

STATE OF THE NORDIC REGION 2018

THEME 4: FOCUS CHAPTERS



State of the Nordic Region 2018

Theme 4: Focus chapters

Julien Grunfelder, Linus Rispling and Gustaf Norlén (eds.)

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COUNTRY CODES FOR FIGURES

AX	Åland
DK	Denmark
FI	Finland
FO	Faroe Islands
GL	Greenland
IS	Iceland
NO	Norway
SE	Sweden

EU	The European Union
EU28	The 28 European Union member states

OTHERS

b	billion
BSR	Baltic Sea Region
EFTA	European Free Trade Agreement
EII	Eco-Innovation Index
Eco-IS	Eco-Innovation Scoreboard
ESPON	European Observation Network for Territorial Development and Cohesion
FDI	Foreign Direct Investments
FTE	Full-time equivalent
GDHI	Gross disposable household income
GDP	Gross Domestic Product
GRP	Gross Regional Product
GWh	Gigawatt hour
ICT	Information and communication technology
ISCED	International Standard Classification of Education
ISO	International Organization for Standardization
ITQ	Individual Transferable Quotas
Ktoe	Kilotonnes of oil equivalent
LAU	Local Administrative Unit
LFS	Labour Force Survey
m	million
NACE	Statistical classification of economic activities in the European Community
NCD	Non-Communicable Diseases
NGA	Next Generation Access
NSI	National Statistical Insitute
NUTS	Nomenclature of Territorial Units for Statistic
OECD	Organisation for Economic Co-operation and Development
PPP	Purchasing Power Parity
R&D	Research & Development
RIS	Regional Innovation Scoreboard
SCB	Statistics Sweden
SDG	Sustainable Development Goals
SPI	Social Progress Index
TWh	Terawatt hour
UN	United Nations
USD	United States dollar
WWF	World Wildlife Fund

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Preface

A LOOK BEHIND THE SCENES OF THE NORDIC MODEL

The Nordic Region as such comprises the 12th largest economy in the world, with a population that is growing faster than the EU average, a labour market that receives global praise and a welfare system that has proved resilient both in times of boom and bust.

But the countries of Denmark, Finland, Iceland, Norway and Sweden along with Greenland, the Faroe Islands and Åland also make out a macro-region of very different internal regions, both geographically and administratively.

It is an area spanning from the endless acres of farmland in Denmark and the vast forests in Sweden, over the thousand lakes of Finland and the mythical fjords of Norway to the Arctic splendour of Iceland and Greenland. Indeed, even the island communities of the Faroe Islands and Åland have their own characteristics, both when it comes to nature and culture, economy and population.

The Nordics often are at the top of the list when the UN or other international bodies rank nations on various parameters. And despite some bumps on the road, we are also rated as some of the most suited to fulfill the aim of the 2030 Agenda to reach the UN Sustainable Development Goals.

In fact, a recent publication from the Nordic Council of Ministers point to the almost unlikely success of the Nordic region in a global perspective. But what is the picture behind the national figures and how do the various regions within the Nordic countries interact, both internally and across borders?

That question is addressed by this publication, the State of the Nordic Region 2018 that gives a unique look behind the scenes of the world's most integrated region.

The Nordic Council of Ministers has contributed with Nordic statistics for more than 50 years through e.g. the Nordic Statistical Yearbook, and Nordregio – our research institution for regional development and planning – has published regional statistics since its establishment in 1997.

Now we are gearing up even more with a newly established Analytical and Statistical Unit at the Nordic Council of Ministers. In the same spirit, two other Nordic actors – the Nordic Welfare Centre and Nordic Agency for Cultural Policy Analysis – have contributed along with Nordregio to the current edition of the State of the Nordic Region, which is now published as a joint venture for the entire Nordic Council of Ministers' network.

By mapping and documenting information about the state of the Nordic region(s), Nordregio provides a very important knowledge base that empowers local, regional and national authorities in the Nordic countries to make informed decisions. Solid documentation of development trends is a necessary starting point for developing good policy.

At the same time, the State of the Nordic Region 2018 is also a treasure trove of information for the Nordic population at large, as well as a must read for international actors who want to learn about the Nordics and maybe even get inspired by the Nordic model, however differently it may be played out in the various regions and areas.

I hope the many interesting facts, figures and stories embodied in this impressive work will find a large audience and reach high and wide, just as the Nordic countries themselves seem to be doing.

Dagfinn Høybråten
The Secretary General,
Nordic Council of Ministers





INTRODUCTION

Chapter 1

INTRODUCTION

Author: Kjell Nilsson

Map and data: Julien Grunfelder

Background

Since 1981, Nordregio and its predecessor organisations have produced the report *State of the Nordic Region*. The report is published every two years, describing ongoing developments over time in the Nordic Region at the municipal and regional levels. This report is the 15th volume in the series "Regional Development in the Nordic countries", which has supplied policymakers and practitioners with comprehensive data and analyses on Nordic regional development for many years.

The report is based on the latest statistics on demographic change, labour markets, education, economic development, etc. The analyses are based on a broad range of indicators covering the above-mentioned areas. Since 2016, *State of the Nordic Region* has also included a Regional Development Potential Index which highlights the strengths and weaknesses of the 74 Nordic regions in relation to one another and identifies the regions with the strongest development potentials. The maps contained within the report can also be accessed through Nordregio's online map gallery, and NordMap, an interactive map tool dealing with demographic, labour market and accessibility issues in the Nordic countries.

From 2018, publication of *State of the Nordic Region* has been directly overseen by the Nordic Council of Ministers centrally. The ambition here is to make the report a flagship project for the Nordic Council of Ministers, enhancing its analytical capacity and its ability to collaborate across sectors and institutions. *State of the Nordic Region* strengthens Nordic identity and community. It is deeply illustrative thanks to its rich map material and is therefore suitable for the international marketing of the Nordic Region. Thanks to the Nordic Region's strong performance in international comparisons it can

also contribute to the strengthening of Nordic influence and competitiveness within Europe as well as globally.

Given its focus on scale, *State of the Nordic Region* builds on the collection and use of Nordic statistics at the local and regional levels. The advantage of following an administrative division is that it coincides with political responsibilities and thus becomes more relevant to politicians and other decision-makers for whom access to comparable and reliable statistical information is vital. The report itself should not however be viewed as being politically guided or seen as containing political pointers or recommendations. Maintaining integrity and independence is important for the credibility and, ultimately, for how the *State of the Nordic Region* is received and used. When the inclusion of an international benchmarking approach makes sense, the Nordic-focused material is supplemented with statistics and maps addressing the pan-European level.

The concept of *State of the Nordic Region* can be both scaled up and down. An example of the former is the ESPON BSR-TeMo project (2014) and its follow-up TeMoRi (Rispling & Grunfelder, 2016), con-

The Nordic Region consists of Denmark, Finland, Iceland, Norway and Sweden as well as Faroe Islands and Greenland (both part of the Kingdom of Denmark) and Åland (part of the Republic of Finland)

ducted by Nordregio on behalf of the Swedish Agency for Economic and Regional Growth, with both projects focusing on the development of a territorial monitoring approach for the Baltic Sea Region (ESPON, 2014; Rispling & Grunfelder, 2016). Examples of scaling down include various assignments that Nordregio has implemented for individual regions such as Jämtland, Värmland, and Lappi. The potentials for extending the implementation of *State of the Nordic Region* are therefore immense if awareness increases due to its broader launch profile.

The regional approach

What is the Nordic Region?

The Nordic Region consists of Denmark, Finland, Iceland, Norway and Sweden as well as Faroe Islands and Greenland (both part of the Kingdom of Denmark) and Åland (part of the Republic of Finland). *State of the Nordic Region* is based on a suite of statistics covering all Nordic municipalities and administrative regions. It is however worth noting here that several Nordic territories, e.g. Svalbard (Norway), Christiansø (Denmark) and Northeast Greenland National Park (*Avannaarsuani Tunumilu Nuna Allannngutsaaliugaq*), are not part of the national administrative systems. Nevertheless, though not strictly included in the administrative systems, these territories are included in the report where data is available.

State of the Nordic Region displays data using national, regional and municipal administrative divisions (this edition according to the 2017 boundaries). Large differences exist both in terms of the size and population of the various administrative units at the regional and municipal levels across the Nordic Region. The four largest municipalities are all Greenlandic, with Qaasuitsup being the world's largest municipality with its 660,000 km² (however, split into two municipalities in 2018). Even the smallest Greenlandic municipality, Kujalleq, at 32,000 km² significantly exceeds the largest Nordic municipalities outside Greenland, i.e. Kiruna and Jokkmokk in northern Sweden with approximately 20,000 km² each. Excluding Greenland and the Faroe Islands, the average size of a Nordic municipality is 1,065 km². The smallest are less than 10 km² and are either insular municipalities (e.g. Kvitsøy in Norway or Seltjarnarnes near Reykjavík) or within the greater capital areas (e.g. Sundbyberg near Stockholm, Frederiksberg surrounded by the municipality of Copenhagen, or Kauniainen surrounded by the municipality of Espoo near Helsinki).

The average area of a Nordic region is 17,548 km². The smallest is Oslo (455 km²), followed by two Icelandic regions, Suðurnes (884 km²) and Hövuðborgarsvæði (1,106 km²). The largest region is Norrbotten in Northern Sweden (106,211 km²), followed by Lappi in Northern Finland (just under 100,000 km²). The average population density of a Nordic region is 66 inhabitants per km² with densities ranging from 1 inhab./km² (Austurland, Vestfirðir, Norðurland vestra, and Norðurland eystra – all in Iceland) to 1,469 inhab./km² (Oslo region). Other high-density regions include the Capital region of Denmark Hovedstaden (706 inhab./km²) and Stockholm (335 inhab./km²).

Among the Nordic countries Denmark, Finland (including Åland) and Sweden, are Member States of the European Union (EU), although only Finland is part of the Eurozone. Iceland and Norway are members of EFTA (European Free Trade Association) consisting of four countries, which either through EFTA, or bilaterally, have agreements with the EU to participate in its Internal Market. The Faroe Islands and Greenland are not members of any of these economic cooperation organisations. These differences in supra-national affiliation have an impact on which data that is available for this report. For example, Eurostat, the statistical office of the EU, only provides data for EU, EFTA and EU candidate states, thus excluding the Faroe Islands and Greenland. Whenever possible, data for these regions has been supplemented from other sources.

