, and markets. The Nordic average is 1.45% in 2023, slightly below the European average of 1.51%.

The highest percentages are found in regions with larger cities. The top three Nordic regions with the highest R&D expenditure in the business sector as a percentage of GDP are Västsverige at 4.2%, Hovedstaden at 3.1%, and Trøndelag at 2.7%. In Finland, the leading region is Etelä-Suomi with 2.55%. Iceland is represented by a national assessment, with 1.98% of GDP. In Sweden, three other regions also scored quite highly: Sydsverige with 2.5%, Stockholm with 2.45% and Östra Mellansverige with 2.4%.

Lastly, Map 7.2c depicts non-R&D innovation expenditure in SMEs as a percentage of turnover, with values normalised between 0 and 1. This perspective captures innovation activities beyond traditional R&D, such as investments in design, marketing, training, and organisational innovation within SMEs. It highlights the importance of non-technological innovation in driving competitiveness and growth, especially for SMEs that may lack the resources for large-scale R&D initiatives.

The Nordic average is 0.4, the European is 0.53. The leader for this indicator is Åland with 0.73, followed by all regions in Norway (except for the two inland ones), ranging from 0.52 to 0.6, Midtjylland in Denmark with 0.56 and Gothenburg in Sweden with 0.59. The lowest values are seen at Nordjylland in Denmark with 0.27, Norra Mellansverige in Sweden with 0.28, Östra Mellansverige in Sweden with 0.3 and Syddanmark in Denmark with 0.31.

In total, these three innovation measures show varying regional trends in innovative activities among the Nordic regions. While it is usually the most urban regions that are associated with a higher level of innovative activities across the three measures, a number of non-urban regions appear to be specialising in various types of innovation.

Social aspects of the regional economy: Inter-regional income distribution and inequality

This section looks at a social dimension of the regional economy in the Nordic countries, specifically the development of intra-regional economic inequality. For this task, we adopt the Gini coefficient index, which is one of the most widely used inequality measures. The index ranges from 0–1, where 0 indicates a society where everyone receives the same income, and 1 is the highest level of inequality, where one individual or group possesses all the resources in the society, and the rest of the population has nothing.

Figure 7.2 demonstrates the development in Gini coefficients from 2011 to 2022 for the Nordic regions, measured in terms of disposable income. Across this period, Sweden and Greenland have the highest levels of income inequality, while Norway and the Faroe Islands have the lowest. Denmark, Finland and Åland lie in the middle.

Among the two countries with the highest Gini coefficients, Greenland has experienced the lowest increase (approximately 0.029 points) over the last more than 10-year period. This contrasts with the Nordic average from 2011–2022 of 0.046 points. Previous research has argued that the high Gini coefficient in Greenland reflects both the small size of the population and the relatively large share employed in the informal economy (Andersen 2015; Ravn et al., 2023). Sweden, on the other hand, has seen an increase of approximately 0.04 points in 11 years. In 2021, Sweden reached the highest Gini coefficient level (0.33) since measurements began in 1975 (Health Europe, 2023). It fell slightly again between 2021–2022.

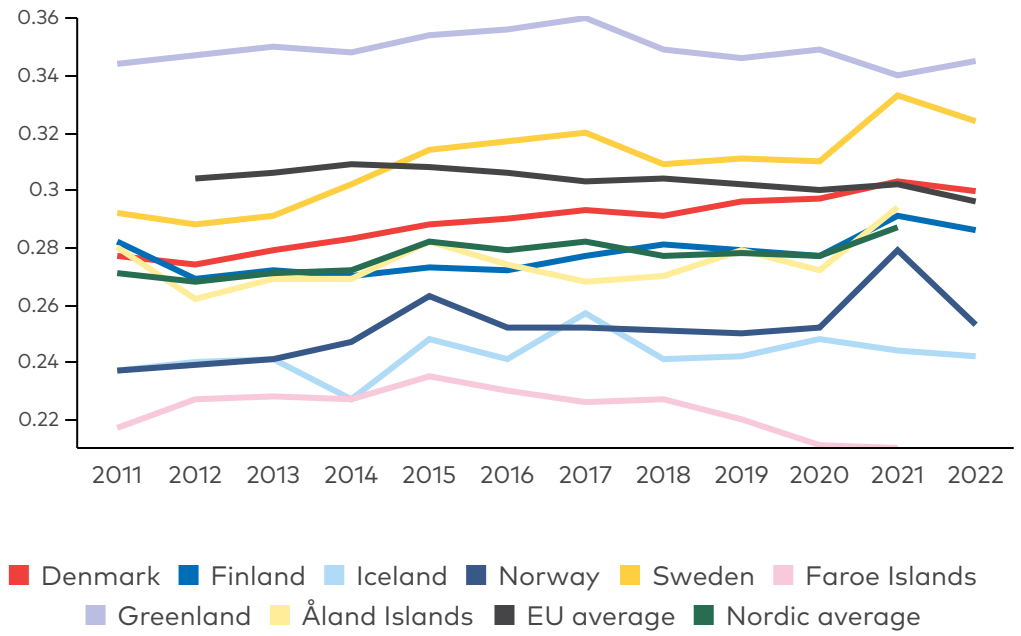
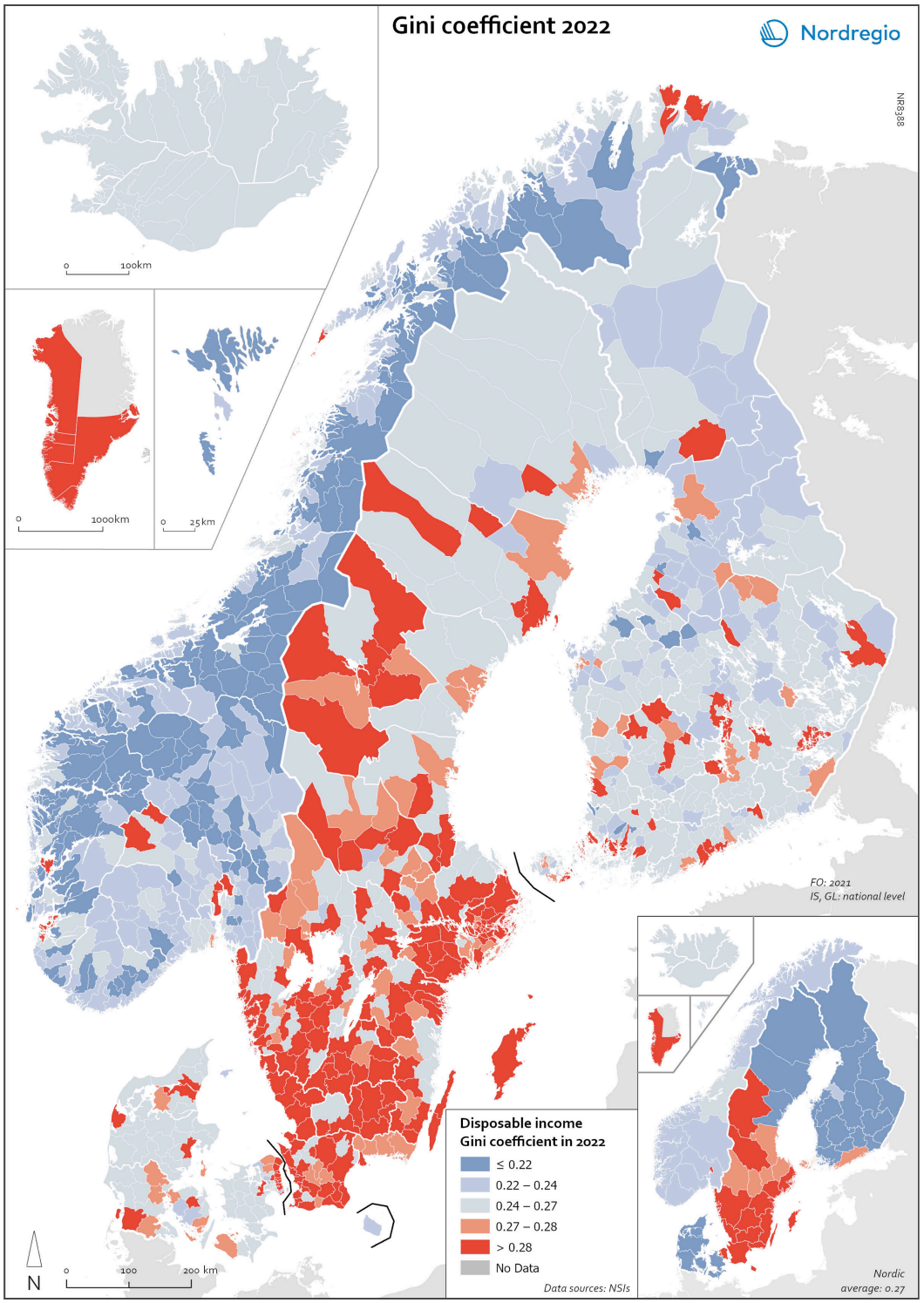


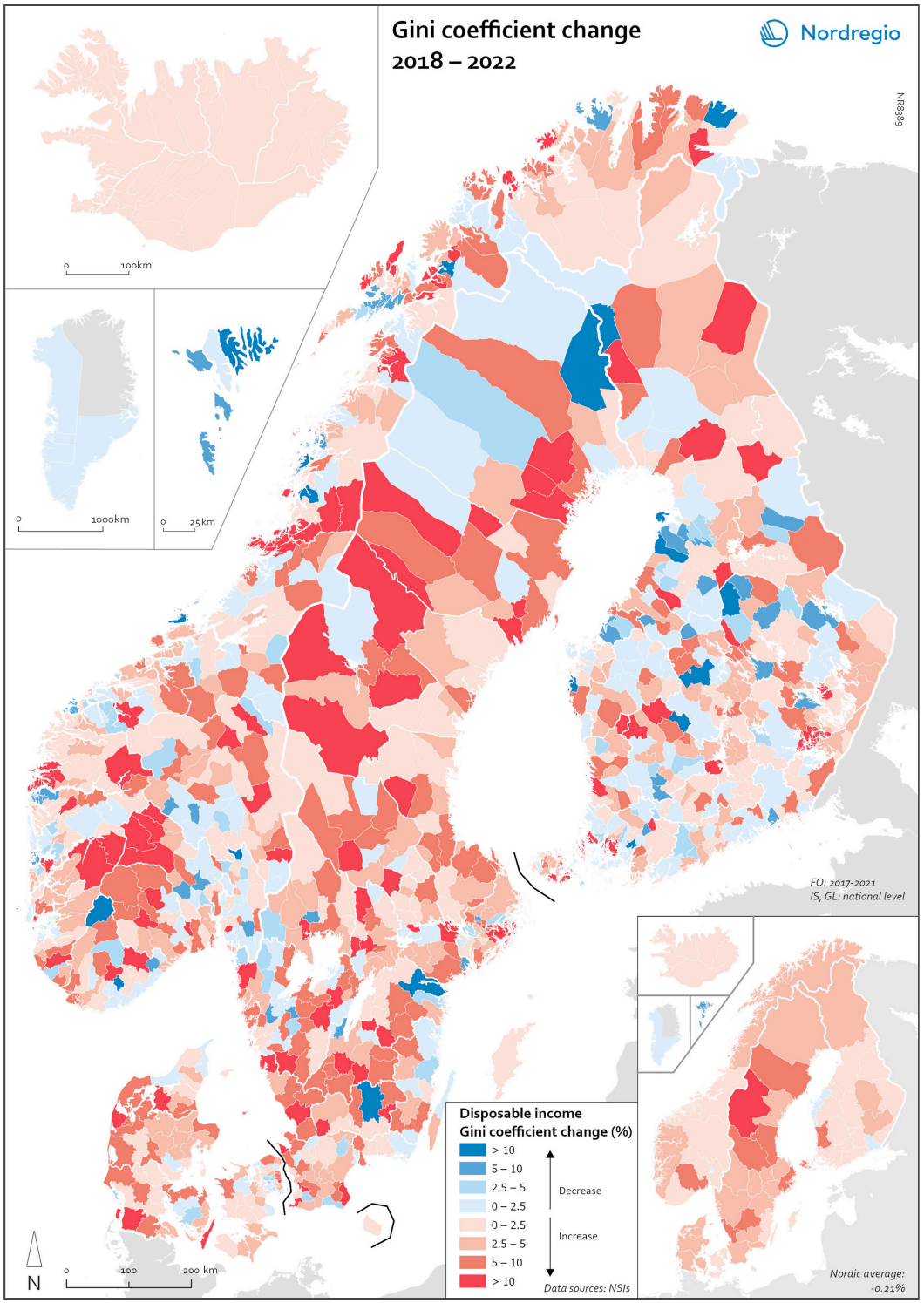
Figure 7.2: Development in Gini coefficients (2011–2022)
Source: NSIs & Eurostat

Previous research suggested that the increase in inequality was due to the diminished significance of social transfers within the working-age population and the resulting decrease in relative income levels experienced by the lowest quintile (Barth et al. 2021; Greve & Hussain 2022). Other explanations probably include high immigration rates, which resulted in 16% of the population being foreign-born in 2015 (OECD, 2017).

Map 7.3 displays the Gini coefficients for Nordic municipalities in 2022, while Map 7.4 depicts the changes in Gini coefficients for Nordic municipalities between 2018–2022. The absence of data for municipalities in Iceland prevents a comparison with the rest of the Nordic Region. In 2022, the highest municipality income disparities were observed in the capital city regions of Denmark, Finland and Sweden, each of which had Gini coefficients around 0.6. Danderyd (0.64), Lidingö (0.52), and Gentofte (0.51) had the highest Gini coefficients. These municipalities also have some of the highest incomes in their respective countries.



Map 7.3: Gini coefficients for disposable income (2022)
Note: Blue areas indicate a Gini coefficient below the Nordic average. Red areas indicate a Gini coefficient above the Nordic average (0.27, excluding Greenland, as a statistical outlier). The data for the Faroe Islands is for 2021.



Map 7.4: Percentage change in Gini coefficients at municipal level (2018–2022)
Note: Blue areas indicate a decrease in income inequality, while red areas indicate an increase in income inequality.

Map 7.4 illustrates significant variations in the change in income inequality across Nordic municipalities and regions. Between 2018 and 2022, income inequality increased in predominantly rural municipalities, notably in Jämtland, Gävleborg, Dalarna and Västerbotten in Sweden, as well as Telemark in Norway. For Denmark, the rise in inequality is mainly for the municipalities in Western Jutland.

At the same time, approximately one third of municipalities in the Nordic Region experienced a decrease in income inequality during the same period, primarily in Finland and Åland. For example, in Finland, the distribution of inequality was more varied. This trend aligns with the ongoing narrowing of the household income gap observed in many Finnish municipalities since 2011, which is mainly attributed to the economic downturn of the early 2010s, as well as demographic shifts such as outmigration and ageing (Roikonen 2022).