In the regular register data of Eurostat and the National Statistics Institutes (NSIs), which are the two prime data sources for this report, commuters to neighbouring countries are not included in the Nordic countries. This results in incomplete information (i.e. underestimations) regarding employment, incomes and salaries for regions and municipalities located close to national borders, where a substantial share of the population commutes for work to the neighbouring country. Estimates have been produced in some cases and included in this report. In 2016, the Finnish presidency of the Nordic Council of Ministers launched a project to develop statistics on cross-border movement in the Nordic countries. There is however still no up-to-date and no harmonised Nordic cross-border statistical data available, other than that provided by some regional authorities.

Regional and administrative reforms

Administrative reforms provide a series of seemingly never-ending stories across the Nordic politi-

cal systems. Today, the need for reforms and for the reallocation of tasks between the national, regional and municipal levels can be derived from two major challenges facing the Nordic countries (Harbo, 2015). Firstly, increased pressure on the Nordic welfare system caused by an ageing population which increases demand for public services while simultaneously shrinking the tax base. Secondly, enlargement of the regions due to widening labour markets caused by changing mobility and commuting patterns moves the functional borders of regions beyond their traditional administrative limitations. Finally, there is a common belief among professionals and decision makers that fewer and larger units are more efficient when it comes to service provision and public administration. On the other hand, concerns remain over the merging of administrative units especially at the municipal level due to the increased distance this potentially creates between citizens and the local political authority.

Thus far, the Danish experience provides the best Nordic example of a completed reform process as it is now a decade since the process took place and where the number of municipalities was reduced from 270 to 98. The reform as such was decided by the government, but the practical implementation, i.e. which municipalities should merge, was delegated to the municipalities themselves. At the same time, 1 January 2007, the 13 counties (*amt*) were abolished and replaced by five regions. The reform increased the political weight of the municipalities in society while the importance of the regions decreased. The regions are led by elected politicians, which reinforces their legitimacy, but they lack the power to tax and the freedom to undertake tasks in addition to their statutory responsibilities. In addition to healthcare, which is the region's main area of work, they are participating in regional public transport companies and in the setting up of growth forums (which decide on the allocation of EU Structural Funds). Hence, there are no official regional development plans except for the capital region, the so-called Finger Plan, which is prepared by the state.

After having failed, for the second time since the turn of the millennium, to try to implement a major reform of the Finnish municipalities, the government decided on 19 August 2015 that the municipalities would no longer be required to investigate the possibility of amalgamation (Sandberg, 2015). The government still wants to encourage municipal mergers, but they should be done on an entirely voluntary basis. Since 2000, the number of municipal-

ities has voluntarily decreased from 452 to 311, but the size of Finnish municipalities is still on average below 7,000 inhabitants. After failing with their municipal reform, the government decided instead to turn its attention to the regional level and to plan for a comprehensive expansion of the regions' responsibilities. The plan is for the 18 regions (*maakuntaliitto – landskapsförbund*) to take over the main health care system from the municipalities. They will also assume responsibility for regional development, e.g. business and transport policy. The regions will have a directly elected political leadership, but the right to tax will remain with the municipalities which will, however, lose more than half of their budget (Sandberg, 2017).

Åland is not included in the above-mentioned administrative reform of the Finnish regions. There, responsibility for health care is already centralised to the Government of Åland. Åland has 16 municipalities, some of them with less than 500 inhabitants and one, Sottunga municipality, with even less than 100. At the same time as several investigations into voluntary municipal mergers are in progress, the current government is also preparing a bill to be introduced to the Åland Parliament, the *Lagtinget*, on reducing the number of municipalities to four.

More than 50 years since the last municipal reform, on 8 June 2017, the Norwegian parliament (Stortinget) decided on an administrative reform that reduces the number of regions (*fylkeskommuner*) from 18 to 11 and the number of municipalities from 428 to 354. The basic goal of the reform, which should be fully implemented by 1 January 2020, is to transfer resources and responsibilities to local and regional authorities that are more robust than they are currently (Kaldager, 2015). In Norway, the health care system is organised by the state, while the regions are, among other things, responsi-

Concerns remain over the merging of administrative units especially at the municipal level due to the increased distance this potentially creates between citizens and the local political authority

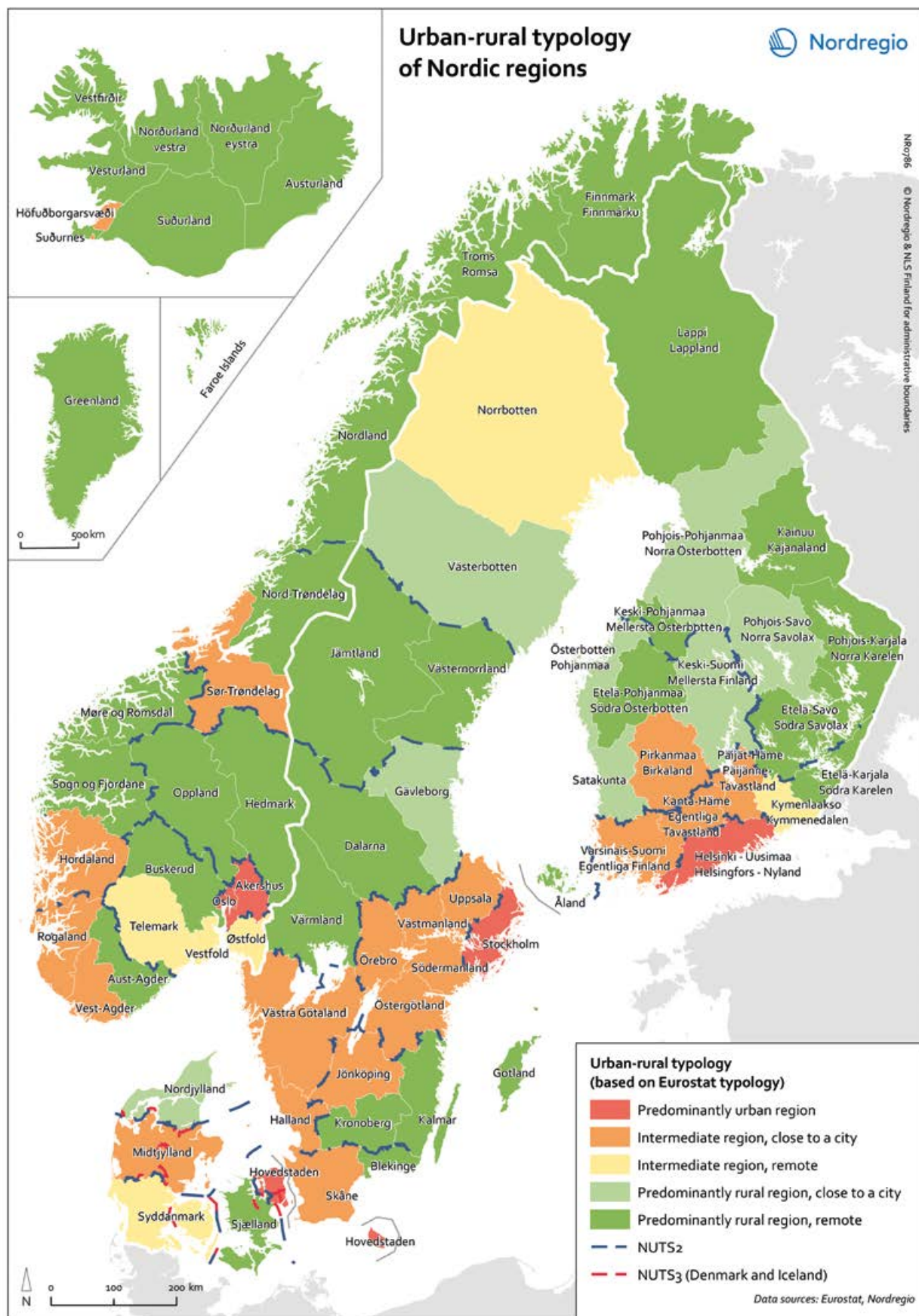


Figure 1.1 Urban rural typology of the Nordic regions.

The combined economy of the Nordic countries is the 12th largest in the world

ble for planning, transportation and regional development. The reform is based on the tasks that the regions currently have, but the government has appointed an expert group to review opportunities to strengthen the regions' role as developer and their capacity to provide better service to the citizens. The regions are led by directly elected politicians, they have a formal – but in practice no – right to tax and they are free to undertake other than statutory tasks.

In Sweden, the last municipal reform took place in 1974 when the number was reduced from slightly more than 1,000 to 278. The latest merger of Swedish municipalities took place in 1977. In the period since, the number has slightly increased to 290 due to the dissipation of existing municipalities. Instead of pushing further municipal mergers, the Swedish government has instead focused on the regions in recent years. In March 2016, a committee presented a new map dividing Sweden into six new major regions. The map raised such strong opposition however that the government chose not to proceed with the proposal. When the map turned out to be a distortion of reality, instead of adjusting the map at regional level, the government decided to change the reality at local level. Thus, a new parliamentary committee was set up to develop a strategy for strengthening the municipalities' capacity, focusing more on cooperation and the allocation and execution of tasks than on administrative boundaries.

In common with the Faroe Islands and Greenland, Iceland has only two administrative levels: national and local. In recent times, Iceland has carried through two large reform processes – in 1993 and again in 2005. On both occasions, consultative referendums were held and on both occasions, a majority voted against the suggested mergers. Despite the outcomes of the referendums the reforms resulted in a reduction in the number of municipalities from 196 in 1993 to 89 in 2006. In recent years, the number of municipalities has been further reduced to 74 on a voluntary basis though the government has, for its part, decided not to push for further aggregations. Instead, the idea of interregional municipal cooper-

ation has been put on the agenda (Traustadóttir, 2015). This idea is aimed at strengthening the local level through the decentralisation of tasks from the government, but without the merging of municipalities.

The Faroe Islands and Greenland both sought to reduce the number of municipalities through administrative reform processes. The Faroese reform process started in 2000 with a new piece of municipal legislation. The government wanted to encourage municipal mergers, but they should be done on an entirely voluntary basis. Since 2000, the number of municipalities has voluntarily decreased from 49 to 29. In a 2012 referendum on municipal mergers, the majority in almost every municipality said no to more mergers.