Environmental aspects: GHG emissions and (supra-)national policies

This section investigates environmental aspects of the regional economy via analyses of territorial greenhouse gas (GHG) emissions at national level. As EU policies have significant implications for the countries' actions aimed at reducing GHG emissions, the impacts of the EU-level schemes are assessed alongside the Nordic ones. Finally, the GHG emissions are evaluated in the light of the GDP analysis to illuminate issues surrounding the decoupling of economic growth and emissions.

In Figure 7.3 the annual territorial GHG emissions spanning from 1990 to 2021 are shown for each of the Nordic countries. While emissions have surged in Iceland, a contrasting macro trend is evident in Denmark, Finland, and Sweden, where reductions have been consistently observed, with the pace of which has been accelerating since 2010. Norway, on the other hand, initially experienced an increase, which has started tapering off starting from in 2020. Emissions increased in Iceland and Norway between 1990 and 2021 due to a recovery in international oil prices which that affected oil-related activity in Norway, and as well as an increase in aluminium production in Iceland (Dixon et al. 2023). However, both EU policies and the national-level policies in the Nordic countries have contributed significantly to the reductions.

Box 7.1: Greenhouse gas (GHG) emissions

Production- versus consumption-based greenhouse gas emissions:

- Production-based GHG emissions are those attributed to the location of the production of goods and services. Production-based emissions are also named territorial or land-based emissions.
- Consumption-based emissions attribute the emissions generated in the production of goods and services based on where they are consumed.[1] These are calculated by adjusting 'production-based' emissions (emissions produced domestically) for trade.
- Consumption-based emissions equal production-based emissions, *minus* emissions embedded in exports, *plus* emissions embedded in imports. This is known as the 'carbon footprint'.
- Greenhouse gas emissions versus CO2 emissions
- Greenhouse gas emissions include carbon dioxide, methane and nitrous oxide from all sources, including land-use change. They are measured in tonnes of carbon dioxide-equivalents over a 100-year timescale.

Sources: CO_2 and Greenhouse Gas Emissions – Our World in Data and Breakdown of carbon dioxide, methane and nitrous oxide emissions by sector – Our World in Data

Figure 7.4 shows that, since the introduction of the EU Emissions Trading System (ETS) in 2005, emissions under this scheme have decreased. In terms of a proportion of all CO_2 emissions in the EU and the EEA, the Nordic countries remained around 40% from 2012 to 2020 – approximately 42% in Denmark, 35% in Sweden and 33% in Finland. As part of the Fit for 55 package, the EU institutions have adopted a new target: to reduce emissions from EU ETS sectors by 62% by 2030, compared to 2005 levels. To reach this target, all Nordic countries must speed up the reduction of GHG emissions from those sectors.

The sectors not covered by the ETS scheme are covered by policy mechanisms under the EU's Effort Sharing Regulation (ESR), which covers around 60% of territorial EU GHG emissions for sectors like transport, housing, agriculture, small industries, and waste management (Dixon et al., 2023). All EU member states, along with Iceland and Norway, have committed themselves to this scheme.

Figure 7.4 shows the GHG emissions from ESR sectors for 2005–2020, as well as the annual targets for 2021–2030, as set out under Implementing Decision (EU) 2020/2126 and EEA Joint Committee No 269/2019. The plot also shows a tentative reduction trajectory towards the new ESR targets agreed under the Fit for 55 Package. Chapter 8 adopts a business perspective to examine in more detail the changes in GHG emissions in the different sectors.

All the Nordic countries have exceeded the EU's overall climate goals (Flam and Hassler, 2023), with several Nordic countries on track to achieve carbon neutrality between 2035 and 2045. Finally, the Nordic national governments confirmed their commitment to ambitious climate goals in 2019 by adopting the Nordic Vision 2030 (Norden, 2019), which sets the goal of the Nordic Region being the most sustainable and integrated region in the world in 2030. This vision includes a commitment to promote the transition towards carbon neutrality.

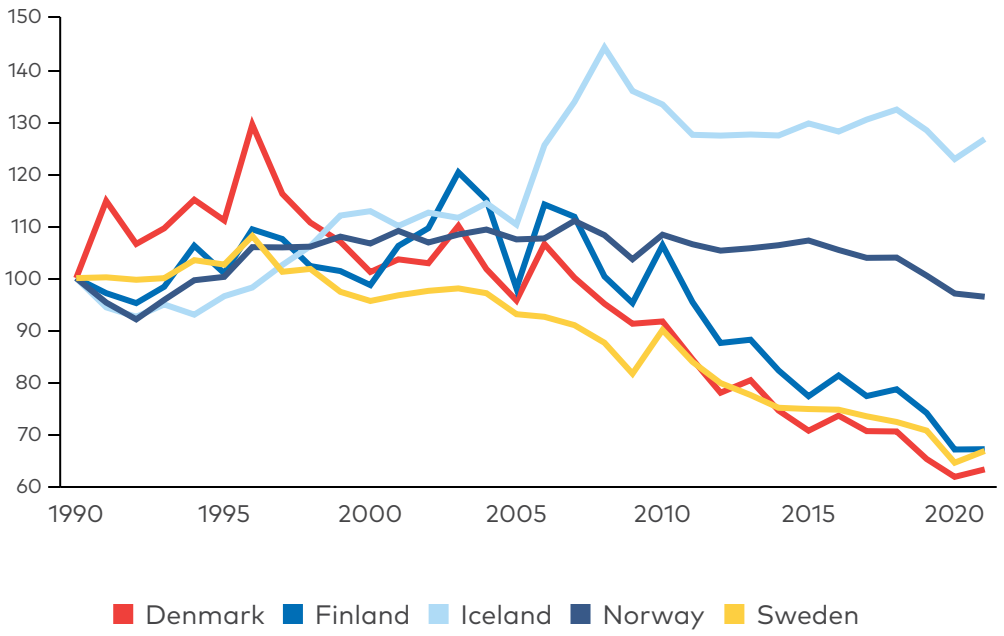


Figure 7.3: Territorial GHG emissions in the Nordic countries 1990-2021 (% change from 1990)
Source: UNFCCC
Note: Excluding emissions from land use, land use change or forestry (LULUCF)

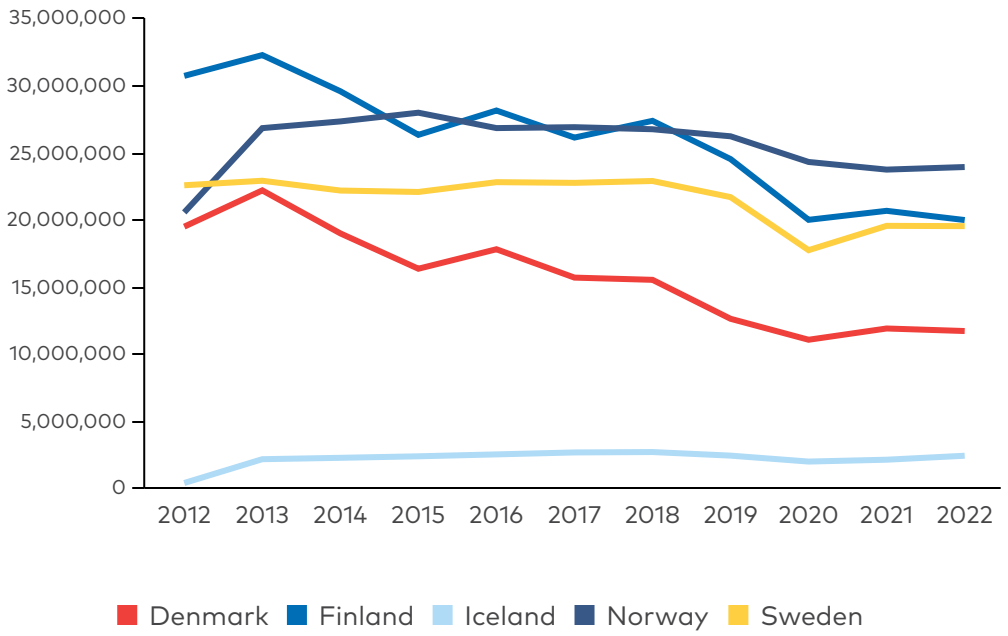


Figure 7.4: Verified greenhouse gas emissions under the ETS Directive (2003/87/EC) (tonnes of CO2 equivalent)
Source: EEA EU Emissions Trading System (ETS) database

The question of decoupling

Today's economic and business models and *modus operandi* are based on ideas of infinite opportunities – in other words, a linear economy – which may not be compatible with the finite nature of natural resources. Socioeconomic systems require materials and energy for human activity, agriculture, livestock, and manufactured goods, all of which lead to emissions of greenhouse gases (GHGs), air and water pollutants and waste. Due to its wealth and purchasing power, the Nordic Region is also facing challenges related to its current consumption patterns and waste streams. As articulated in Watson et al. (2021):

"*Green growth forms the core of sustainable development strategies in the Nordic countries, the rest of Europe and indeed in the rest of the world. The central assumption is that economic growth can be continued while reducing resource use, environmental pressures, and impacts. [...] However, it is not clear whether absolute decoupling is possible in the long-term or whether it is simply a pipe dream that those who see economic growth as a societal priority can hang on to.*"

Grafström (2023) argues that since 1990, the European economy has become 60% larger, while at the same time, emissions have been reduced by 25%. Between 1990 and 2019, the Swedish economy doubled, while GHG emissions fell by almost 29%, and the population grew by 1.6 million. Denmark's GDP has increased almost every year since 1990, except during the financial crisis and COVID-19, while GHG emissions increased less in the early part of this period and have been decreasing since 2006. A large part of the decrease in emissions is due to the green transition, especially measures related to renewable energy and energy efficiency. In Norway, emission intensity fell by 1.6% for production and 1.7% for GDP in 2022, indicating that Norway has become more emissions effective. Since 1990, the emissions intensity for production has fallen by 56.3%, and for GDP by 49.9% (SSB 2023).

Looking at the Nordic countries if isolated from the rest of the world, the evidence for absolute decoupling seems to be the case for GHG emissions when considered from a territorial perspective for Denmark, Finland, and Sweden. However, the reduction in GHG emissions is partly due to carbon leakage, e.g. from the outsourcing of heavy industrial production to other regions abroad. Statistics Denmark (2023) reports a shift in the Danish economy away from industry and towards services. Similarly, the IEA points to deindustrialisation as the reason for around 30% of the decrease in CO_2 emissions in Europe (IEA, 2024).

Alongside changes on the supply side, the demand for labour is also undergoing a profound transformation – often referred to as the fourth industrial revolution. Developments in information technology, combined with robotisation and artificial intelligence, are enabling the automation of tasks previously only done by humans (Degryse, 2016). In 2020, Nordregio conducted an analysis of automation and Nordic labour markets and concluded that 32% of jobs were at risk due to automation (Grunfelder et al., 2020). Although automation may result in the displacement of workers in particular industries in the short term, the jobs it creates are expected to more than make up for the losses in the longer term (McKinsey & Company, 2017). Nevertheless, these structural changes in Nordic industries may have significant impacts on territorial GHG emissions.

Further, corresponding changes in consumption have not been seen (Watson et al. 2021). We will investigate this from a household perspective in a later section. Haberl et al. (2020), as part of a large literature review looking at the possibility of achieving absolute decoupling in the future, argue that there is ample evidence that a continuation of past trends will not yield absolute reductions in either resource use or GHG emissions. So far, environmental and climate policies have, at best, achieved a relative decoupling of GDP and resource use – specifically, GHG emissions (Kemp-Benedict 2018, Haberl et al. 2020).

By contrast, circular economy approaches, based on a recycling of materials or resources (as described, e.g. by Gowdy and Erickson 2005; Kovacic et al. 2020), look at the economy as being constrained by environmental factors. One current example of the circular economy approach is GreenLab Skive (Salonen & Tomren 2023), a business park comprising eight companies specialising in energy storage and resource efficiency. A notable feature of the park is its provision of internally sourced renewable energy, which serves as the primary energy supply for the resident companies, all of which are engaged in the production of environmentally friendly goods, including electro-fuels, heat and other sustainable products. The system also allows companies to share their surplus resources within the park, which cuts the costs of production. The park is constructed around a circular economy framework that aims to foster innovation to benefit not only the resident companies but also the surrounding region and to promote a process of evolution towards industrial symbiosis. For example, converting agricultural waste into resources such as biogas and biomass not only reduces carbon emissions but works in conjunction with local agricultural production processes. These energy systems are also creating jobs in their regions (Green Power Denmark 2024). In Denmark, the energy industry, including wind and Power-to-X, employs 73,000 people. Between 2023 and 2030, the sector expects to need an additional 45,000 jobs on average per year for the development of more renewable energy based on electricity.

In sum, while it may not be possible to achieve decoupling on a global level, we do have attempts and practices in the Nordic Region, e.g. circular economy models, that have benefits for the environment, jobs, and the economy, and on which we can build in the future.

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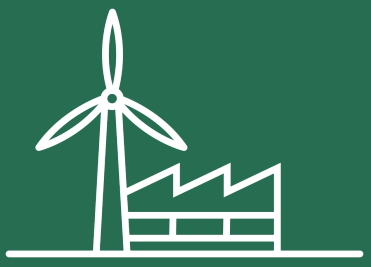
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CHAPTER 8:

BUSINESS PERSPECTIVE ON THE ECONOMY

AUTHORS: Karen Refsgaard, Sigrid Jessen and Carlos Tapia
GIS AND MAPS: Maria Bobrinskaya and Kamila Dzhavatova



The business as a unit of analysis

This section adopts a business-level perspective to analyse important economic, social and environmental indicators. Approaching the regional economy at the business level makes it possible to untangle some of the mechanisms in play at the more aggregated regional level.

In the following, we focus on both small and medium-sized enterprises (SMEs) and larger companies. In this chapter, SMEs are companies with between 10 and 250 full-time employees. SMEs play a significant role in the economies of many countries. This is also the case in the Nordic countries, where there are approximately two million SMEs, corresponding to approximately 90% of all companies in the region (Nordic Cooperation 2021).

Companies are shaped by the regions in which they are based and operate – and they, in turn, shape those regions (Dosi & Metcalfe 1991). They also come in various types and shapes and have distinct regional characteristics depending on the local context. This is evident in the geographical patterns in the sizes of companies, with a larger share of smaller companies in rural areas over time. The companies' sizes, resources and capabilities create different opportunities to conduct innovative activities and act in socially and environmentally sustainable ways (ILO 2019). This chapter will, therefore, zoom in on the economic and innovative dynamics of Nordic companies.

The following section offers an analysis of Nordic companies' economic and innovative activities. This is followed by an analysis of gender wage gaps and gender diversity in Nordic companies. The chapter concludes by looking at the environmental impact of different industries in the Nordic countries.

Economic aspects of the business perspective on the economy

This section examines economic and innovative perspectives relating to Nordic companies. The focus is on regional variations in busiess bankruptcies during and after the COVID-19 pandemic, as well as innovative activities.

Business bankruptcies in Nordic companies during and after the COVID-19 pandemic

The rate of business bankruptcies is a core indicator of the robustness of the economy from the business perspective. This is a particularly important indicator in this 2024 edition of the *State of the Nordic Region* report since Nordic and international businesses have been impacted by both the COVID-19 pandemic and rising inflation in recent years.