By far the most radical change took place in Greenland in 2009, where the administrative set up changed from 18 to four municipalities. The idea behind the change which was supported by most of the political parties, was to delegate political decisions and economic resources from the central administration to the municipalities (Hansen, 2015). In reality, only a few administrative areas have at least thus far been transferred, but major areas will be transferred to the municipalities in 2018 and 2019. Widespread dissatisfaction with the new municipal structure especially in Qaasuitsup Kommunia, the largest municipality in the world in terms of square kilometres, led to a political decision to divide Qaasuitsup Kommunia into two municipalities by 1 January 2018.

NUTS classification

Table 1.1 provides an overview of the administrative structure in each country in the Nordic Region. These administrative structures are the basis for the NUTS (Nomenclature of territorial units for statistics) classification, a hierarchical system dividing the states on the European continent into statistical units for research purposes. The NUTS and LAU (Local administrative units) classifications generally follow the existing division but this may differ from country to country. For example, municipalities are classified as LAU 1 in Denmark but as LAU 2 in the other Nordic countries, and regions of primary importance within the national context as NUTS 2 in Denmark but as NUTS 3 in Finland, Norway and Sweden (figure 1.1).

Nomenclature level	NUTS 0	DK	FI	IS	NO	SE	SNUTS	FO	GL
	Regional	NUTS 1	Manner-Suomi/ Fasta Finland; Ahvenanmaa/ Åland 2			Landsdel 3	SNUTS 1		
		NUTS 2	Region 5	Suurlue; Storområde 5		Landsdel 7	Riksområde 8	SNUTS 2	
		NUTS 3	Landsdel 11	Maakunta; Landskap 19	Hag-skýrslu-svæði 2	Fylke 19 (18)	Län 21	SNUTS 3	
	Local	LAU 1	Kommune 98		Landsvæði 8	Økonomisk region 89	SNUTS 4	Sýsla 6	
		LAU 2	Sogn 2165	Kunta; Kommun 311	Sveitarfélög 74	Kommune 426 (422)	Kommune 290	SNUTS 5	Kommune 30 Kommune 4 (5)

Table 1.1 Administrative structures in the Nordic Region on 1 January 2017 (diverging number on 1 January 2018 in brackets).

¹ Grey frames represent the regional levels presented in most regional maps in this report, comparable from a Nordic perspective, while dark gray frames show the local units represented in the majority of our municipal level maps.

Data sources: NSIs, Eurostat, ESPON.

The Nordics in the world

With its 3,425,804 km², the total area of the Nordic Region would form the 7th largest nation in the world. However, uninhabitable icecaps and glaciers comprise about half of this area, mostly in Greenland. In January 2017, the Region had a population of around 27 million people. More relevant is the fact that put together, the Nordic economy is the 12th largest economy in the world (Haagensen et al., 2017).

The power of the Nordic economy was acknowledged in the light of its general handling of the economic crisis of 2007–08 (Wooldridge, 2013). What particularly impressed e.g. the journalists at the magazine *The Economist*, that published a special edition on the Nordics, was the ability of the Nordic countries to combine a generous tax-funded welfare system with efficient public administration and a competitive business sector.

As such, the locational aspects of the Nordic Region are noted in this edition of the State of the Nordic Region, where relevant and when reliable data is available. In addition, European developments generally and specifically those pertaining to the EU level are also addressed.

EU 2020 targets

The Europe 2020 strategy was designed in 2010 with the aim of guiding the Member States through the global financial crisis towards recovery. Three drivers of economic growth were identified as crucial: (i) smart growth based on knowledge and innovation, (ii) sustainable growth for a more efficient, greener and competitive economy, and (iii) inclusive growth capable of delivering employment, social and territorial cohesion.

Targets to be achieved include increasing the employment rate of the population aged 20–64 from 69% to 75%, investing at least 3% of the EU's GDP on research and development, reducing greenhouse gas emissions by 20% compared to 1990, increasing the share of renewable energy sources in final energy consumption to 20%, reducing the proportion of early school leavers from 15% to below 10%, ensuring that at least 40% of 30–34 years old

The total area of the Nordic Region would form the 7th largest nation the world

Figure 1.2 Sustainable Development Goals.



should have completed tertiary or equivalent education and, finally, reducing poverty by lifting at least 20 million people out of the risk of poverty or social exclusion.

The European Commission expected that each Member State would translate these targets into national targets and trajectories. According to Eurostat's headline indicators scoreboard only one target, i.e. the reduction of greenhouse gas emissions, has thus far been reached. Two targets, those regarding early school leavers and tertiary educational attainment, are less than one percentage unit from fulfilment. The target on reduced poverty is also close to being attained, in 2015 18.5 million people have been lifted out of poverty since 2012. The employment rate had risen to 71% in 2016, but is still less than half way to the target while the R&D investments are even further away from their specified target.

UN Sustainable Development Goals

On 25 September 2015, the United Nations adopted Resolution A/RES/70/1 which contains 17 Sustainable Development Goals (SDGs) with 169 targets to be achieved over the next 15 years. The 17 goals (figure 1.2) are:

1. End poverty in all its forms everywhere;
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture;
3. Ensure healthy lives and promote well-being for all at all ages;

4. Ensure inclusive and quality education for all and promote lifelong learning;
5. Achieve gender equality and empower all women and girls;
6. Ensure access to water and sanitation for all;
7. Ensure access to affordable, reliable, sustainable and modern energy for all;
8. Promote inclusive and sustainable economic growth, employment and decent work for all;
9. Build resilient infrastructure, promote sustainable industrialization and foster innovation;
10. Reduce inequality within and among countries;
11. Make cities inclusive, safe, resilient and sustainable;
12. Ensure sustainable consumption and production patterns;
13. Take urgent action to combat climate change and its impacts;
14. Conserve and sustainably use the oceans, seas and marine resources;
15. Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss;
16. Promote just, peaceful and inclusive societies;
17. Revitalize the global partnership for a sustainable development.

The Nordic countries are performing well. In an overall assessment of OECD countries, Sweden is given the highest score followed by Denmark, Finland and Norway (Sachs et al., 2017). Nevertheless, the Nordic countries continue to face significant

challenges in terms of reaching all the identified targets by 2030. The Nordic Council of Ministers has chosen goal number 12, to "ensure sustainable consumption and production patterns", as its prioritised action field. But there are additional goals where a certain amount of effort is still required, such as the greening of the region's agricultural systems (SDG 2), reducing the high levels of CO2 emissions per capita (SDG 7 and 13, and improving ecosystem conservation (SDG 14 and 15) (Larsen & Alslund-Lanthén, 2017).

Further reading

The report consists of two parts; the first, consisting of three thematic areas which have remained constant over the years of this publication (demography, labour market and economy) and are summarised in the *Regional Development Potential Index* (chapter 15).

Demography (chapters 2–4): Describes and analyses population development in terms of natural increase or decline, migration, urbanisation and age distribution.

Labour market (chapters 5–7). Describes and analyses employment, unemployment and economically-inactive groups, especially among young people and foreign born, as well as education.

Economy (chapters 8–10): Describes and analyses GDP, income levels, innovation capacity, research and development and foreign direct investment (FDI).

The second part consists of four thematic focus areas. The chosen areas for the 2018 edition are:

Bioeconomy (chapter 11): Focuses on land use and land ownership, forestry, biogas, fisheries and aquaculture.

Digitalisation (chapter 12): Focuses on the broadband coverage and use of Internet to interact with the public sector.

Health and welfare (chapter 13): Focuses on public health issues and the territorial dimensions of life expectancy and accessibility to healthcare.

Culture and arts (chapter 14): Focuses on newly-produced data at municipal and regional levels on cinemas, libraries and museums.

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THEME 4

FOCUS CHAPTERS

State of the Nordic Region is published every second year and along with the core chapters on demography, economy, the labour market and education come a series of focus chapters which vary from edition to edition. These chapters are chosen either because the topics reflect a global agenda or to throw light on a particular policy area in the Nordic Region.

In the 2018 edition of State of the Nordic Region, the areas in focus are bioeconomy, digitalisation, health and welfare along with culture and the arts, an essential area for Nordic co-operation. Finally, there is a horizontal focus on integration cutting across many of the chapters.

The new bioeconomy and the whole move from a fossil-based to a biobased economy is an area with vast potential for the entire Nordic Region, although it is more relevant to some regions than to others. Already, the bioeconomy makes up around 10% of the total Nordic economy while the potential within fields such as fisheries, aquaculture, forestry and bioenergy is, clearly, very large in the context of a Nordic geography with vast natural resources.

When it comes to digitalisation, the Nordic countries are in many ways already ahead of the game in respect of broadband coverage.

Indeed, with the industry still in its infancy in the early 1980s, Nordic co-operation helped define the global standard for mobile data transfer. Today, the Nordic Region is one of the most digitized in the world with the most advanced digital public service.

The Nordic form of the welfare state developed around a commitment to high levels of public service based on a strong tax base. Despite this commitment however remote areas experience challenges when it comes to health care and service maintenance for remote and sparsely populated areas. Digital health solutions may provide one solution to growing social inequality in the area of health, as described in the chapter of health and welfare.

Finally, Nordic co-operation is, to a very large extent, based on fact that the five countries as well as Faroe Islands, Greenland and Åland in the Nordic Region display quite similar values and norms. Nevertheless, reviewing cultural consumption and habits it is clear that variations exist between the various parts of the Nordic Region, as shown in the chapter on culture, a topic hopefully to be explored further in future State of the Nordic Region editions.

Chapter 11

THE RAPIDLY DEVELOPING NORDIC BIOECONOMY

Authors: Karen Refsgaard, Jukka Teräs, Michael Kull, Geir Oddsson, Torfi Jóhannesson and Iryna Kristensen
Maps and data: Linus Rispling and Eeva Turunen

The bioeconomy is conceived as an economy based on land and marine-based natural resources including biowaste. It produces vital goods and services: food, drinking water, fresh air and energy as well as a range of ecosystem services including climate regulation. Bioeconomy can also replace many goods and services currently produced from fossil-fuels, including a range of biofuels, bioplastics and biopharmaceuticals. The Nordic Council of Ministers expresses it in the following way: *"The bioeconomy is all-encompassing and comprises those parts of the economy that make responsible use of renewable biological resources from the land and water for the mutual benefit of business, society and nature"* (Nordic Council of Ministers, 2017). In this way, moving from a fossil fuel to a bio-based economy can contribute both to the fight against climate change, but also to new economic activity in and around rural regions.

Transition from a fossil-fuel to a bioeconomy generates significant technical and institutional innovation (Bryden et al., 2017a). Bioresources are mostly located in rural and coastal areas (forests, fish, algae, farm by-products) but appear also as e.g. organic waste. Their productivity and accessibility differ between localities, given variation in natural conditions and the management of ownership and use. However advanced are the technologies involved, the biological raw materials used stem from – and impact on – land, water and sea-based bioresources. Alternative and competing uses touch on human rights and common property. Their exploitation may therefore be subject to conflicts and

require public regulation to prioritise use in relation to human welfare and to limit or prevent use for non-essential yet potentially highly-priced products.

The potential utility of these bioresources and the products and services based on and developed from them thus depends not only on the availability of land, sea, inland waters, human and social capital but also on wise institutional arrangements and regulation, across multiple scales and levels of governance, including regional and local initiatives.

There is global interest in the Nordic approach to bioeconomy. Nordic countries have developed unique regulatory frameworks for natural resource management, including laws on land ownership; regulation of fisheries and the marine environment; forestry management and regulation; bioeconomy strategies; and participation and engagement in local natural resource management decisions. This chapter provides insight into the rapidly developing Nordic bioeconomy. We have included figures on land use as an initial basis for utilisation while preferred data on ownership and user rights are not available. Examples of both existing and new bio-products based on land and sea are also discussed. We have not however included examples of bioeconomy services. In future, we hope to be able to provide a broader and more inclusive picture with data from the wider bioeconomy.

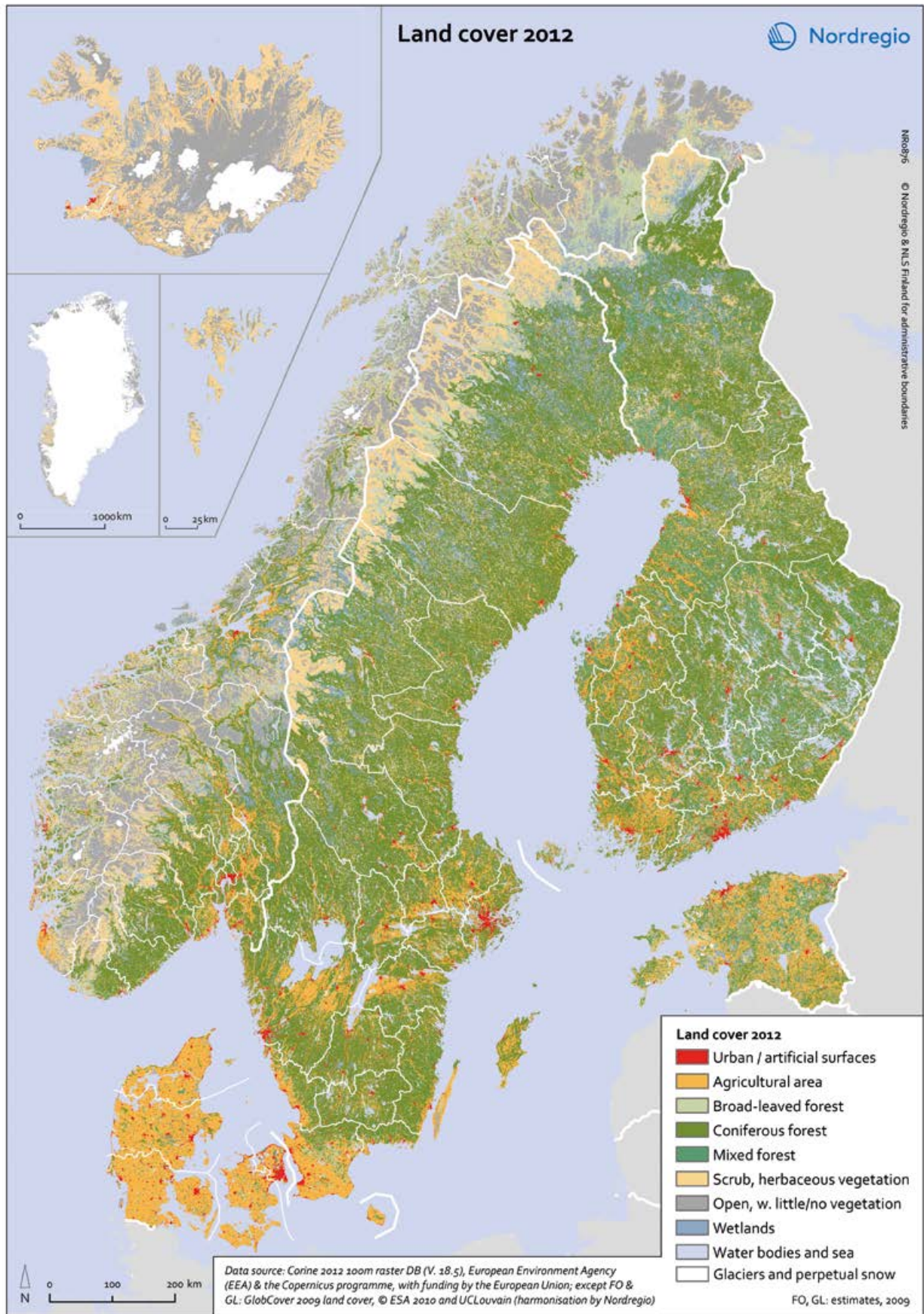
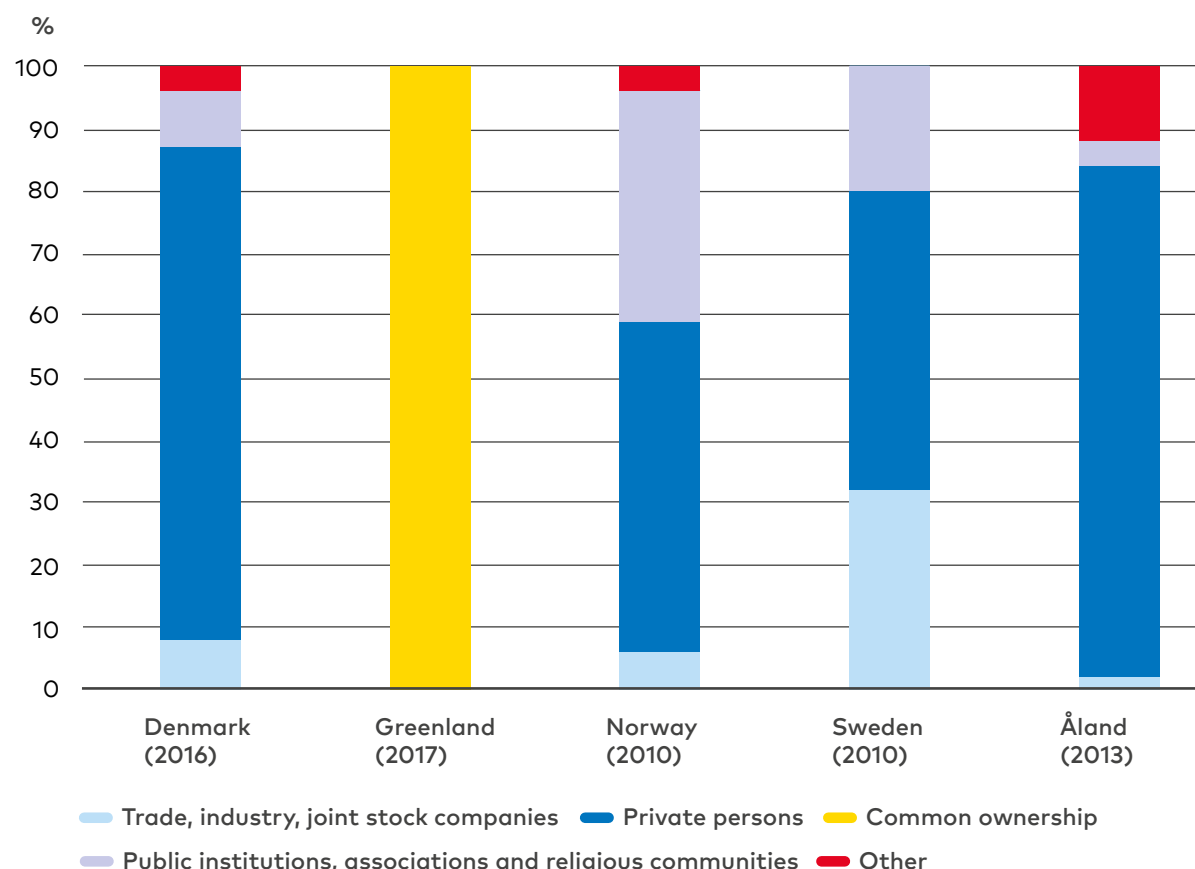


Figure 11.1 Land cover 2012.

Figure 11.2 Land ownership by category.



Data source: NSIs & Greenland Ministry of Finance. Note: FI, IS: No data. AX: Estimates. "Common ownership": GL: impossible to own, buy, and sell land. "Public institutions, associations and religious communities": DK: includes land owned by counties and municipalities; NO: includes land owned by counties and municipalities, state owned forest, organisations and companies; SE: includes public institutions, associations and communities; AX: includes Åland government and parish owned land.

Access and rights to the utilisation of products and services from land and sea is key

Land is a key resource for most biological and human activities: agriculture, forestry, industry, transport, housing and other services. Land is also an integral part of ecosystems and indispensable for biodiversity and the carbon cycle. The regulation of ownership and management of land, and user rights to the land, the sea and freshwater resources, or to the key products and services arising from them, is crucial for their sustainable development potential. Such rights, their allocation and distribution, taxation and associated rules, determine productivity and the distribution of costs and benefits, including related public goods and "bads".