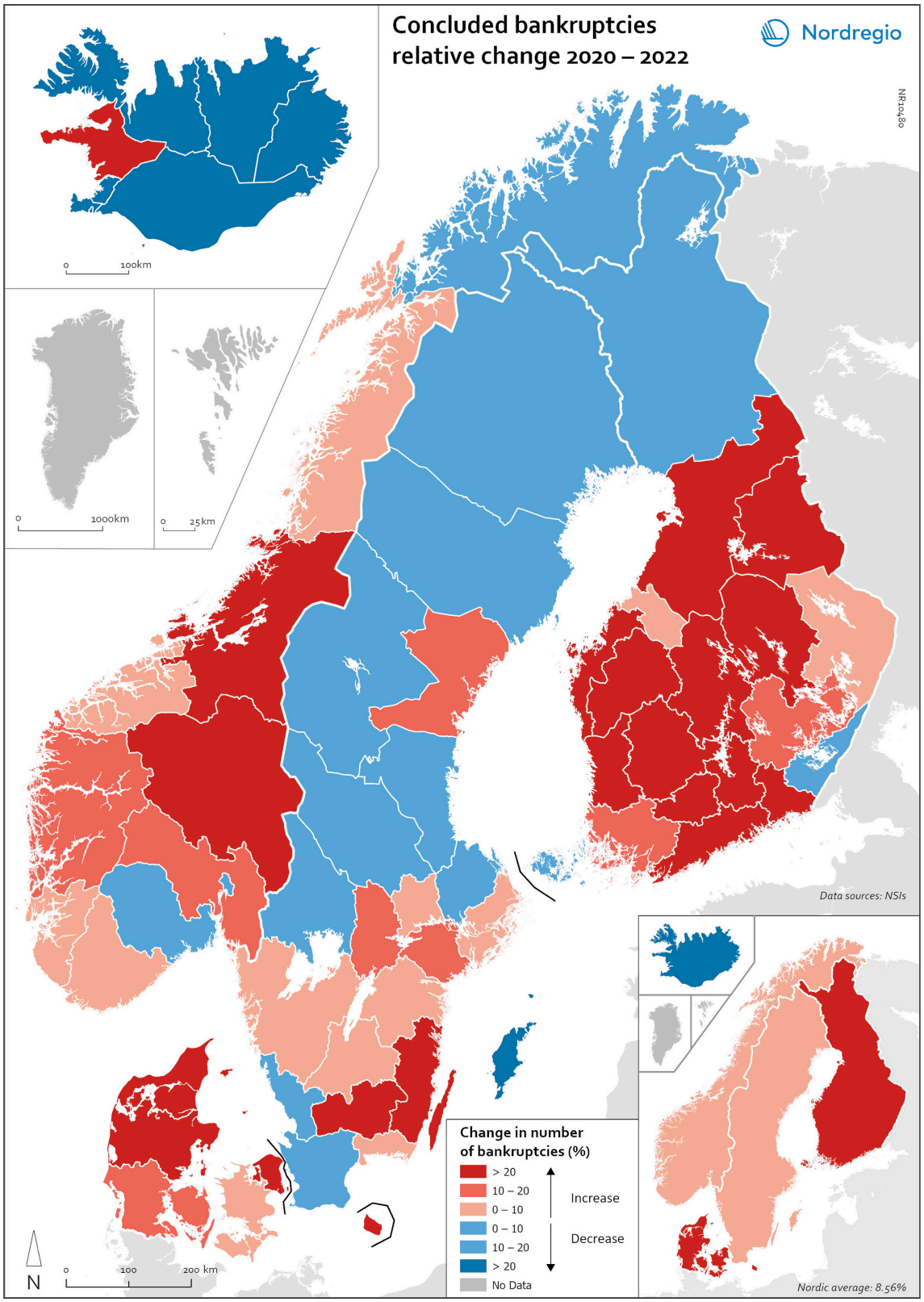
In terms of the level of bankruptcies, data from Eurostat (2024) shows that the Nordic countries fared relatively well compared to other high-income countries between 2020 - 2022. Map 8.1 depicts the change in total number of bankruptcies in the Nordic regions in 2020–2022. In the years during and after the COVID-19 pandemic, the most densely populated regions saw the highest levels of bankruptcies. This finding is partly to be expected, as these regions also tend to be those with the highest number of companies.

However, some variation can be seen across the countries. Overall, Iceland and Finland experienced the lowest rate of bankruptcies in 2020 and 2022. Denmark had the highest level of bankruptcies during COVID-19. Potential explanations for the national variations may include the countries' varying strategic approaches to the pandemic.

Denmark enforced more restrictive lockdowns compared to, for example, Sweden, where the less restrictive approach has been linked to the more limited impact on business bankruptcies in the early part of the pandemic (e.g. Cella 2021, Danmarks Statistik 2022). Furthermore, there is a large consensus that the many job-retention schemes across the Nordic Region also served to limit the number of bankruptcies (e.g. Hansen et al. 2020; da Silva et al. 2020).
However, new data from early 2024 shows that after the job-retention schemes ended, and while high inflation and interest rates were increasing the pressure on Nordic companies, the level of bankruptcies increased. In 2023, 8,868 companies went bankrupt in Sweden the highest number of bankruptcies in a single year since 1998 (Tillväxtanalys 2023). Denmark recorded the highest number of bankruptcies in a single year since 2010, at 3,078 (Danmarks Statistik 2024). The pattern was similar in Finland, where 3,293 businesses filed for bankruptcy, the highest level since 1998 (Statistics Finland 2024). The figures from Norway and Iceland also

show higher levels of bankruptcies in 2023 compared to 2022, albeit to a lesser extent than the other three Nordic countries.

The difference between the level of bankruptcies in the first phases of the pandemic and the later phases and the aftermath also indicates the importance of observing longer time periods when accessing the economic impacts of different types of policies (e.g. Hendren & Sprung-Keyser 2020) and crises (e.g. Hall 2015).



Map 8.1: Change in the number of business bankruptcies (2020–2022)

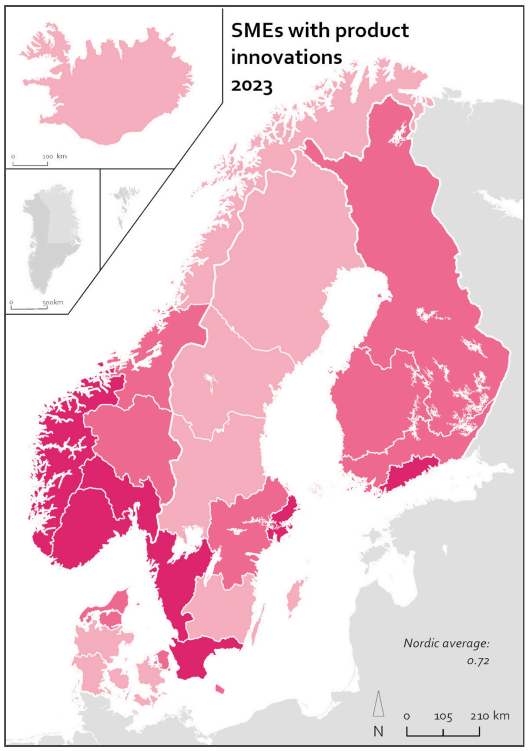
Innovation by Nordic companies

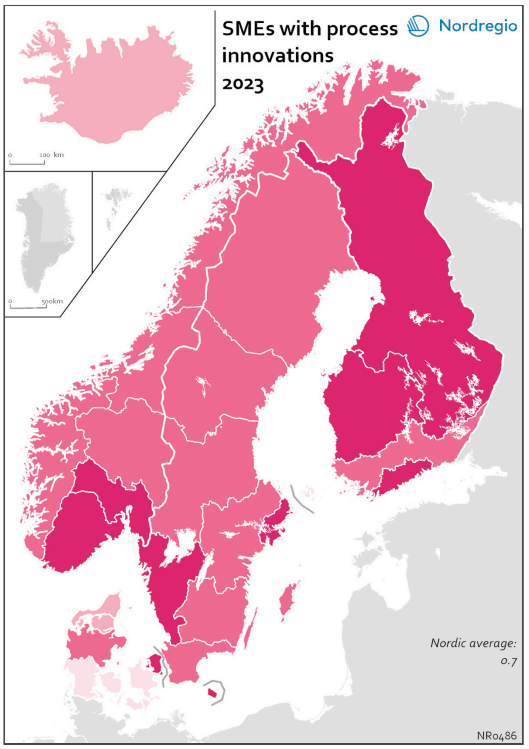
Map 8.2a depicts SMEs introducing product innovations as a percentage of SMEs in the Nordic regions, calculated as the share of SMEs who introduced at least one product innovation. The values for the map are normalised from 0–10. In this context, a product innovation is defined as the market introduction of a good or service that is new or significantly improved with respect to its capabilities, user-friendliness, components, or sub-systems.

Rural regions tend to have lower levels of SMEs with product innovations, while urban regions have the highest levels. In 2023, Åland (0.235) had the lowest number of SMEs with product innovations in the Nordic Region, while Oslo had the highest (1.0). Etelä-Suomi and Stockholm regions were slightly behind, with 0.954 and 0.948, respectively. In Denmark, the leading regions were the Capital Region (Hovedstaden) and Northern Jutland (Nordjylland), with 0.719 and 0.715, respectively. Southern Denmark (Syddanmark) had the lowest level in Denmark, at 0.545. In Norway, the lowest value was in Northern Norway (Nord-Norge), 0.67, while in Sweden it was Middle Norrland (Mellersta Norrland), with 0.53. Taken as an average across the Nordic countries, Norway has a significantly higher number of SMEs with product innovations than the other countries.

Map 8.2b shows the share of SMEs introducing at least one business-process innovation, which includes process, marketing, and organisational innovations. In general, Nordic SMEs are more likely to innovate in products rather than processes. The highest shares of process-innovating SMEs are found in most of the Finnish regions ranging from 0,79 in Länsi-Suomi to 0,91 in Etelä-Suomi, except of Åland with 0,58. Other high ranking regions are Stockholm and Osl0 (both at 0.89). The lowest value is in Sjælland in Denmark (0.48). The Nordic average is 0.7.

The more urban regions tend to have higher levels of process innovation, but the geographic rural/urban divide is less pronounced than that seen in product innovation. In other words, more non-urban SMEs are innovative in their processes than their products.





SMEs with product innovations (RIS 2023)

- ≤ 0.5
- 0.5 – 0.7
- 0.7 – 0.85
- 0.85 – 1
- No data

The values are based on the results of the Regional Innovation scoreboard (RIS) 2023 for the NUTS2 regions Original values ranging from 0 to 1

SMEs with business process innovations (RIS 2023)

- ≤ 0.6
- 0.6 – 0.7
- 0.7 – 0.8
- 0.8 – 1
- No data

Data source: RIS 2023

Map 8.2a and 8.2b: SMEs with product and business process innovations

Social aspects of the business perspective on the economy: Closing gender wage gaps in Nordic companies

Gender diversity and equal pay are core social aspects of the economy, seen from the business perspective. The Nordic countries have long prided themselves on being leaders in gender equality (e.g. Wagner et al. 2022), but gender differences can be observed in Nordic companies. In this section, we zoom in on gender wage gaps in the Nordic countries.

Figure 8.1 shows gender wage gaps as a percentage difference across the Nordic countries in 2007–2022. Gender wage gaps, in general, have narrowed across all five Nordic countries over the past 15 years, albeit at varying paces.

Between 2007–2022, Sweden had relatively narrow gender wage gaps, which continued to fall during the period. In 2007, Iceland had the widest gender wage gap of the five countries, but by 2022, it had the narrowest, approximately halving the gap. Researchers have identified several key factors impacting this development, e.g. the Icelandic Equal Pay Standard and several other policies targeting the gap (Kristjánsdóttir & Neunsinger 2023; Olafsdottir 2018). In 2018, Iceland became the first country to introduce a policy obligating all companies and institutions with more than 25 employees to provide evidence of equal pay for equal work (work of equal value). The policy was enforced through the Equal Wage Management Standard, also referred to as "the system" (Wagner 2022).

Finland, Norway, and Denmark are also making progress in this area, but more slowly than Iceland. Overall, Norway has reduced the gender wage gap since 2007, but it began to widen again in 2018–2022, especially between 2020–2022. One explanation for this may be the gender-biased effects of the COVID-19 pandemic, as shown in previous research in certain countries (Bluedorn et al., 2023).