Compared to the EU, the Nordic Region has vast amounts of land relative to the size of its population (Eurostat, 2016). In 2015, Denmark (132) was the

only country with a population density above the EU28 average of 117 inhabitants per square meter (Eurostat, 2017). The averages for Sweden (24), Finland including Åland (18) and Norway (17) were significantly lower. Iceland is extremely sparsely populated (3). There are also significant differences between the Nordic countries in terms of their land use. Denmark is largely agricultural (62%), while Finland (73%), a large part of Sweden (69%) and south-eastern Norway (28%) are all dominated by forest, mainly coniferous. Iceland and the Faroe Islands have large areas of scrub and herbaceous vegetation, suitable for grazing livestock. Open land with little vegetation is significant for many regions in Norway and Iceland. Vast parts of Greenland and parts of Iceland are glaciers. The Nordic countries all have long coastlines and easy access to marine resources. Figure 11.1 visualises the different types of land cover in the Nordic countries.

Rights for land owners to resources beyond the coast in Iceland

In Iceland landowners' rights to resources extends beyond the coast to 115 m from the low-water mark. This is called the net zone (netlög) and is first set in law in Jónsbók in 1281. This private property right addresses natural resource utilisation in its entirety, including fishing rights, unless otherwise limited by law. In some ways, this complicates maritime spatial planning such as regarding aquaculture development. Aquaculture utilises both land-based as well as off shore facilities, often both within and outside net law. In practice, this means that the responsibility for planning and zoning on land and within the net law is at the municipality level, but the responsibility for planning outside of net law is at the national level. Currently there are no laws governing planning of coasts and oceans outside net law. Until that changes, aquaculture development is only controlled through licensing and individual decision on where aquaculture is allowed or not. Other examples of potential complications are commercial fishing of near-shore species such as lumpfish (*Cyclopterus lumpus*), mussels (*Mytilus edulis*), and harvesting of seaweed. In all these cases it is important that national and municipal governments and landowners are all involved in planning processes and decision making (Althingi, 2010).

Figure 11.2 shows the distribution of land ownership at the national level for some Nordic countries, in harmonised format. Denmark has the highest share of privately owned land – 61% of the land is used for agriculture of which 93% is owned by private persons. In Finland, the share of productive forest area of total land is 67% of which private persons own 60%. Of the 57% productive forest in Sweden 56% is owned by individuals and other private owners, while companies own 25% and the state and state-owned companies have a share of 17% (Swedish Forest Agency, 2012). Norway, being especially mountainous and with more marginal land, has a larger share of land owned by the public or by associations. A major source of the livelihood in Greenland is hunting and fishing. Ownership to land or nature as such has little meaning here. The land in Greenland is therefore commonly owned

land. People can however get access to e.g. housing through user rights, but the land surrounding the house is common. A dominant part of Åland is privately owned land, mainly forest (around 80%) and agricultural land (around 15%).

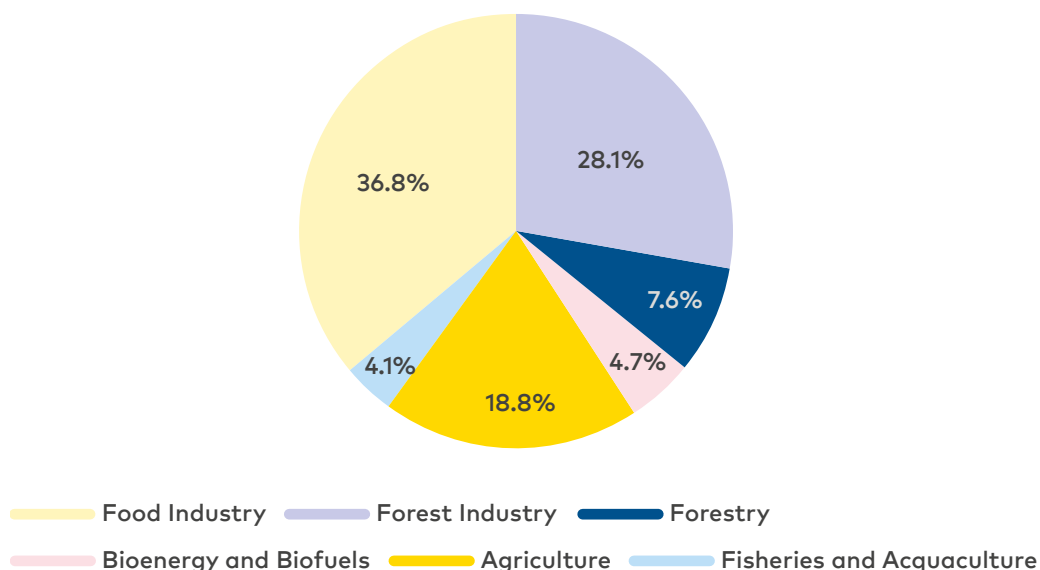
The abundant regional resources from land and sea

Sweden generates 16% of EU forestry turnover while Finland is responsible for 10.6% of EU turnover in the paper manufacture sector (Ronzon et al., 2017). Total turnover of the key bioeconomy sectors in the Nordic countries was estimated to be EUR 184 billion, equal to 10% of the total Nordic economy (Rönnlund et al., 2014). Table 11.1. gives an overview of the bioeconomy turnover in selected Nordic countries.

	Turnover	
Country	Billion Euro	1,000 Euro per capita
Denmark	49.5	8.8
Finland	48.8	9.0
Sweden	62.3	6.5

Table 11.1 Bioeconomy turnover in Denmark, Finland and Sweden. Data source: Ronzon et al., 2017.

Figure 11.3 The share of the sectors included in the bioeconomy in the Nordic countries.



Data source: Rønnlund, Pursula, Bröckl & Hakala, 2014; Lange et al., 2015.

Estimates for the different sectors are shown in figure 11.3. In Finland the estimated share of the bioeconomy is over 16% with the industry currently employing more than 300,000 people (Ministry of Employment and Economy of Finland, 2014). Despite regional variations, the bioeconomy potential is large (Lange, et al., 2015, p. 10): *"Upgrade of biomass from waste fractions from agriculture, forestry and fisheries has huge potential for improved use of the biological resources. Globally, approximately 50% of the primary production is still not utilized, but wasted. Biomass to bioenergy is already developed for up- scaling and commercialisation. However, development of biobased products into products of higher value, such as healthy food and feed ingredients, speciality chemicals and functional materials is still in its early stages."*

We have chosen examples based on abundant resources in different regions contributing to their economic growth (Gíslason & Bragadóttir, 2017).

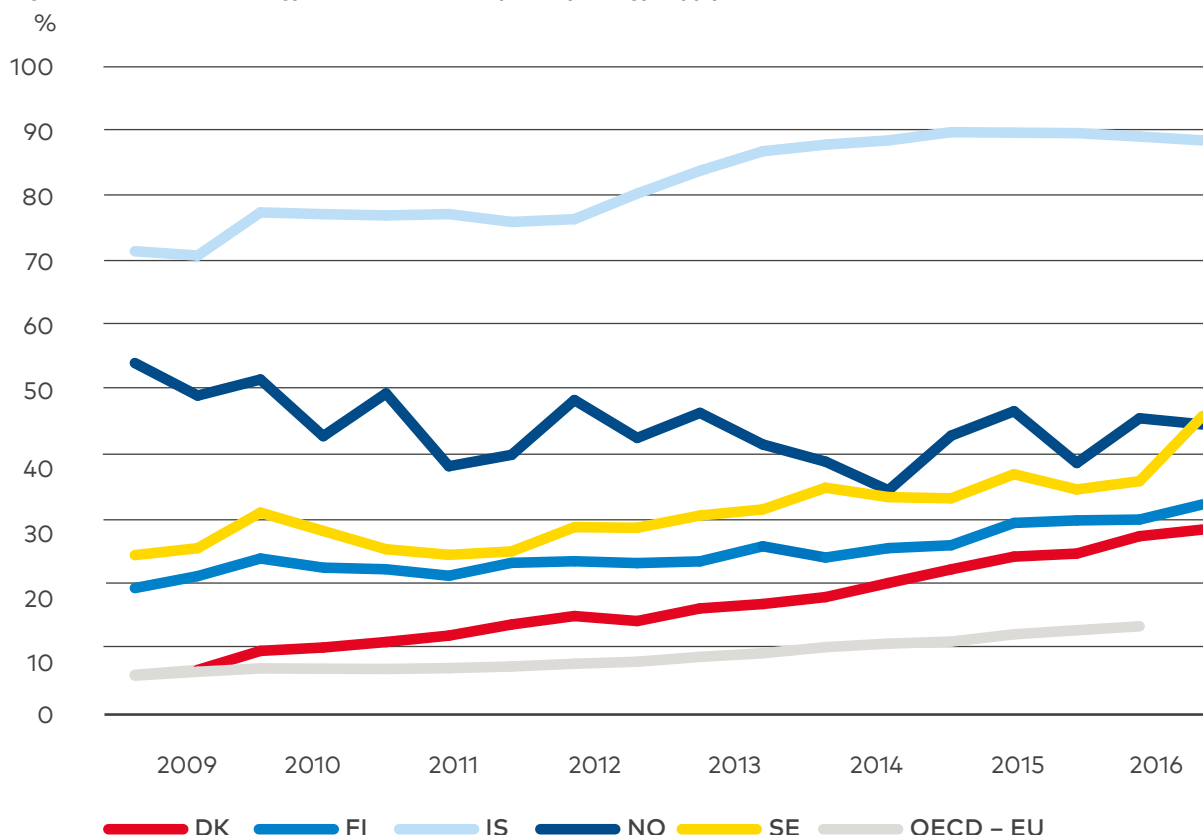
Land with forest felling and its uses: Sweden and Finland have extensive forests and we show potentials in respect of forest felling and the production of pulp and paper, construction materials and services and to "newcomers" such as heat, biofuels and bioplastics.

Agricultural land and the cities providing waste resources for bioenergy and biogas: The fertile soils of Denmark with an agriculture sector specialising in pig and dairy production provide abundant food but increasingly also energy production; based on manure and in combination with wastewater and organic waste from cities and industry. This is used in the production of biogas and refined fertiliser in Denmark and also in Sweden and Finland.

Marine areas with a focus on fish landings and aquaculture: The Faroe Islands, Greenland, Iceland and Norway have abundant marine resources. They utilise marine biomass such as fisheries and aquaculture, including related waste streams. New and previously underutilised bioresources such as algae and seaweed are now also being developed, especially in Norway, the Faroe Islands and Iceland.

Bioservices: The land and sea also offer opportunities for service creation and provision: recreation, including tourism, berry and mushroom picking and other anthropogenic uses as well as non-anthropogenic outcomes such as biodiversity and CO₂-sequestration. While bioservices indeed is an important aspect of the broad field of bioeconomy, this chapter will be limited to the other three aforementioned aspects of the bioeconomy, namely: land and forest use; agriculture and waste; and marine areas with fish landings.

Figure 11.4 Renewable energy as a share of total primary energy supply.



Data source: OECD Green Growth Indicators.

The developed biomass to bioenergy sector

Figure 11.4 shows Nordic renewable energy supply as a share of renewable sources in total primary energy supply for the period 2000–2015, based on OECD data. All Nordic countries are well above the average of European OECD countries, with Iceland emerging as a clear leader. As of 2015, Iceland met 88% of their energy needs in this way, Sweden met 46% closely followed by Norway at 45%, Finland 32% and Denmark 28%.

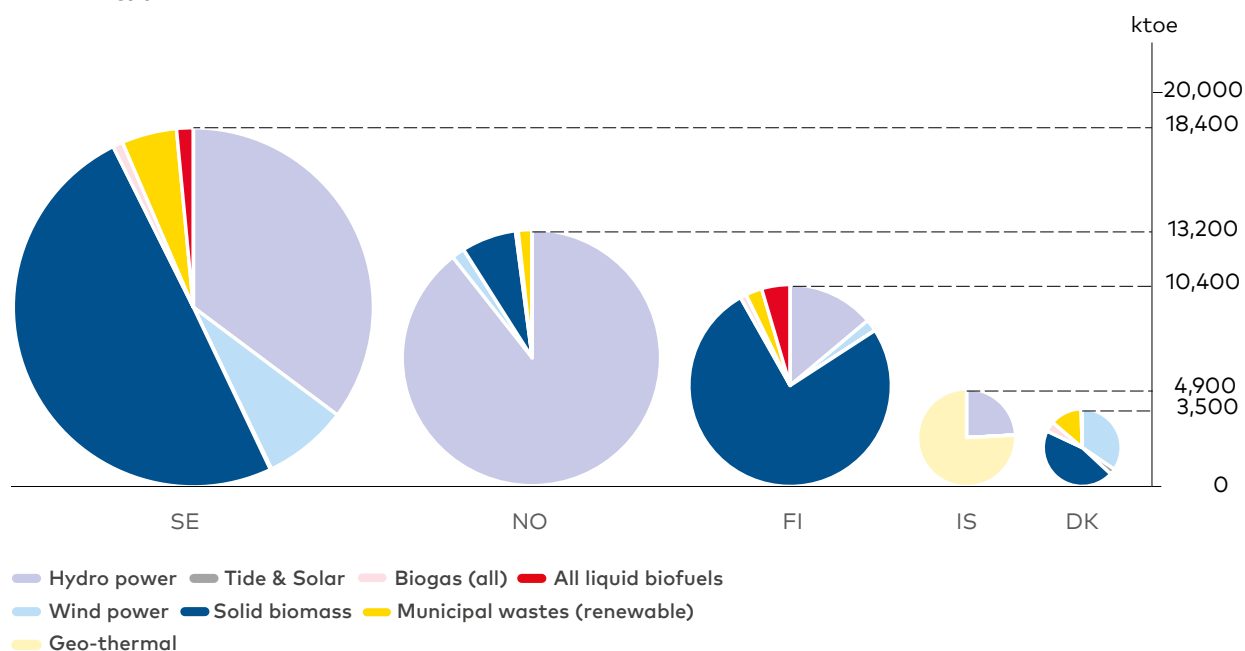
In figure 11.5 we see that biomass and waste dominate the renewables sector for generating electricity, heat and transport fuels in Sweden, Finland and Denmark. The lack of biomass utilisation in Norway is due to low electricity prices and political support (Bryden et al., 2017b). Renewable electricity is generated from hydropower in Norway and, apart from biomass, predominantly by wind power in Denmark. Geothermal heat and power production

supplemented by an abundance of rivers supplying hydropower are the most important energy sources in Iceland.

Large potential for forest multiuse

Figure 11.6 shows average forest felling and a vast regional distribution, especially in Sweden and Finland. Annual growth currently exceeds annual harvest. As a percentage of annual growth, Norway harvests 35%, Finland 56%, Sweden 77% and Denmark 51% (Rytter et al., 2015). Wood bi-products is extensively used for energy purposes and the forests display a large potential for increasing the production of renewable energy as well as other biobased products. Rytter et al. (2015) calculated the total potentially available forest fuel of the region between 195 and 368 TWh depending on the restriction level for management, although its optimal use will not always be for energy.

Figure 11.5 Renewable energy production 2015, in kilotonnes of oil equivalent (ktoe) (top) and renewable energy share in total energy production 2015 (bottom).



Renewable energy share in total energy production 2015.

Data source: Nordregio's calculations based on Eurostat.

All Nordic countries have a recognised capacity to increase harvesting while remaining environmentally sustainable in terms of ecosystems, carbon neutrality and climate impacts (ibid.). This sustainable management capacity together with the unutilised forest potential is important for the future of remote and rural regions in the Nordic countries and provide opportunities for investments in education, training, technology and plants.

Turning waste from agriculture and cities into energy

Biogas production is widely distributed across the Nordic Region and between the types of sources used (figure 11.7). In 2015, 18% of the energy use in Denmark came from biomass and waste. A large and underutilised potential for bioenergy remains (Energistyrelsen, 2014) and can be found in harvested dry matter and manure (Energistyrelsen, 2015; Gylling, Jørgensen & Bentsen, 2012). In the western part of Denmark, biogas is mainly based

on manure from farms supplemented with sludge and organic waste from wastewater plants. Biogas production has seen strong growth in Denmark with an expected trebling over the period 2012–2020 given increased support through the *Energy Agreement* (Energiaftalen in Danish) of 22 March 2012 (Energistyrelsen, 2014). Further, the vast infrastructure for gas makes it easy and accessible for farmers to link biogas to the existing energy net. The largest numbers of plants in Finland are based on farms and landfills. Norway produced 500 GWh biogas in 2016, mainly from wastewater treatment plants, but also based on organic waste, manure and fish waste. In general, significant focus is placed on the potential of utilising waste from fish and fish farms in Norway (Martin S. Kristensen, personal communication, 2017). In 2015 in Sweden, 282 facilities produced 1947 GWh biogas with the largest regional production being in Skåne (417.5 GWh), Västra Götaland (350.9), and Stockholm (255.8) (Statens energimyndighet 2016). Iceland had a biogas facility in Reykjavík at Álfnes landfill with plans for

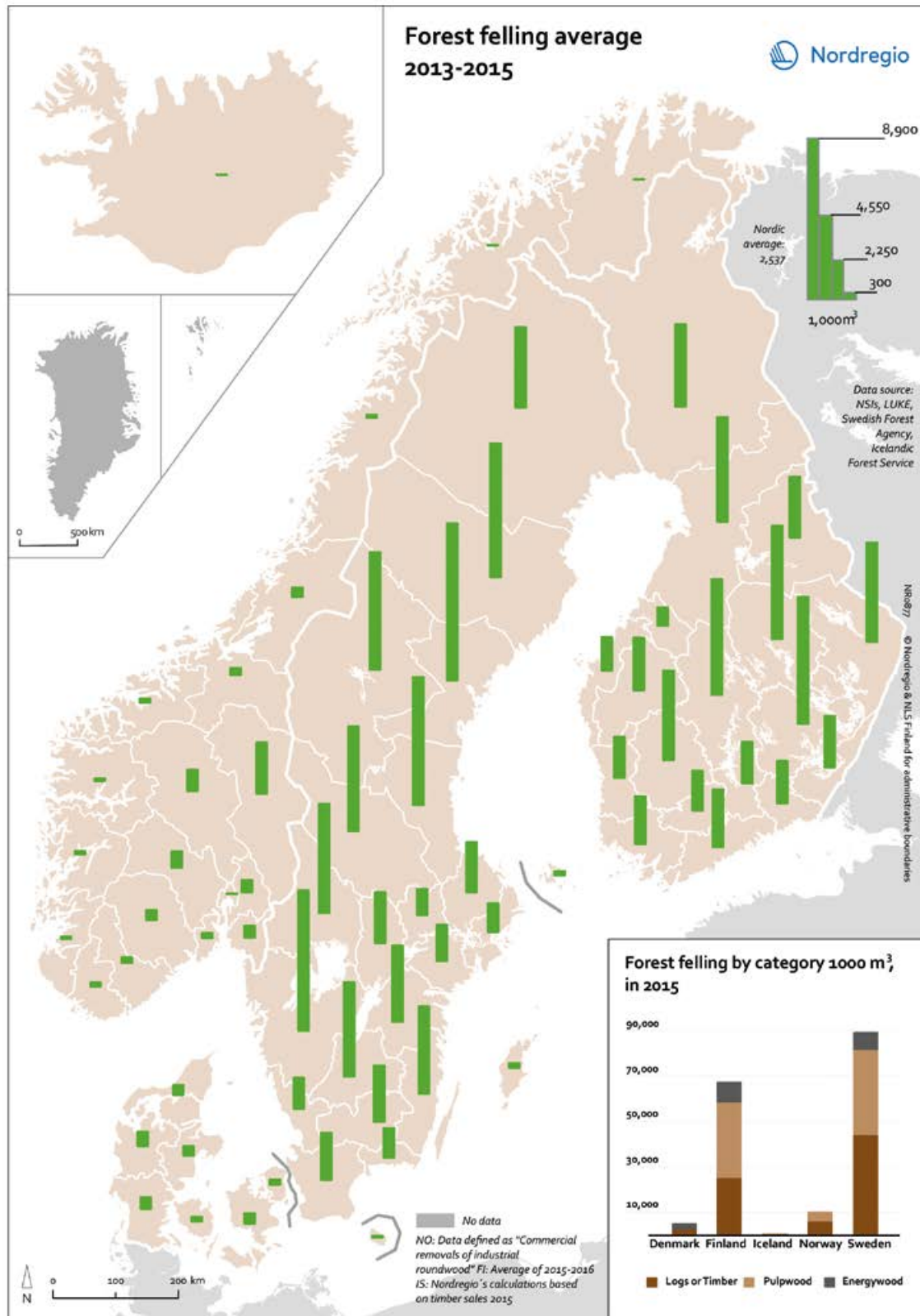


Figure 11.6 Forest felling at the regional level, average 2013–2015 (main map), and forest felling by category in 1,000m³ at the national level 2015 (chart).