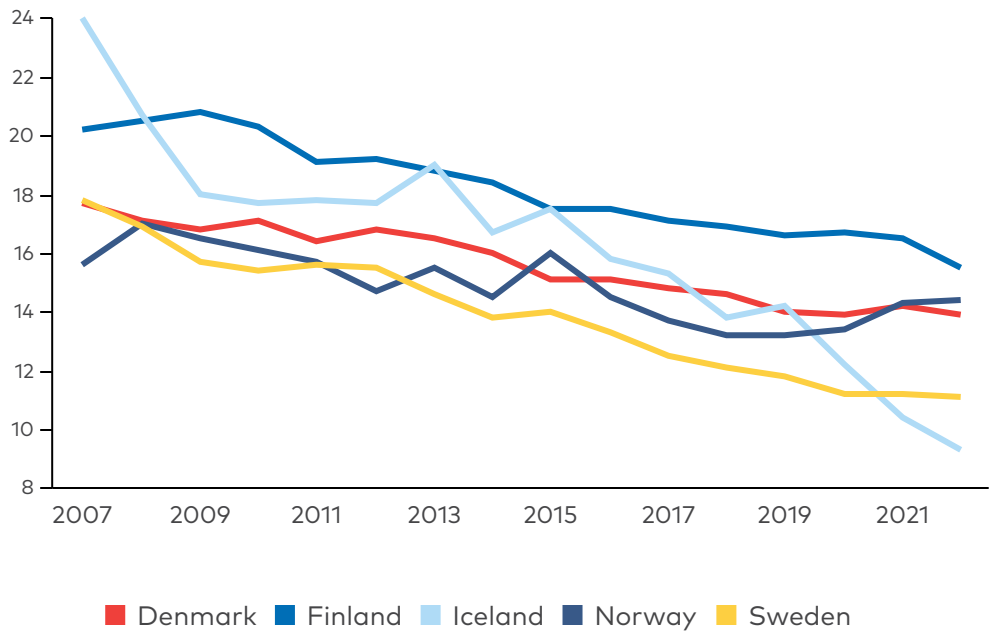


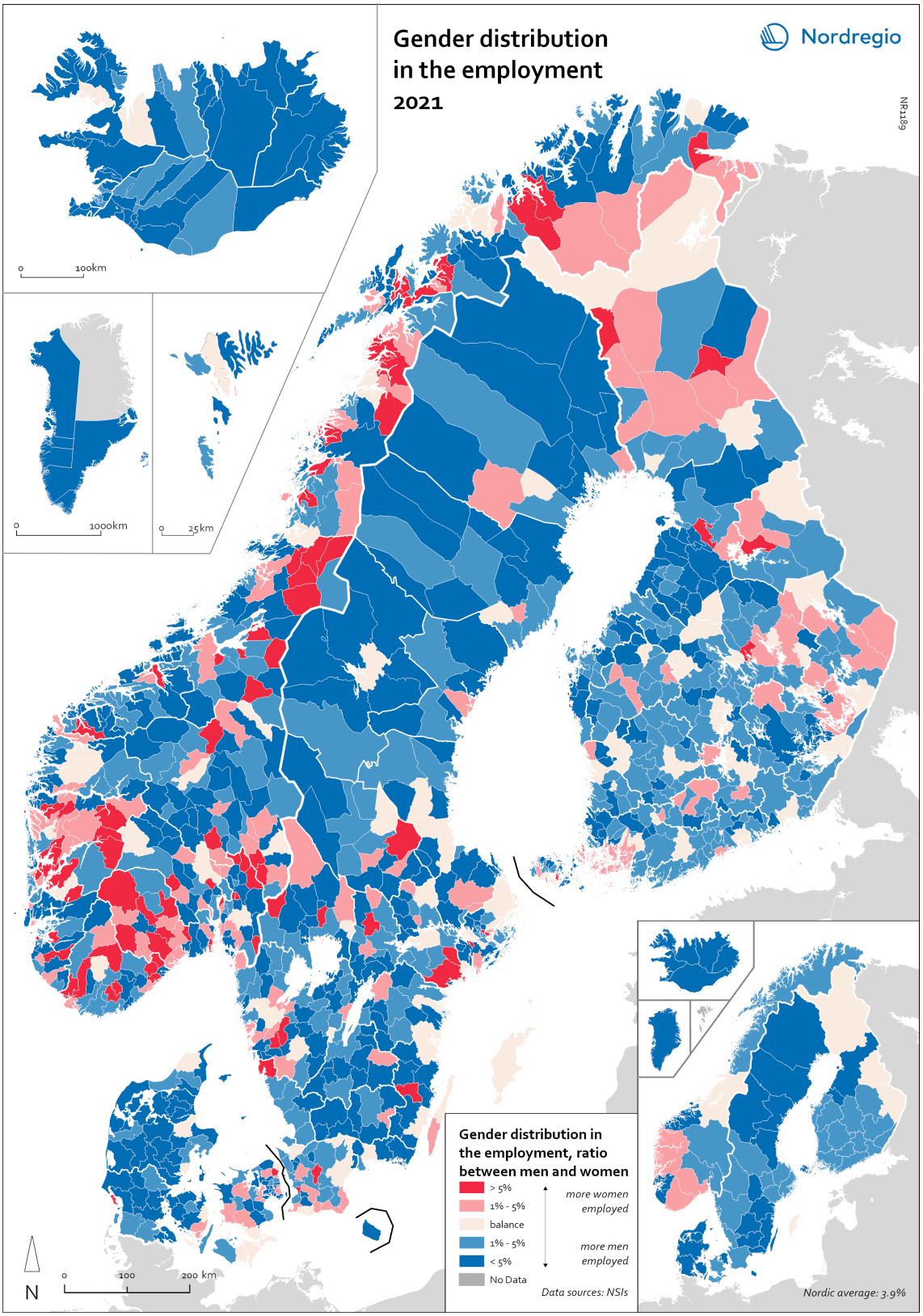
Figure 8.1: Gender wage gaps as a percentage difference across the Nordic countries
Source: Eurostat
Note: Including both the public and private sectors

Table 8.1 shows the age distribution of the gender wage gaps in 2021 across the Nordic countries. Gender divisions begin to emerge from age 25 onwards in the Nordic countries when most individuals have graduated from their highest level of education and entered the job market. This is consistent with previous research on gender gaps in the Nordic countries, which also pinpoint childbearing, parenthood and maternity leave as substantial factors (Gallen et al. 2019; Kleven et al. 2019; Nygren et al. 2021; Nygård & Duvander, 2021).

The countries' wage gaps also differ by age. Iceland and Norway have the two lowest gender wage gaps for those under 25. These countries also had the lowest Gini coefficients in 2022, as shown in the previous chapter on the regional perspective. However, while the gender wage gap for Iceland remains relatively low across all age groups, the same is not true for Norway, where the gap widens by age and ends up surpassing several other Nordic countries.

	25 and less	From 25 to 34 years	From 35 to 44 years	From 45 to 54 years	From 55 to 64 years	From 65 and over
Denmark	5,6	11,1	14,2	16,8	16,3	10
Finland	5,9	9,5	15,8	19,1	17,9	22,1
Iceland	0,7	3,8	8,8	13,8	16,3	14,1
Norway	2,7	8,3	14,4	17,7	19,1	16,3
Sweden	5,2	7,2	11,8	15,1	14,5	8,4

Table 8.1: Gender wage gaps as percentage difference by age across the Nordic countries (2022)
Source: Eurostat
Note: Blue colors represent a lower wage gap between age groups within a country, while red colors indicate a higher wage gap between age groups within a country.



Map 8.3: Gender distribution in employment by municipality in the Nordic countries (2021)

Map 8.3 shows the gender distribution in employment at both municipal and regional levels in the Nordic countries in 2021. Most regions had higher employment rates for men than women, with an average of 3.7% more men across the countries and sectors. In Finland, the rates were more balanced, with only 1.3% more men in employment. In three regions in Finland, employment rates were slightly higher for women: Etelä-Karjala – Södra Karelen, with 0.8% more women than men; Kainuu – Kajanaland, with 0.4%; and Uusimaa – Nyland with 0.1%. These are the only regions in the Nordic countries with a prevalence of employed women at the regional level. For the rest, employment rates were higher for men, with Icelandic regions having the largest share: Suðurnes had 11.3% more men than women, Vesturland 8.8%, Austurland 8.7%, and Suðurland 8.2%. The average for the Icelandic regions was 7.5%. For Denmark, this was 4.9%, for Sweden, 3.9%, and for Norway, 3.4%.

At the municipal level, however, the situation was much more varied. Åland is one of the most extreme examples. Although the average was 2.5% more men employed than women, Åland has several municipalities with extremes at both ends. On the one hand, there are municipalities like Lumparland, with 16% more women than men, and Brändö, with 11.3%. On the other hand, Kökar had 64% more men than women. The variations between Ålandic municipalities can largely be attributed to the municipalities' population size. The larger cities, like Trøndelag in Norway, may be more balanced at the regional level, but within the region, there are municipalities with a 20% prevalence of women in employment (Namsskogan, Meråker, Holtålen), as well as some with 18% (or higher) more men, such as Overhalla and Åfjord.

Environmental aspects of the business perspective on the economy

Finally, this section looks at territorial GHG emissions, both at regional level and for the different sectors. As the countries and regions have different energy mixes and production structures, and therefore different emission patterns and climate goals, the key indicators are emissions by region and by sector.

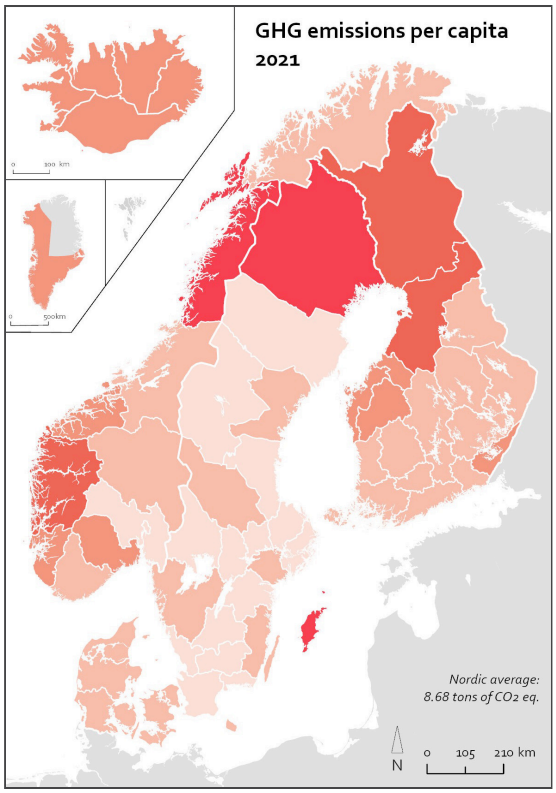
The OECD (2021) shows that the inter-regional variations in territorial (production-based) GHG emissions per capita are larger than between countries, as the emissions are closely linked to the countries' production structures. In general, metropolitan regions contribute about 60% of the territorial GHG emissions in the OECD countries. However, measured per capita, remote rural regions emit three times more than large metropolitan regions. This illustrates the nature of economic activities and settlement patterns in these areas. Remote rural areas tend to host a larger proportion of carbon and material -intensive industries (such as forestry and mining), and households in these areas generally have greater energy requirements, considering both housing and transport.

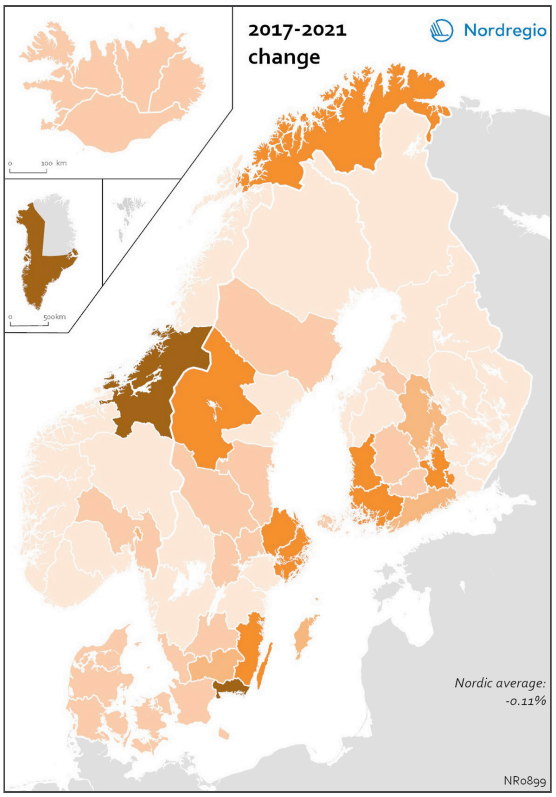
Regional GHG emissions

Map 8.4a and Map 8.4b show regional GHG emissions per capita on a territorial basis, although the picture may be skewed due to the inter-regional dynamics of energy processes, natural resource distributions and concentrations of industrial activities. From 2017 to 2021, the Nordic regions cut their per-capita GHG emissions by on average 11.3%, with an overall Nordic average fall of 8.7% over the same period.

In regions historically reliant on fossil fuels for heat and power generation, emissions have continued to decline. This trend is evident in Denmark, as well as in Southern Sweden and Southern Finland – densely populated areas that have taken steps toward expanding district heating coverage and reducing carbon intensity. The largest decrease in GHG emissions per capita was found in Troms and Finnmark, with a 42.3% decrease, Satakunta with a 30.2% decrease and Päijät-Häme – Päijänne-Tavastland with a 29.2% decrease. Only three regions (Greenland, Trøndelag and Blekinge) saw an increase in GHG emissions per capita.

At an aggregated level, industrial-related emissions decreased throughout the Nordic Region, but this trend does not hold true for regions in Norway with intensive offshore oil and gas operations. For instance, Nordland, Vestland, Møre og Romsdal, Vestfold and Telemark exhibited the highest per capita emissions in 2021. Between 2017 and 2021, emissions were increasing in many Norwegian regions with intensive offshore oil and gas activity, but also in Norrbotten in Sweden (21.2 tonnes of CO_2 equivalent per capita) and Gotland (33.6 tonnes of CO_2 equivalent per capita) due to intensive activity in the metal and cement industries, respectively, as well as in several Finnish regions. At the other end of the scale, the lowest emissions were seen in Oslo (1.32 tonnes of CO_2 equivalent per capita), which is characterised by hydropower-based heating and a prevalence of electric cars. These tendencies align with OECD (2023), in which rural regions that specialise in natural resource extraction emissions were seen to be declining more slowly.





Tons of CO_2 equivalent per capita

- ≤ 5
- 5 – 10
- 10 – 15
- 15 – 20
- > 20
- No data

Excluding emissions from land use, land use change or forestry (LULUCF). Regional data adjusted to UNFCCC national data. DK, IS & GL: national data.

Tons of CO_2 equivalent per capita change (%)

- < -20
- -20 - -15
- -15 - -10
- -10 - 0
- 0 - 5
- No data

Data sources: UNFCCC; FI & GL: NSIs; NO: Miljødirektoratet; SE: Naturvårdsverket.

Map 8.4a and 8.4b: Regional GHG emissions per capita on a territorial basis.

GHG emissions by source sector

Figure 8.2 shows the changes in territorial GHG emissions (excluding LULUCF) by source sector for each of the Nordic countries from 1990–2021. The countries show different patterns in reducing industrial emissions during this period, which is due not only to climate goals and implementation policies but also differences in economic specialisations, natural resources, and energy mixes. Denmark, Finland, and Sweden all show a reduction in GHG emissions for most sectors, especially in fuel combustion.

Since the 1990s, the share of renewable and non-fossil fuels in the Nordic energy mix has increased steadily. As noted by the IEA (2024), the advanced economies' electricity sectors have been undergoing a transformation since around 1990 that has pushed coal demand to a previously unseen low (except for a brief period during the Great Depression). Since reaching its peak in 2007, coal demand has nearly halved. Map 7.4 (Electricity production in 2021) in Chapter 6 in this report shows the composition of the different energy sources for electricity. In 2021, 73% of the primary energy consumed in Iceland and 67% of that in Norway for electricity came from renewable energy, in particular hydropower and geothermal energy – the latter of which accounts for 12% of the primary energy consumed in Iceland.

Looking at GHG emissions, emissions in Norway's energy industries sector increased by 108% in the period due to the toll of oil production (Hall, 2020). In Sweden, hydropower (31%) was supplemented by wind (12%), with small contributions from other renewables like biofuels and solar power. In Denmark, there has been a 67% reduction in GHG emissions in the energy industries sector in the period, mainly due to a large increase in wind power, which has replaced coal and gas (GreenPower 2024).

Dixon et al (2023) shows in an overview of the energy consumption and energy mixes in the Nordic countries, that, the contributions of wind (26%), solar (2%) and other renewables (6%) were more substantial in Denmark than in the other Nordic countries. In Finland, wind (7%) and hydro (14%) produced the largest proportion of renewable energy consumed locally in 2021. Liquified biofuels represented 2% of primary energy consumption, whereas other renewables, in particular biomass, constituted an even larger proportion of the total primary energy consumed in Finland (5%). Nuclear energy played a major role in Sweden (22%) and Finland (21% of primary energy consumption).

Fuel combustion in the transport and energy industries was the largest contributor to GHG emissions in 2021 in all of the Nordic countries except Iceland, where the dominant sectors were industrial processing (e.g. of aluminium) and product use. In Norway, 25% of GHG emissions from fuel combustion stemmed from processing in the oil and gas sector[14] (Golombek & Hoel 2023). From 1990 to 2021, only Sweden and Finland managed to reduce GHG emissions by 15% and 7%, respectively, in the transport sector.