Note: DK: The category of Energywood includes NSI categories "firewood" and "wood for energy chips & logs". NO: Forest felling data is defined as "Quantity removed for commercial purposes" but the figures equal the assorted wood type data at the national level. The category of pulpwood also includes small number of "unsorted saw logs" and the category of energywood in the NSIs data was defined as "fuelwood". SE: Figures are our estimates based on NSI gross felling data that is assorted by solid volume.

expansion in 2018. The production will then increase from producing methane for 1,400 cars to 8,000 methane cars.

Future food from abundant marine resources

Fisheries and aquaculture are highly important bio-economy sectors in the Nordic Region and are the most important contributors to the Faroese economy, accounting for over 91% of total exports in 2012 (Lange et al., 2015). Fishing is also the most important export sector in Greenland, amounting to 91% of merchandise exports (Lange et al., 2015; Ögmundsson, 2014). The Faroe Islands, Iceland and Greenland have huge fish landing amounts per capita. Figure 11.8 (large map) visualises fish landing in Norway, Iceland and Finland which is quite evenly distributed between communities distributed along the coastline. Since we do not have data on boat ownership we cannot however show which municipalities or regions are the primary beneficiaries of the income generated, where the fish is landed.

Finnish landing data is based on the municipality where the fisherman and the fishing vessel is registered. Foreign landings as a share of total landings, show remarkable variation across the Nordic Region, with both Denmark and Sweden having a share over 41% while Finland has only 0.8% (Norway 14.3%). It is primarily Greenlandic vessels that service fish factories in Greenland.

National objectives in respect of fisheries management in the Nordic Region vary, though each has the sustainable utilisation of marine life as a main objective. In global terms, the Nordic fisheries sector is doing well in terms of their ecological, economic and social impacts, though variation is evident. The Baltic Sea environment is, however, under huge pressure, with almost 70 species in danger of becoming extinct (Helcom, 2013; WWF, 2015) and fish stocks being 30–40% below historical levels (WWF, 2015). Nonetheless, the region is a forerunner in transboundary collaboration, inclusive of stakeholders in Marine Spatial Planning and developing best practices in ecosystem-based management (Kull et al., 2017). According to the WWF (2015) the

Pohjois-Karjala – a Finnish forerunner in renewable energy

Pohjois-Karjala (North Karelia in English) – one of mainland Finland's 18 regions – is a forerunner in renewable energy terms, thanks to innovations emerging from its robust forestry industry in cooperation with strategic work carried out at the regional level. Renewable energy accounts for 63% of total energy use in Pohjois-Karjala (28.5% in Finland), with 82% of this coming from wood-based sources. The forestry industry makes a substantial contribution to the regional economy with over 10% of workplaces, and about 25% of turnover, equalling up to EUR 1.7 billion. The region has vast experience of commercial and intellectual engagement with the forestry industry. Given the strength of the inter-sectoral linkages and local ownership of the value-chain, the regional multiplier for employment in the forest supply chain is estimated at 2.3. Forest residues are used as feedstock for district heating systems in local communities. By owning district heating plants, the forest owners and cooperatives of forest owners capture additional revenue from the forest. Although the impact on job creation is not dramatic, diversification has offered small forest owner co-operatives a new source of revenue. According to Pohjois-Karjala's Climate and Environmental Programme 2020, wood-based energy is targeted to contribute almost 50% of the share of the Region's different energy resources. (OECD, 2012; Bryden et al., 2017b; Berlina & Mikkola, 2017)

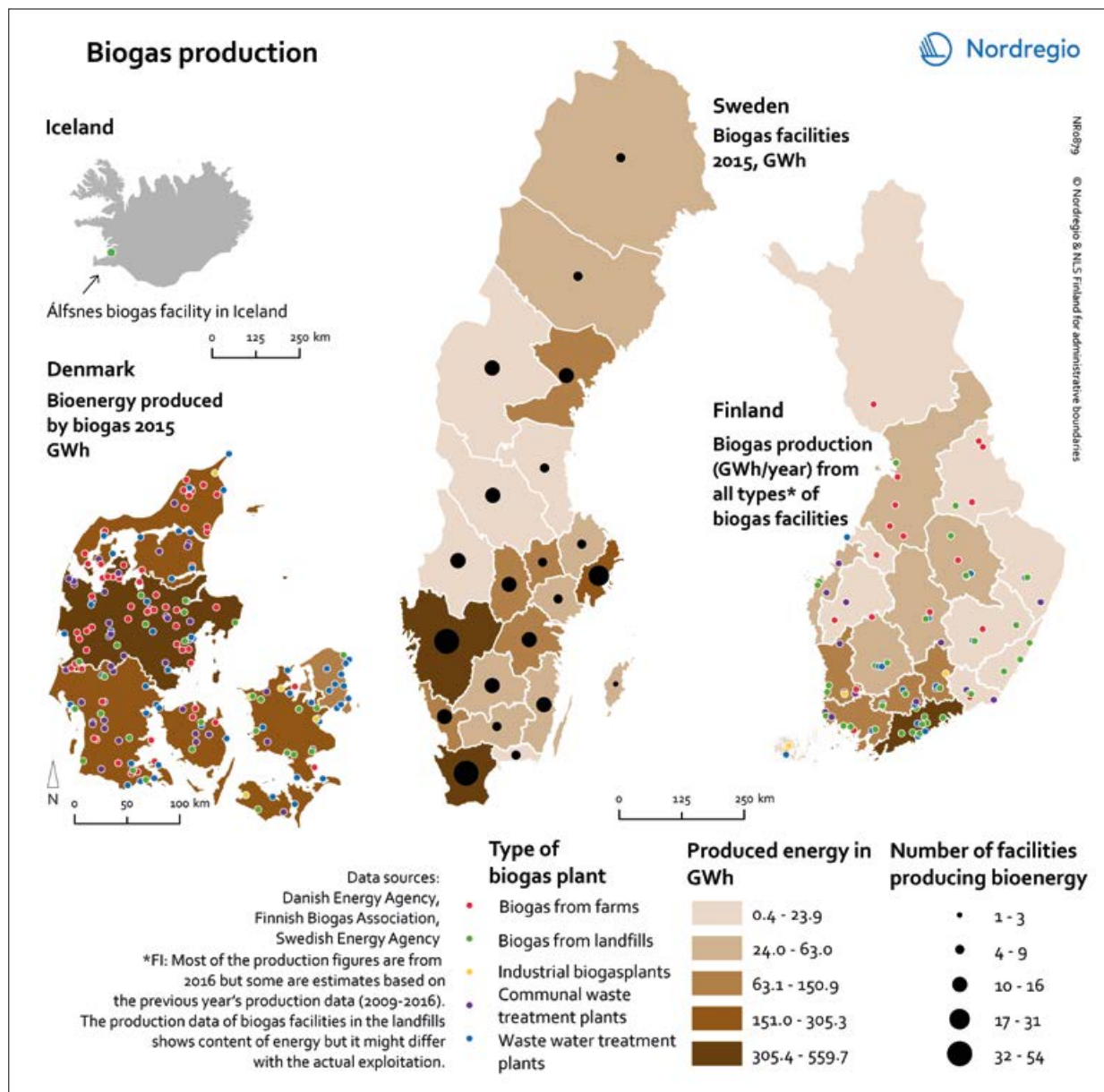


Figure 11.7 Regional biogas production in GWh.

area could become a global role model and change agent in the sustainable blue economy.

Nordic fisheries are characterised by innovation in products, services and markets. Rural and coastal development is clearly affected by fisheries policy, directing where fishing vessels can land their catch, such as in Norway, with positive economic impacts for smaller coastal communities. The Norwegian Fresh Fish Act (1938) gave the fishermen's organisation "the right to negotiate landing prices for the

whole coast, and settle them with reference to the export market opportunities. In effect, the Act implied that the resource rent went to the primary producer, rather than to the middlemen" and ensured local landings (Brox, 2006).

Large changes have however occurred in fisheries value chain management in recent years. The Nordic countries have been leaders in the development of sustainable fisheries management, with a focus on property based management and different