During the same period, emissions in Iceland increased slightly, driven by the boom in tourism that began around 2013. As long-distance tourism became more popular over the 30-year period, the emissions from international aviation increased substantially in all of the Nordic countries, ranging from a 77% increase in Denmark to a 336% rise in Iceland, although COVID-19 brought the industry to a halt (Norlén et al. 2022). Post-pandemic figures from 2021 show decreases from international navigation in Denmark, Finland and Norway but increases in Iceland (632%) and Sweden (196%). In the agriculture sector, only modest reductions have been seen, ranging from 6% for Norway to 13% for Denmark.

Regardless of past trends, coal, oil, and gas are still major components of primary energy consumption structures in the Nordic countries. Even if major progress has been achieved in terms of renewable energy production, substantial decarbonisation challenges remain in all Nordic countries due to fossil-based energy mixes (Sweden, Finland, and Denmark), oil production (Norway) and industrial processing (Iceland) in order to decrease the GHG emissions.

14. It should be noted that North Sea oil and gas are not accounted for prior to the processing stage (Golombek and Hoel 2023).

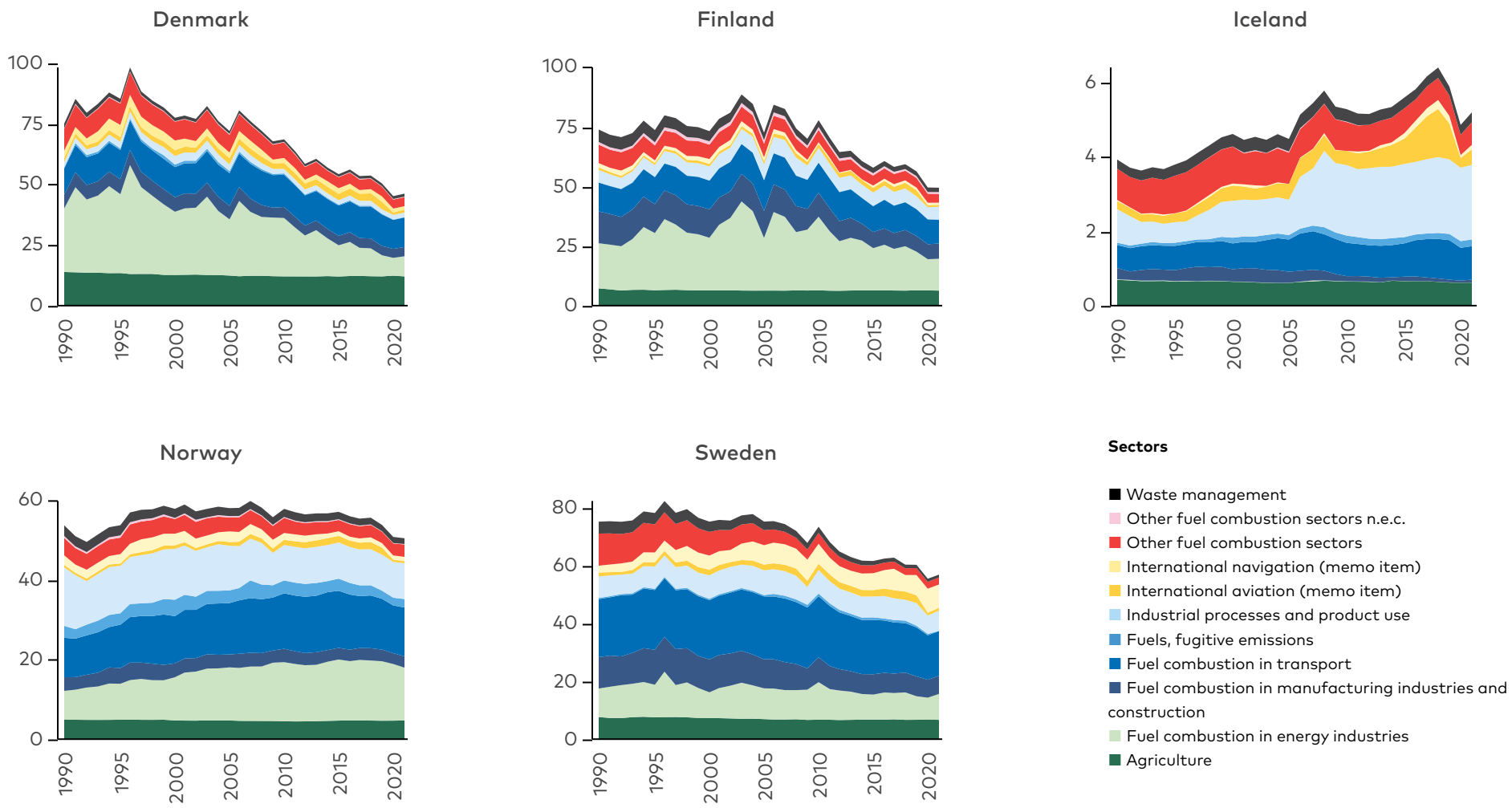


Figure 8.2: Greenhouse gas emissions in the Nordic countries by source sector (million tonnes of CO_2 equivalent)
Source: Eurostat
Note: Excluding Land-Use Change and Forestry and memo items but including international aviation and navigation.

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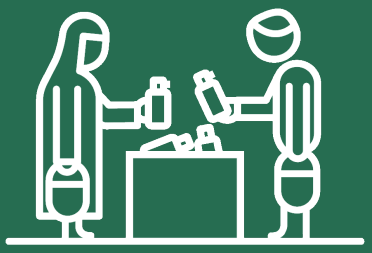
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CHAPTER 9:

HOUSEHOLD PERSPECTIVE ON THE ECONOMY

AUTHOR: Karen Refsgaard, Sigrid Jessen and Carlos Tapia
GIS AND MAPS: Maria Bobrinskaya and Kamila Dzhavatova



The household as a unit of analysis

This chapter looks at economic, social, and environmental indicators from a household perspective. The economic and social indicators are closely interconnected and are analysed through the distribution of and changes to household disposable income. The environmental indicators are investigated through consumption-based GHG emissions, which are then related to income levels from a geographical perspective.

Economic and social aspects

Household disposable income per capita is a common indicator of the affluence of households and, therefore, of the material quality of life. It reflects the income generated by production, measured as GDP that remains in the regions and is financially available to households, excluding those parts of GDP retained by corporations and government (OECD 2022). In sum, household disposable income is what households have available for spending and saving after taxes and transfers (OECD 2024). It is 'equivalised' – adjusted for household size and composition – to enable comparison across all households. Purchasing Power Standards (PPS) is used to compare the countries' economies and the cost of living for households.

National level

Figure 9.1 shows that, when purchasing power is considered, Norway still has the highest income, although the differences between the countries have changed. Since 2015, Denmark has had a steady increase in household income, while Finland, Sweden and Åland have seen no increase – and in the last year, even a decrease – in purchasing power. Iceland had the absolute lowest level of purchasing power in 2015. The Faroe Islands and Greenland were slightly higher, reaching the level of Finland in 2022. Iceland's purchasing power increased in 2022 but was still at the lowest level among the Nordic countries. The increased value of the Danish currency (which is tied to the euro) compared to the Swedish and Norwegian currency means greater purchasing power in relation to imported goods and services, and thus may partly explain the Danish increase in household income compared to the other Nordic countries.

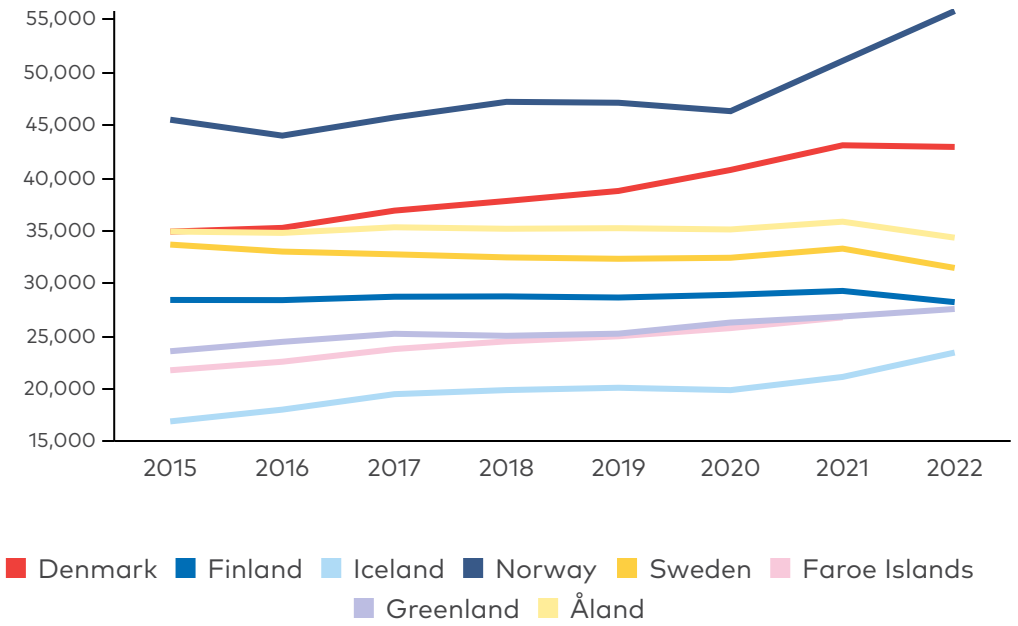


Figure 9.1: Household disposable income per capita in PPS[15]
Source: NSIs

15. Purchasing Power Standard (PPS) represents the number of currency units per PPS. Real expenditure refers to expenditure in national currency converted to PPS using Purchasing Power Parities (PPPs), thereby denominating it in PPS (Statistics Denmark, 2024).

However, average numbers do not reveal anything about the distribution among households. The sections above on social aspects of the regional economy, investigated the Gini coefficients across the Nordic countries. Greenland and Sweden had the most unequal distribution of incomes per capita, while the Faroe Islands, Iceland, and Norway were more equal.

As other research pinpoints, childbearing, parenthood and maternity leave as factors that contribute to gender wage gaps, it is interesting to look more closely at household incomes for families with children. Epland and Hattrem (2023) analysed the household incomes for families in Denmark, Finland, Norway and Sweden from 2005–2020, factoring in the impact of major events, e.g. the financial crisis in 2008 and the rise in immigration to Europe some years later. They conclude that in Norway, it is primarily families with two parents that have the highest incomes, while in Denmark, it is single parent households.

In 2020 there was a difference in income between single- and two-parent households of 73% in Denmark and Finland, compared to 63% in Norway. Figure 9.2 shows the percentage increase in the median income from 2005 to 2020 for children in different households. Children in Denmark and Finland have had the highest increase in household income, while growth has been lower for Norwegian and Swedish children. It is first and foremost single parent families where the development has differed between the countries. While children in Denmark – and, to some extent, Finland – from single-parent families recorded nearly the same trend as children on average, Swedish and, in particular, Norwegian children have had much lower growth in income.

Epland and Hattrem (2023) argue that these differences in income for families can be partly explained by the stable or increasing participation in the labour market by parents in Denmark – and, to some extent, Finland. Conversely, the large increase in the immigrant population in Sweden and Norway in recent years suggests that an overall reduction in average educational level may be a reason for the lower increase in labour market participation. Such deep dives into the distribution of household incomes show how even indicators like Gini coefficients are not sufficient as social indicators for household economy.

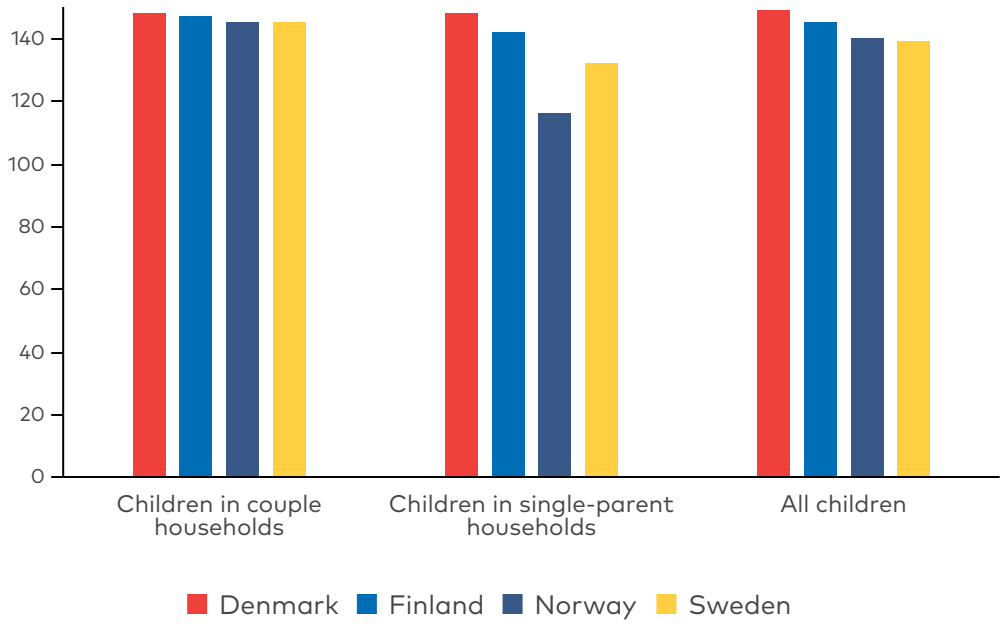


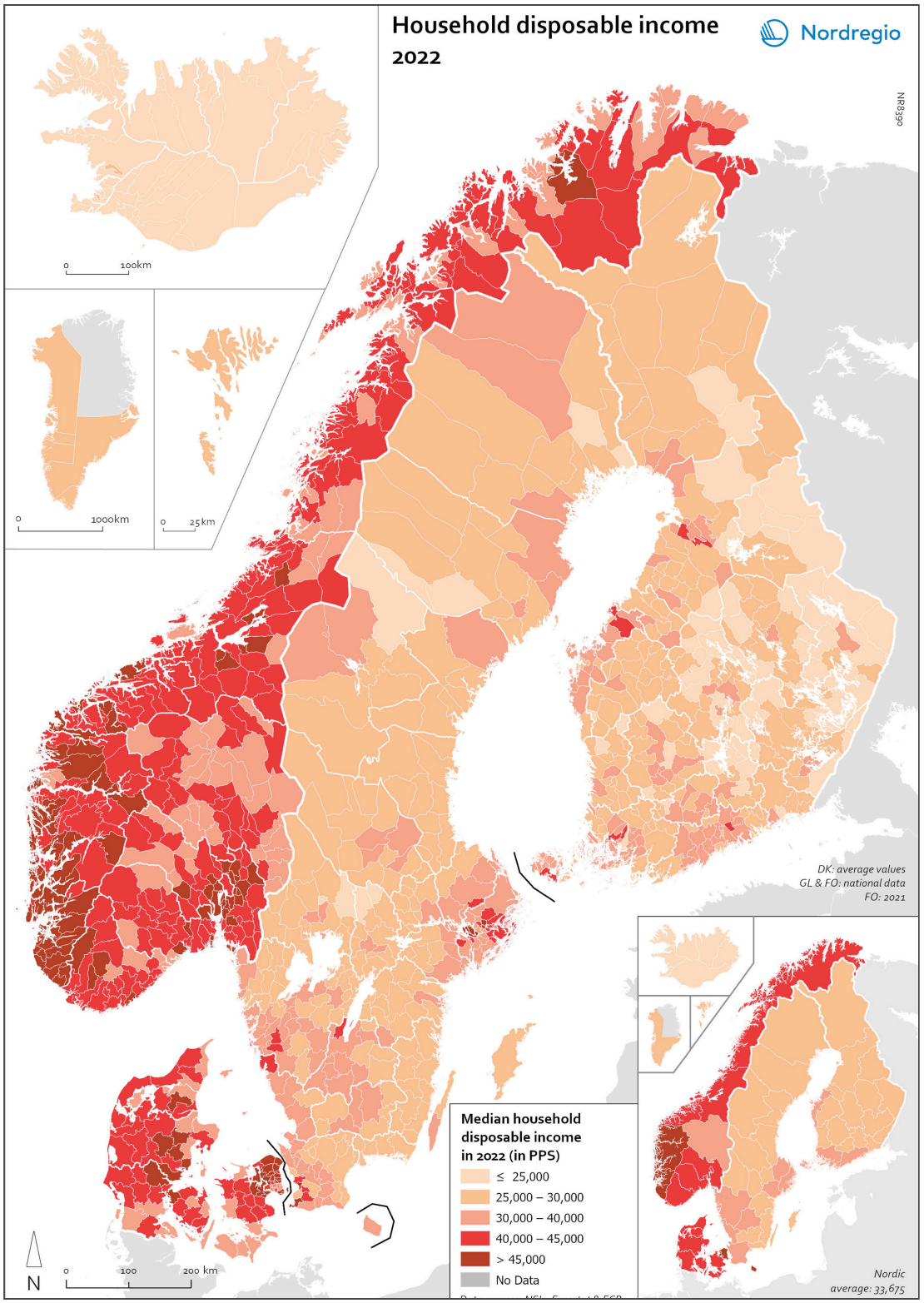
Figure 9.2: Percentage change in median equivalent income (2005-2020)
Source: Epland and Hattrem (2023) based on EU-SILC data

Municipal level

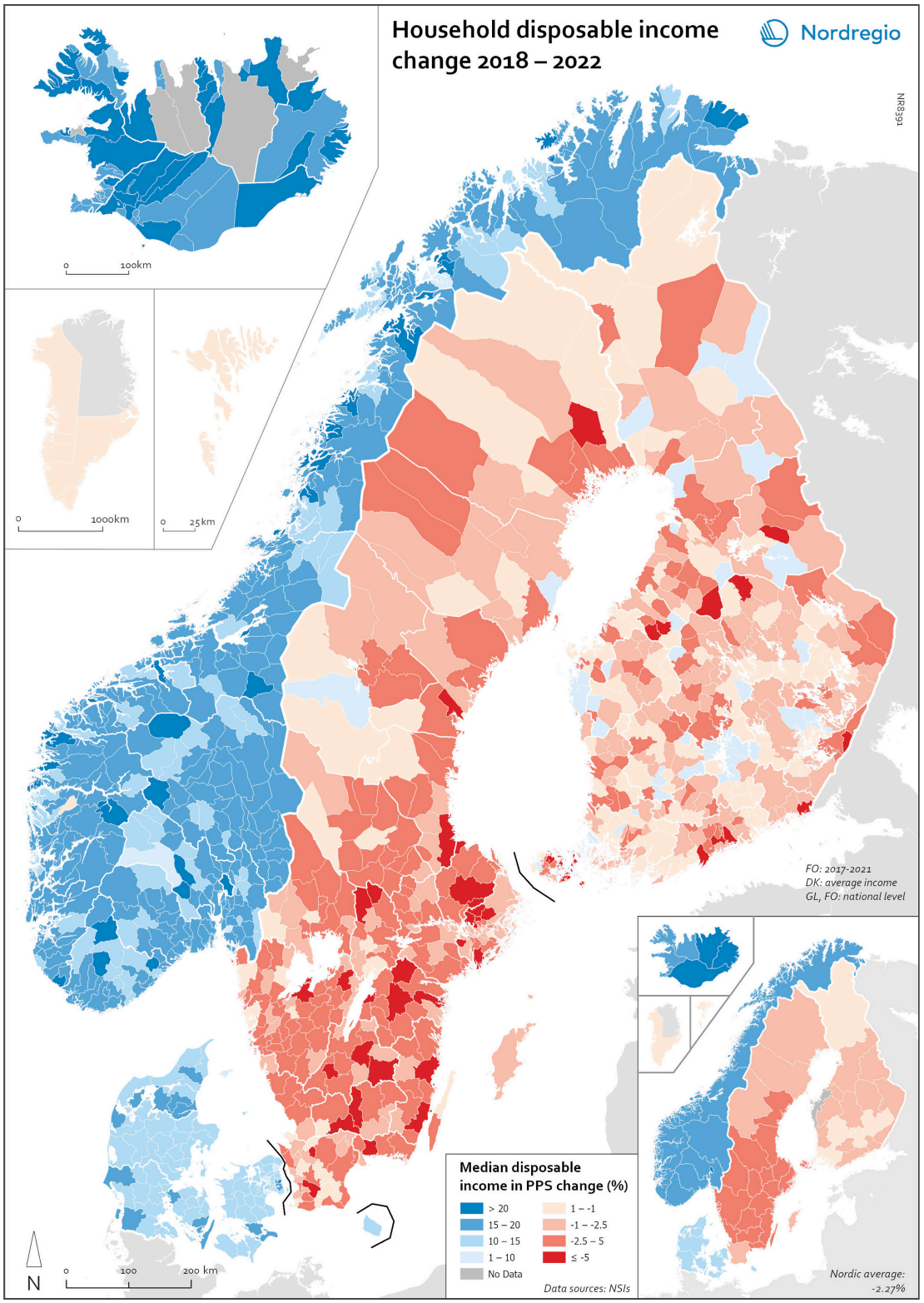
Map 9.1 shows the intra-municipal differences in household disposable income in PPS, which reveals the different patterns in the Nordic countries. Norwegian coastal municipalities have slightly higher household disposable income than inland municipalities, with some exceptions. Finnish, Icelandic, and Swedish municipalities generally have much lower household disposable income compared to Norwegian and Danish municipalities, except for the larger urban areas. In Denmark, most municipalities are at a similarly high level, except for remote islands in the south. The differences between the Icelandic municipalities are rather small, at a medium to lower level.

As shown in Map 9.2, between 2018 and 2022, household disposable income increased for all Danish, Icelandic, and Norwegian municipalities and decreased for Finnish and Swedish municipalities. On average, the city municipalities have higher incomes and increased most in Finland and Sweden in 2018–2022. In Sweden, a tendency towards larger falls in income was observed in several southern municipalities.

In summary, absolute household income increased in all Nordic countries but not when measured in purchasing power. Based on this metric, on average, Norwegian households are the most well-off and Iceland the worst off, while Danish households benefited from a stronger currency in 2022. Single-parent households have had lower increases in household income than other families in Norway and parts of Sweden. Municipalities show a similar trend in Norway and Denmark, although Norwegian coastal municipalities fared slightly better in 2022. Disposable income is falling in all Swedish and Finnish municipalities.



Map 9.1: Household disposable income in PPS (2022)



Map 9.2: Percentage change in household disposable income (2018–2022)

Environmental aspects

This section looks at and compares production- and consumption-based GHG emissions from a household perspective. As GHG emissions are closely linked to consumption and income, we also examine these relationships in more detail.

GHG emissions are usually measured based on 'production' or 'territorial' emissions, which are used when countries report their emissions and set targets domestically and internationally (Pedersen, 2021). In addition, 'consumption-based' emissions are increasingly attracting attention (e.g. Girod et al. 2014; OECD 2021, Axelsson et al. 2022, Statistics Denmark 2022). Consumption-based emissions reflect consumption and lifestyle choices in a country– in effect, they are territorial emissions adjusted for trade. In general, consumption-based GHG emissions are higher than territorial emissions in most developed countries (Ahmad & Wyckoff 2003; Wilting & Vringer 2009; Peters 2016). Globally, there is a regional East-West split in net exporters and importers – most of Western Europe, the Americas, and many African countries are net importers of emissions, while most of Eastern Europe and Asia are net exporters.

Factoring in consumption emissions significantly increases the Nordic GHG emissions footprint. For example, statistics from the Global Carbon Project (2023) reveal that in 2021, territorial CO2 emissions, which exclude emissions embedded in traded goods, represented only a roption of total CO2 emissions consumed in Nordic countries (see Figure 9.3). In Nordic countries, the shares of territorial emissions relative to consumption emissions were 63% in Denmark, 73% in Finland, 57% in Sweden and 92% in Norway. Norway's significantly higher ratio is attributed to substantial process-related CO_2 emissions in the oil and gas sector. The biggest difference between territorial and consumption-based emissions was seen in Sweden, which indicates that Sweden's imports were a significant contributor to CO_2 emissions.

All the Nordic countries have cut their consumption-based emissions significantly by around 30–50% since 2000 (Iceland is excluded from this data).

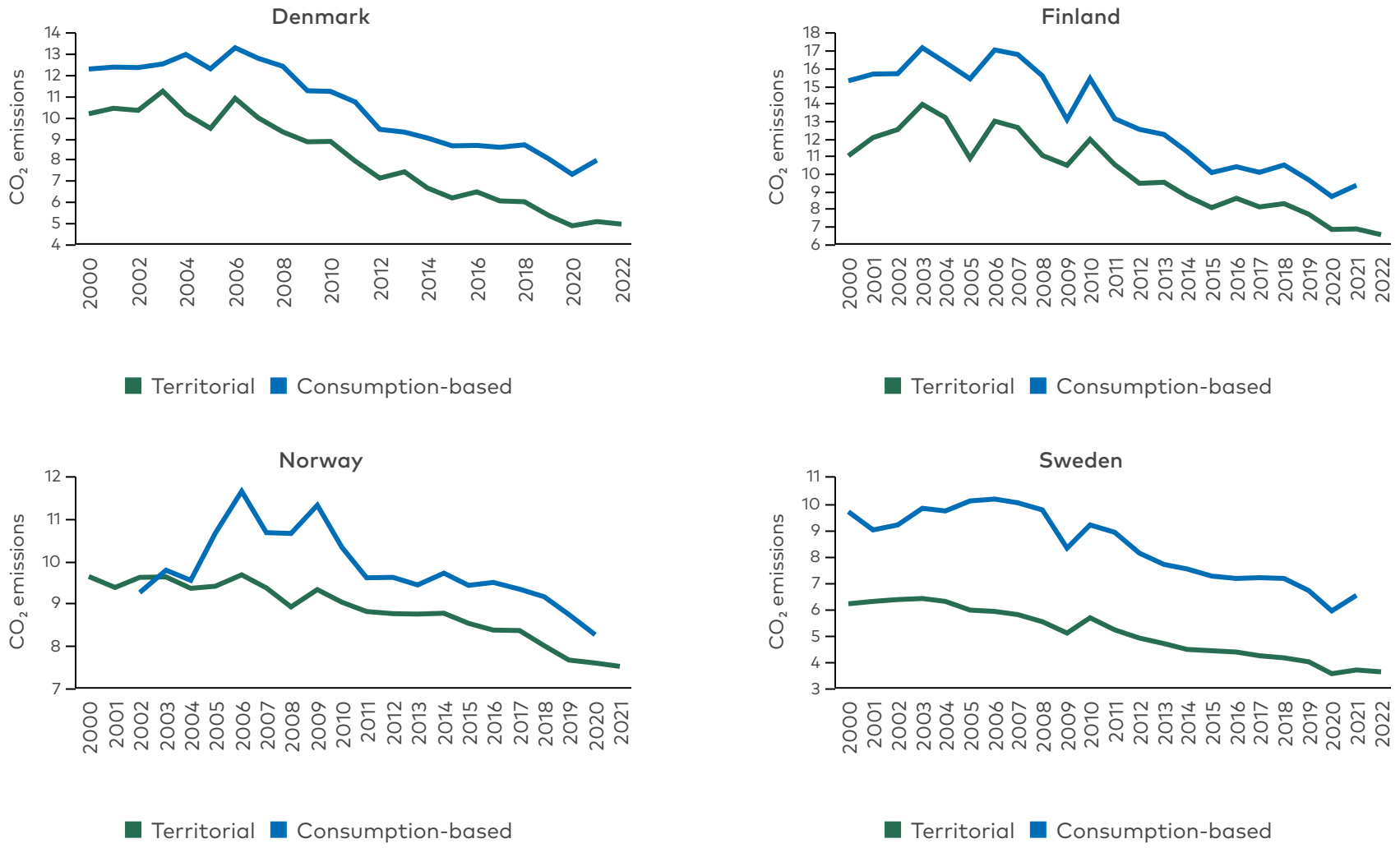


Figure 9.3: Territorial and consumption-based CO_2 emissions per capita (tonnes of CO_2 equivalent)

Source: Global Carbon Budget 2023 & Our World In Data project

Data from the Global Carbon Budget (2023) shows 7.8 CO_2 equivalents per Dane, 9.3 per Finn, and 8.3 per Norwegian and 6.5 per Swede[16] and have all increased since the pandemic. Numbers from 2020 from Statistics Denmark (2022) show 11 tonnes of CO_2 equivalent per capita, while for 2019, Statistikmyndigheten (SCB 2022) reports 9 tonnes of CO_2 equivalent per Swede. The deviation from the figures from Our World In Data may be due to, among other factors, the latter not including emissions from international aviation and shipping or emissions from land-use change.

Consumption-based GHG emissions are attributable to private consumption, public consumption, and investment. Private household consumption comprised 62% of total consumption-based GHG emissions in Denmark in 2020 (Iliev et al. 2021). Also Swedish Statistics (Axelsson, 2022) has investigated the composition of emissions from household consumption and found that in 2019, total emissions from private households in Sweden amounted to 6.3 tonnes of CO_2 equivalent per Swede, while Danish Statistics (2022) calculated 6.8 tonnes of CO_2 equivalent per Dane (see Table 9.1 and Figure 9.4). Transport (cars and aviation) accounted for 42% of private household emissions in Sweden and 33% in Denmark. Food accounted for 24% in Sweden and 18% in Denmark. Housing was the third-largest sector, with 18% for Sweden and 8% in Denmark.

Figure 9.4 shows also the figures for imported GHG emissions in Denmark, which accounted for a significant proportion (more than 50%) in most categories. For further analysis, see Norlén et al. (2022).

16. Those numbers do not include emissions from international aviation and shipping.

Consumption categories	Tonnes of CO2-equivalents per Swede	Share of total
Transport, including	2,57	42%
Car	1,02	40%
Aviation	1,02	39%
Public transport	0,1	4%
Other	0,44	17%
Food incl. restaurants	1,5	24%
Housing and furniture	1,15	18%
Culture, sport and leisure	0,43	6%
Other	0,37	6%
Clothes and shoes	0,25	3%
Total	**6,27**	**100%**

Table 9.1: Swedish household consumption footprint by consumption group (2019)
Source: Stockholm Environment Institute

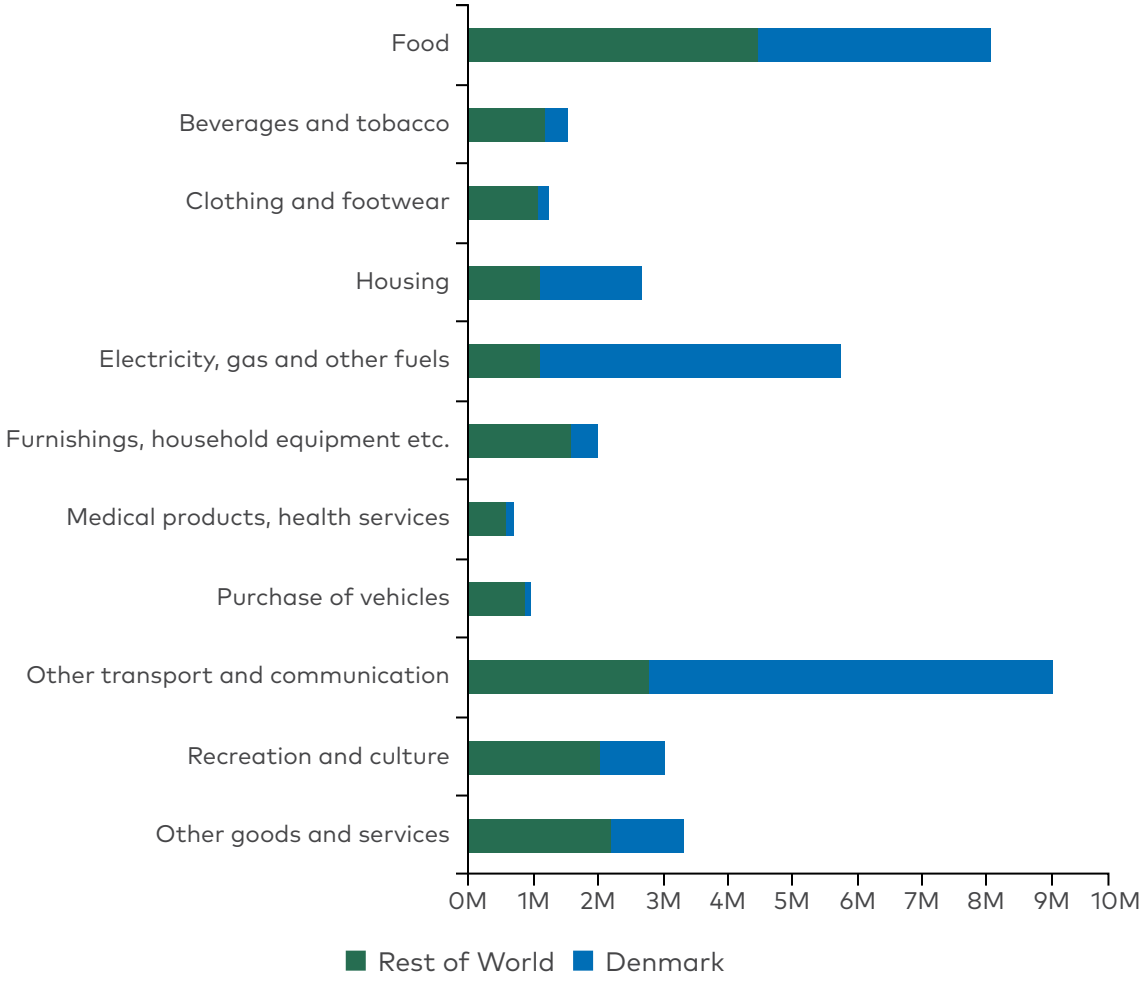


Figure 9.4: Danish household consumption footprint by consumption groups (2021) (million tonnes of CO_2 equivalent)
Source: Statistics Denmark 2022.

According to several studies (Heinonen et al. 2013; Pang et al. 2019; Peters et al. 2016; Haberl et al. 2020; OECD 2021), income is a key variable in explaining emissions from household consumption and implies a positive correlation between emissions and GDP per capita. See, for example, a global marginal increasing curve for GHG emissions with increasing GDP per capita (Our World in Data 2024). Consumption-based analyses comparing rural and urban areas reveal that urban households have a higher carbon footprint, primarily due to higher consumption levels resulting from frequently higher income (Heinonen et al. 2013; OECD 2021). It is therefore interesting to investigate the data from Swedish Environmental Institute where GHG emissions are calculated at municipal and postcode level for all of Sweden's municipalities (Axelsson et al. 2022).

Axelsson et al. (2022) report that the average footprint is at the same level in each of the municipalities, but large intra-municipal variations are seen at postcode level. The analysis shows that GHG emissions from households range from around 3.5 tonnes CO_2 equivalent per person per year in the less affluent areas to nearly 18 tonnes CO_2 equivalent per person per year in more affluent areas. Postcodes with higher incomes have a higher-than-average climate footprint from consumption.

The results also show large variations between the municipalities when it comes to the composition of emission sources. Urban municipalities have a higher-than-average footprint due to flying, people in rural areas use more cars, and in the northern part of Sweden, a larger proportion is used for heating. The highest footprints are in urban municipalities, followed by municipalities with high levels of tourism, while the lowest footprints are found in municipalities within commuting distance to a smaller town. Food consumption is at the same level across the types of municipalities.

Sweden is introducing strategies and instruments to reduce consumption-based GHG emissions. It is also investigating the possibility of introducing national targets for consumption-based emissions (Statens Offentliga Utredningar 2022).

The comparisons of production- and consumption-based GHG emissions from a household perspective show that the import of goods of services composes around 50% of the consumption based GHG emissions in Denmark. However, the Nordic countries have cut their consumption-based emissions significantly by around 30–50% since 2000. Beside variation in geographical conditions for the size and composition of consumption based GHG emissions research shows positive correlation between emissions and income per capita. It is therefore of interest for future GHG policies to look into those causes for variations in GHG emissions stemming from private consumption.

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REGIONAL POTENTIAL INDEX: A revised methodology

AUTHORS: Carlos Tapia
MAPS AND FIGURES: Gustaf Norlén and Kamila Dzhavatova



Photos: Unsplash, iStock, iStock

Introduction

Regional development and innovation processes are multifaceted phenomena that encompass various factors related to infrastructure, institutions, technologies, social capital and more (Isaksen et al. 2022). These factors play various roles in regional development and interact in complex ways, which makes interpretation challenging. It is, therefore, helpful to employ composite indicators or synthetic indices to summarise multidimensional information. This both simplifies communication and facilitates more straightforward benchmarking and trend analysis (Nardo and Saisana 2009). Multidimensional indicators of this kind are widely utilised in policy- and decision-making, including in regional policy (Saisana et al. 2005).

Nordregio's Regional Potential Index (RPI) enables cross-regional comparison of development potential and illustrates the regional balance between the Nordic countries (Grunfelder et al. 2020a). The *State of the Nordic Region* report included RPI for the first time in 2016, and the index was subsequently updated in the 2018 and 2020 releases (Lindberg et al. 2017; Grunfelder et al. 2018; Grunfelder et al. 2020b). The purpose of this multidimensional index is to summarise the current and past performance of the Nordic regions across major policy domains. The index helps to identify regions that have high potential and those in need of further support to boost their potential and meet existing challenges. It provides policy-makers with a comparative learning tool that informs the design of effective regional development strategies at Nordic level.

Nordregio's RPI is a multi-item measurement scale that incorporates information about the demographics, labour market and economic output of the Nordic countries' 66 administrative regions. It consists of eight indicators[17].classified into four main groups and eight subgroups (see Table 10.1). These components and indicators were originally selected on the basis of their relevance for regional development (Lindberg et al. 2017).

The original RPI was constructed as a simple weighted average of the contributing indicators. In the 2018 and 2020 editions, the RPI allocated a maximum of 75 points to each indicator in the demographic domain, up to 100 points to each indicator in the labour market dimension, a maximum of 200 points to regional GDP per capita, and up to 100 points to R&D investment per capita.

The weights were manually assigned based on expert judgement, in line with their intended policy *relevance*. However, this interpretation is not appropriate when using a *fully compensatory* aggregation function, such as the weighted arithmetic mean. The nature of the additive aggregation method entails *full compensability*, which implies that a decline in one policy domain (e.g. *gender balance*) could be completely offset (compensated) by progress in another one (e.g. *total production*). This is undesirable since it might encourage decision-makers to focus on policy areas in which results can be more easily achieved rather than those with a greater need for intervention.

17. The original RPI had nine indicators (see explanation below).

Domain	Subdomain	Indicator	Justification
1. Demography	1.1. Degree of urbanisation	Proportion of population living in urban areas of 5,000+ inhabitants	Medium-sized and large cities offer relatively good access to jobs (especially in the tertiary sector), healthcare, culture, environmentally friendly transport and other services due to a critical mass of population.
1. Demography	1.2. Gender balance	Gender ratio of the total population	In a balanced situation, the regions offer education and workplaces for both genders. An unbalanced situation is often the result of the outmigration of women for education or work purposes, which contributes to the intensification of demographic shrinkage (e.g. lower fertility rates and ageing).
1. Demography	1.3. Age balance	Demographic dependency ratio	This highlights the economic burden on the working population (those who have the potential to earn their own income) in supporting non-working members of the population (young people and pensioners).
2. Labour market	2.1. Employment level	Total employment rate	Relatively high employment contributes to higher tax revenues, the overall regional economy and its production. It also indicates that the region's population has the skills sought by employers. A high employment rate also contributes to both social cohesion and life satisfaction.
2. Labour market	2.2. Youth unemployment	Youth unemployment rate	A low rate of youth unemployment highlights good conditions for entering the labour market.
3. Labour market	2.3. Educational attainment	Population with tertiary education	A high proportion indicates a more skilled workforce and a better chance of being an innovation leader. It also tends to improve the quality of jobs and, consequently, the life satisfaction of the region's inhabitants.
3. Economy	3.1. Total production	GDP per capita (PPS)	This provides an indication of the level of production of goods and services in the region. More generally, it also provides a fairly reliable measure of the performance of the regional economy.
3. Economy	3.2. Innovation investment	Total R&D investment per capita	This indicates the region's preparedness in relation to future development and is seen as a tool for translating innovation into economic growth.

Table 10.1: The RPI framework's data model.

In this edition, we adopt a new methodology that maintains a similar set of indicators but applies a more robust statistical process to the construction of the RPI.

In brief, our methodology consists of a pre-processing stage, in which the input data is prepared for analysis, and a processing stage, in which the indicators are weighted and aggregated.

The pre-processing stage entails imputing missing values (Step 1), removing statistical outliers (Step 2), transforming the data to reduce skewness (Step 3), and standardising the values for aggregation as adimensional constructs (Step 4). The data-processing stage involves assigning a data-driven definition of weights to different variables (as presented in Table 10.2) based on their contribution to the overall variance (Step 5), and the aggregation of this information in an adimensional index, using a weighted geometric mean (Step 6).

Finally, there is also a post-processing stage (Step 7), in which a sensitivity analysis evaluates the influence of each preceding step on the final outcome.

Indicators	PCA FA weights
Proportion of population living in urban areas of 5,000+ inhabitants	0.15
Gender ratio of the total population	0.18
Demographic dependency ratio	0.05
Total employment rate	0.14
Youth unemployment rate	0.11
GDP per capita (PPP)	0.15
Total R&D investment per capita	0.08
Population with tertiary education	0.14

Table 10.2: Weights assigned through Principal Component Analysis (PCA) and Factor Analysis (FA)

As part of the extensive methodology review, we also chose to exclude the *net migration rate* indicator. The purpose of this was to ensure the conceptual coherence of the index. *Net migration rate* was the only indicator in the original data model that was expressed as a rate of change, whereas the other indicators provided a static snapshot of conditions across various domains. Removing the *net migration rate* from the data model, therefore, enhanced the conceptual coherence of the RPI. At the same time, it also improved the temporal stability of the resulting index, especially during the COVID-19 years.

Consequently, the revised methodology produces more stable and consistent results while also minimising data redundancy (double-counting) during the weighting phase and mitigating compensatory issues during the aggregation phase. For further information on the construction of robust multidimensional indices, see the European Commission's Competence Centre on Composite Indicators and Scoreboards (European Commission 2023).

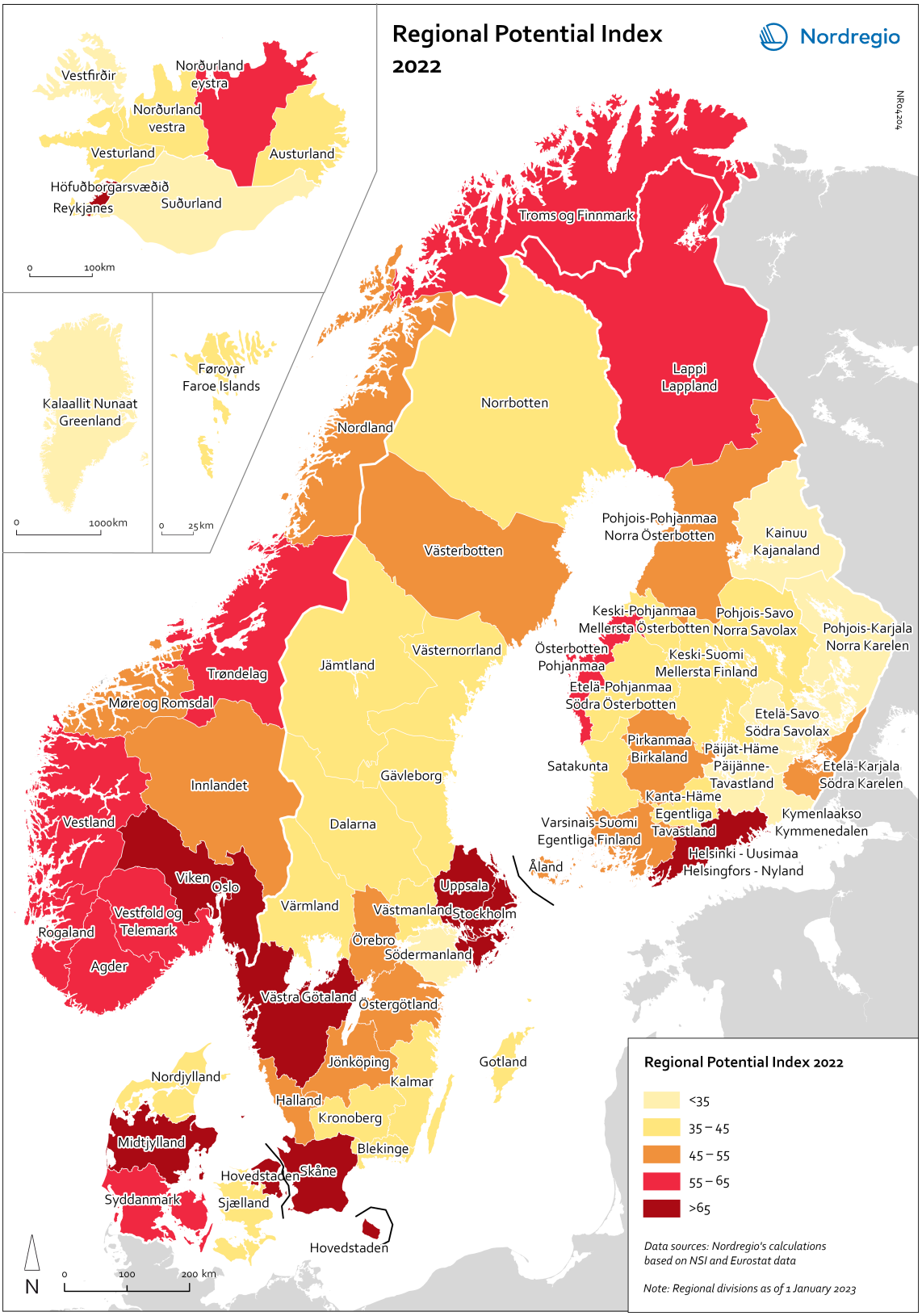
The new Regional Potential Index

The RPI was calculated retroactively for the 2015–2023 period. However, the focus in this section is on 2022 – the most recent year in our time series with full data coverage. Map 1 shows the redesigned RPI for that period. In line with the principles of accumulation and agglomeration that drive the global economy, the RPI highlights the role of the Nordic countries' largest cities and city regions. The top performing region in 2022 was Oslo, the Capital Region of Norway, followed by Stockholm County and the capital regions of Denmark and Iceland.

On the other end of the RPI spectrum, we find regions such as Greenland, the Eastern Region in Iceland, and South Savo and Päijät-Häme in Finland. All of these regions are characterised by sparse populations, rural economies, and in some cases, remoteness.

Greenland has the lowest overall RPI, with low rankings for most indicators but not all. For instance, Greenland boasts one of the lowest demographic dependency ratios in the Nordic Region, and youth unemployment does not appear to be a significant issue. However, the region consistently underperforms in indicators such as gender balance, educational attainment and degree of urbanisation. This description is also largely applicable to the Eastern Region of Iceland.

Like several other areas across the Nordics, regions in Eastern Finland have one of the fastest-ageing populations, and increasing life expectancy is leading to growth in the elderly population (see Demography section). Concurrently, even though Eastern Finland's economy is developing, the labour market presents discouraging figures, with comparatively lower employment rates and higher youth unemployment rates than the national and Nordic averages. This could explain why, unlike other rural Nordic regions, several landlocked Finnish regions near the Russian border are struggling to counter some of the challenges posed by an ageing population, such as a shrinking labour supply and escalating public-sector costs. The same situation applies to Södermanland County in Sweden, even though this region also struggles with one of the Nordics' highest youth unemployment rates.



Map 10.1: Regional Potential Index (2022)

Box 10.1: Interpreting the Regional Potential Index

The RPI offers several advantages for policy monitoring and evaluation:

- It encapsulates multiple dimensions of regional potential into a single metric, providing a comprehensive overview of this phenomenon.
- It simplifies complex data, making it easier for policy-makers and stakeholders to understand regional potential in a holistic way.
- It allows for meaningful comparison across different policy priorities, regions, or time periods.
- It enhances transparency and accountability in policy implementation, thereby helping to identify trends, patterns and anomalies in policy performance over time.

However, much like any other composite indicator, the RPI simplifies reality. While the indicator is a powerful tool for policy monitoring and evaluation, it should be used judiciously – i.e. based on a comprehensive understanding of what the RPI signifies about the measured phenomenon, supplemented by other qualitative and quantitative methods. Furthermore, any interpretation of RPI scores must take into consideration the context and limitations of the data and methodology used.

In essence, the RPI provides a snapshot of regional potential within a Nordic framework. When combined with the various thematic analyses in the *State of the Nordic Region*, it can facilitate a better understanding of the dynamics, enablers and drivers of this multidimensional phenomenon.

RPI trends over time

The RPI is a relative index that fluctuates both temporally and spatially. This means that the scores depend on the values of all data points within the distribution. The maximum and minimum scores are determined, respectively, by the best- and worst-performing regions across the time series. As new data points are added to the panel, the scores are retroactively recalculated. Consequently, the rankings and their temporal changes offer more insight than the RPI scores themselves.

An examination of the data from 2019 to 2022 (Figures 10.1a and 10.1b) reveals that the top performers during this period were the Southern Region in Iceland, Kronoberg and Kalmar counties in Sweden, and South Karelia, North Ostrobothnia and Ostrobothnia in Finland.

Progress in the top-performing region during this period, the Southern Region of Iceland, was mostly driven by internal population dynamics. This region experienced progress in its relative RPI score, primarily due to the population concentration in the city of Selfoss, which is experiencing sustained growth. This indicates improved access to services for residents in a region that boasts a robust local economy, as well as a relatively low demographic dependency ratio. At the same time, the Southern Region performs fairly well on all indicators – with the exception of gender ratio and share of population with tertiary education, neither of which changed substantially between 2019 and 2022.

Unlike the Southern Region in Iceland, progress in the Swedish and Finnish regions was characterised by substantial improvements in several key indicators. For example, the labour markets in the South Karelia, Kronoberg and Kalmar regions saw considerable enhancements in 2019–2022. Relative to other areas, these regions managed to increase total employment while simultaneously reducing youth unemployment. These improvements coincided with a relative expansion in their regional economies, measured in terms of GDP per capita. All things considered, the labour markets and local economies in these regions demonstrated resilience in the face of the COVID-19 pandemic and the Russian invasion of Ukraine. South Karelia also made substantial strides towards achieving a more balanced gender composition.

In stark contrast to the previously mentioned regions, the Northwestern Region in Iceland, the Faroe Islands, Åland and Västmanlands County in Sweden fell more than ten positions in the RPI ranking during 2019–2022. In the very rural Northwestern Region of Iceland, the decline in the RPI is mostly attributable to a deteriorating gender balance in the total population. This trait is also observed in Åland and Västmanlands County in Sweden. In the case of the Faeroe Islands and Åland, the decline in the RPI is more likely related to the deterioration of local economies during COVID-19, which had a comparatively greater impact on these regions.

In the case of Åland, the process was characterised by a slight relative increase in unemployment rates, particularly among young people. In the Swedish County of Västmanland, youth unemployment also increased substantially in relative terms during 2019–2022. The socioeconomic disruptions caused by the pandemic and the early stages of the war in Ukraine seem to have affected the regional economies to a larger extent than in other areas. This accentuated the ongoing outmigration of young people, particularly women, leading to a deterioration of demographic dependency ratios relative to other regions.

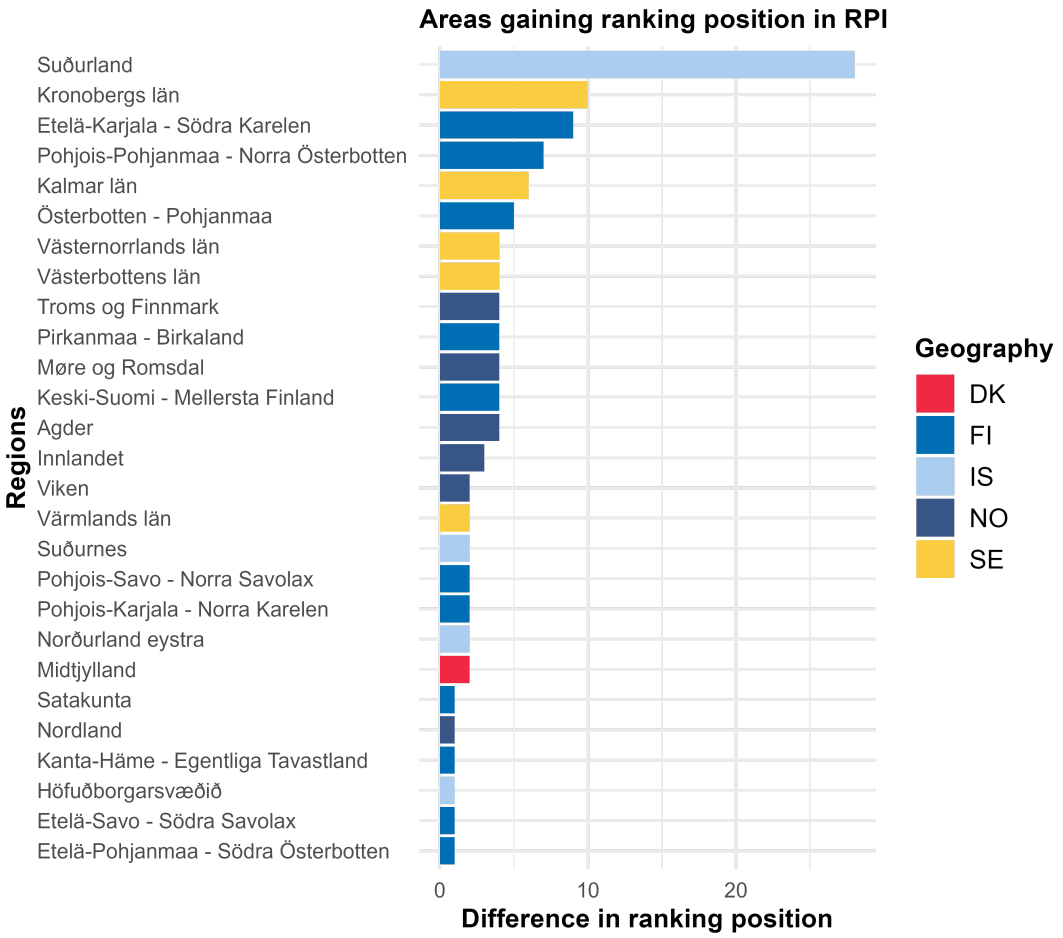


Figure 10.1a: Top movers 2019–2022.

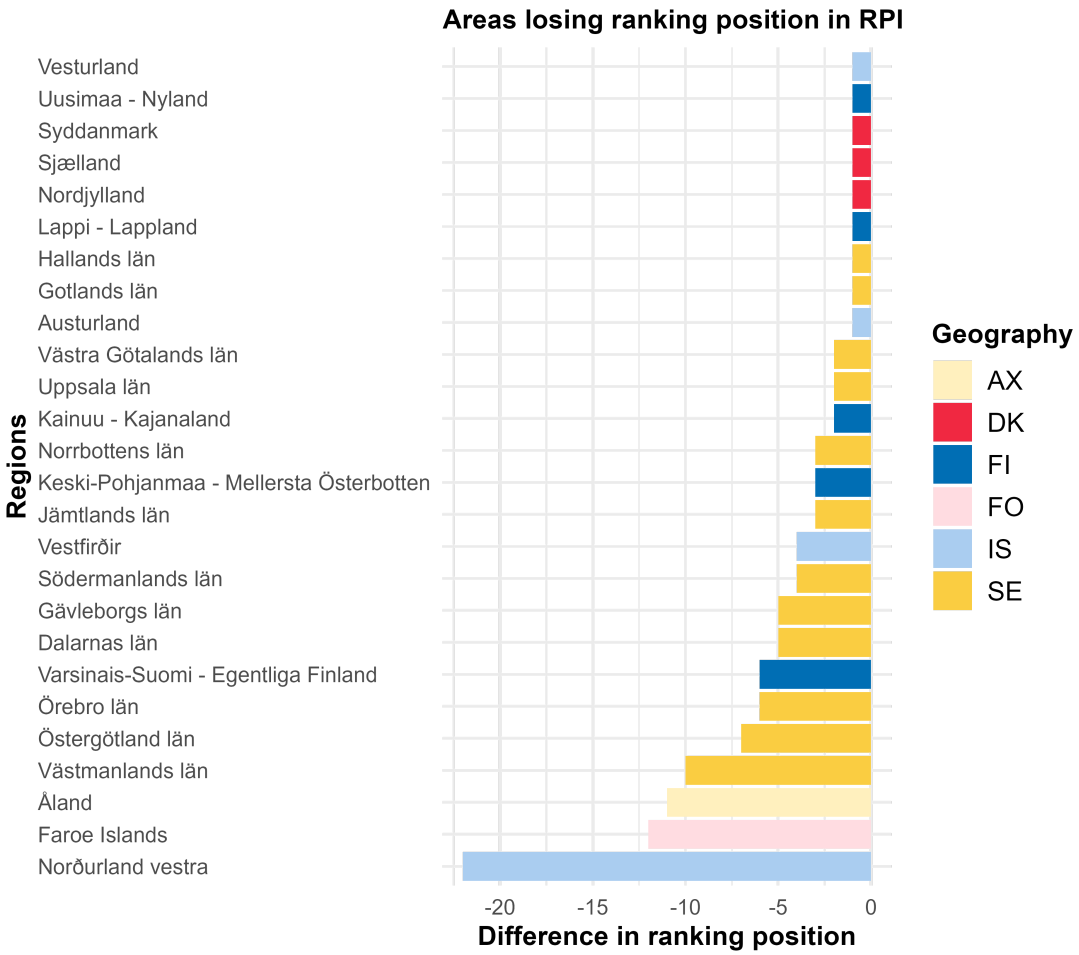


Figure 10.1b: Top movers 2019–2022.

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Editors: Gustaf Norlén, Timothy Heleniak, Karen Refsgaard

Authors: Gustaf Norlén, Timothy Heleniak, Nora Sánchez Gassen, Mats Stjernberg, Eva Maersk, Karina Berbert, Sigrid Jessen, Karen Refsgaard, Carlos Tapia

Maps and figures: Gustaf Norlén, Timothy Heleniak, Nora Sánchez Gassen, Anna Vasilevskaya, Karina Berbert, Maria Bobrinskaya, Kamila Dzhavatova

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Nordregio
P.O. Box 1658
SE-111 86 Stockholm, Sweden
nordregio@nordregio.org
www.nordregio.org

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STATE OF THE NORDIC REGION 2024 gives you a unique look behind the scenes of the world's most integrated region, comprised of Denmark, Finland, Iceland, Norway and Sweden, along with the Faroe Islands, Greenland and Åland.

The report presents a series of facts, figures and maps showing the current state of play within core socioeconomic sectors, including demography, labour market and economy. The State of the Nordic region offers a broad Nordic panorama based on the latest data, trends and analysis. It also zooms in on key phenomena with insights from local, regional and national levels and cross-regional comparisons.

Nordregio
P.O. Box 1658
SE-111 86 Stockholm, Sweden
nordregio@nordregio.org
www.nordregio.org