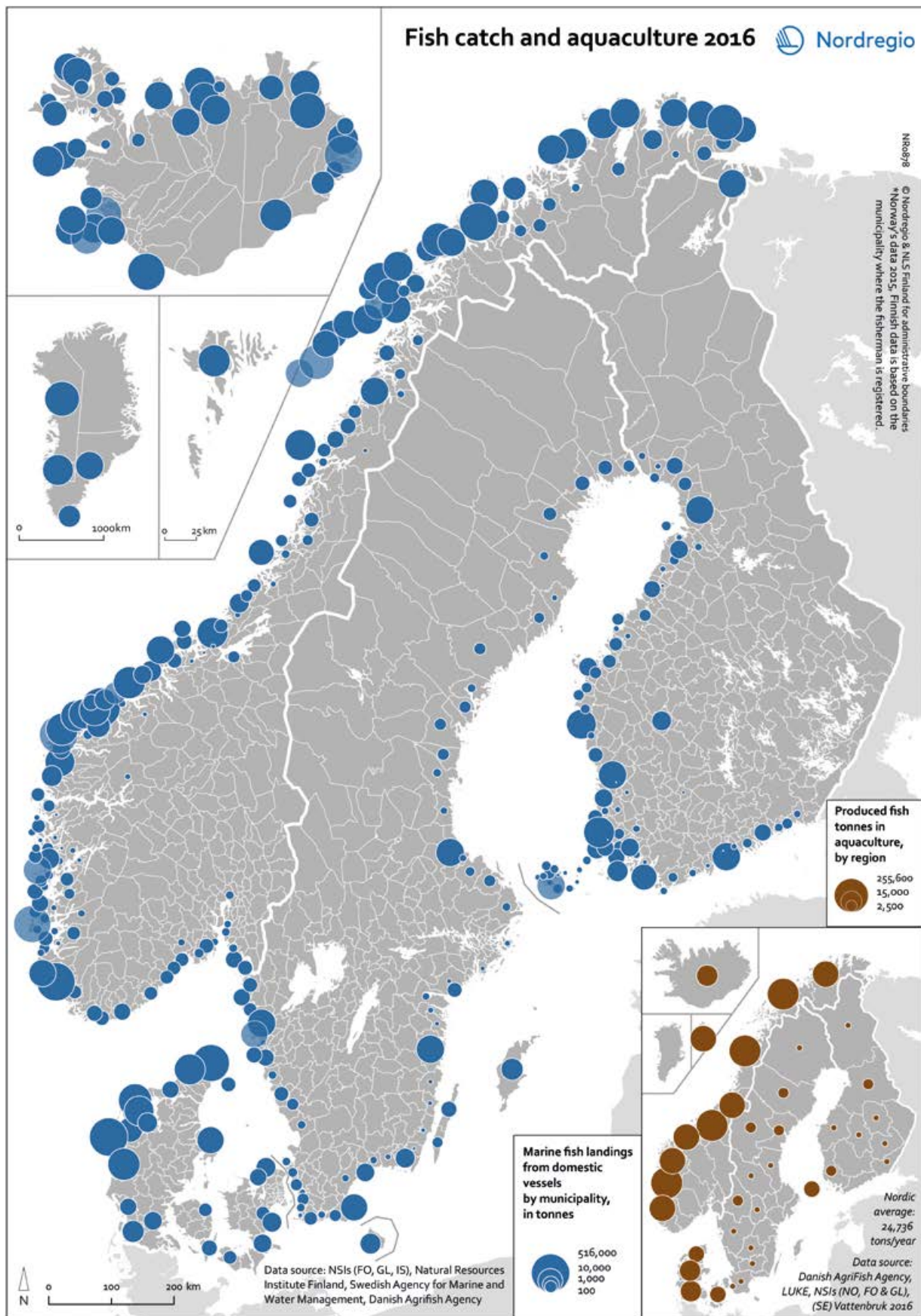
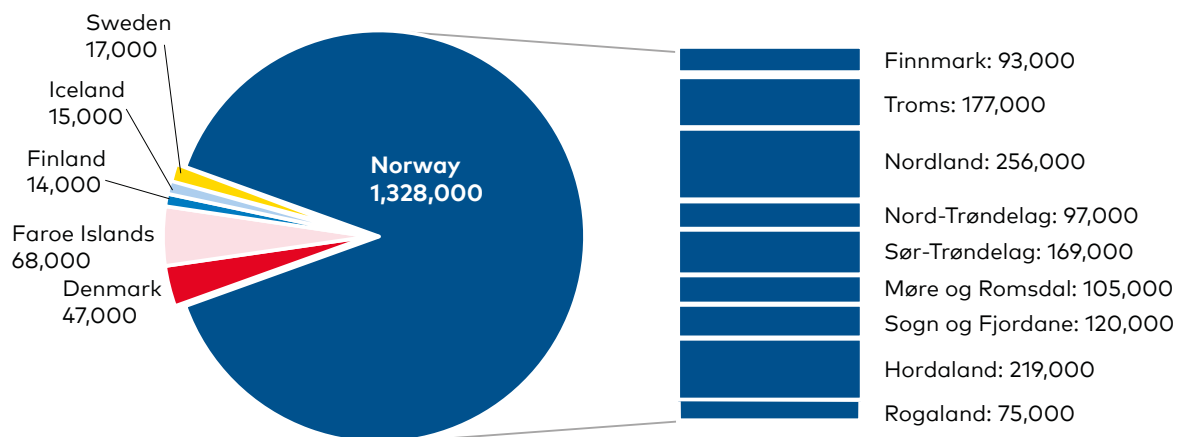


Figure 11.8 Fish catch and aquaculture 2016.

Figure 11.9 Farmed fish in tonnes in the Nordic Region in 2016.



Data source: Danish Agrifish Agency, LUKE, NSIs, Vattenbruk 2016.

variations of Individual Transferable Quotas (ITQs). The ITQ does not however consider either the regional or the inter-personal distributional impacts of the catch. The sea is a common resource fishing bank and property rights regimes that consider both distributional impacts as well as environmental and production outcomes are required.

Figures 11.8 (small map, bottom right corner), and 11.9, highlight aquaculture production in the Nordic Region in 2016 with the size of farmed fish production at the regional level. Norway, particularly its coastal regions in the west, clearly dominates the Nordic aquaculture sector.

Concluding remarks

This chapter provides a series of snapshots from the different parts of the bioeconomy relevant to the Nordic Region with a focus on land and sea use. The need for additional data (at regional level) however remains – including that relating to the institutional (networks, ownerships, actors etc.) and the socioeconomic (employment and income) aspects of this subject.

The vast land resources and surrounding marine areas enjoyed by the Nordic Region provide significant opportunities for economic growth and employment in its diversified rural areas and can create value added and generate highly valued R&D jobs. The bioeconomy requires technological but also,

crucially, institutional innovation. Above all, policy must respond to the diverse and dispersed bioresources in rural and coastal areas and with competing uses crossing sectors. Instruments and regulations are required to promote and defend the interests, knowledge and user rights to the resources and their utilisation and to creative incentives promoting economic, social and environmental sustainability at multiple levels. New institutions including those overseeing land use and marine ownership, management of the resources and their utilisation, the power to take decisions and governance at the local and regional levels, are needed. This is required to support the development of new processes at the local and regional levels and to promote the establishment of new businesses and clusters, while at the same time considering the impacts of this transition on, and interests of, the local communities. As expressed by Sveinn Margeirsson, director of Biotech R&D institute Matis in Iceland: “The value creation depends on people that live outside the large urban centres and are prepared to grow the land, catch the fish and process the raw materials. These people and their skills are essential in developing the bioeconomy towards its next stage” (Finnsson, 2014, April, p. 7).

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Chapter 12

DIGITALISATION FOR A MORE INCLUSIVE NORDIC REGION

Authors: Ingrid H.G. Johnsen, Julien Grunfelder, Morten Friis Møller and Tuulia Rinne
Data and maps: Julien Grunfelder and Oskar Penje

Digitalisation is a recurrent theme in today's regional development agenda with policies impinging on this field discussed at several administrative levels. It is one of the seven pillars of the European 2020 strategy (European Commission, 2017) as well as one of the main themes in the programme of the Swedish Presidency of the Nordic Council of Ministers for 2018 (Nordic Council of Ministers, 2017) and a subpart of the UN Sustainable Goal 9. Indeed, access to an open, secure and advanced digital infrastructure has become one of the most important performance multipliers towards a more inclusive, sustainable and innovative society (ibid.).

The Nordic Region is already one of the most digitised parts of the world. High digital penetration rates in society relating to digital government initiatives (i.e. eGovernment), clearly demonstrate the region's maturity in terms of digital readiness, placing it in the top tier of adopters among its international peers (European Commission, 2017). Since the 1990s, the Nordic governments have made a considerable effort to both realise and optimise the benefits of ICT and to integrate it into public sector reforms as, for instance, with the development of ICT infrastructure and investments in digital service delivery. Public sector institutions, citizens and businesses have greatly benefitted from these investments leading to better and more efficient welfare services, improved business competitiveness, social inclusion and economic growth.

The first section below presents Next Generation Access (NGA) network coverage in Europe and the Nordic Region at several scales. The second

The European Union has set itself a 2020 target of achieving Next Generation Access (NGA) networks, offering speeds above 30Mbps, for all households in Europe

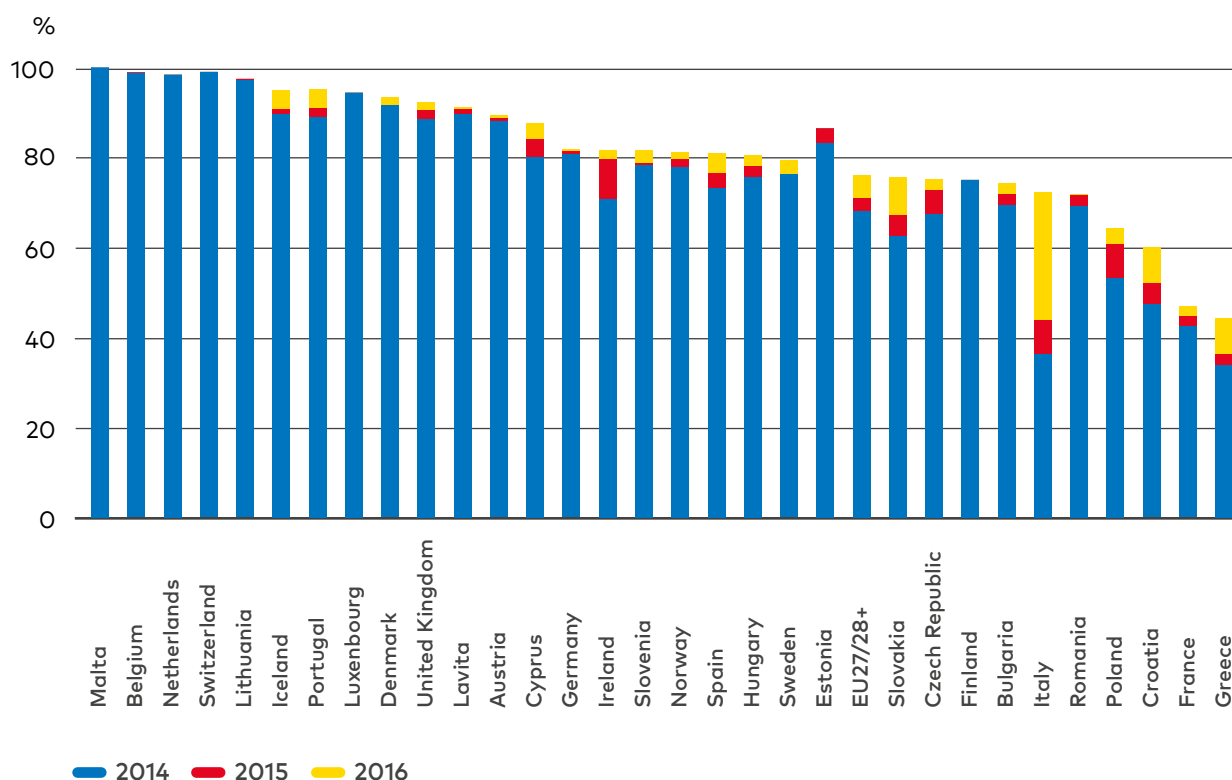
section illustrates one of the aspects of the benefit of digitalisation for regional development and citizens, namely the digitalisation of public services. The chapter concludes with a summary of the issues related to Internet non-users.

Iceland and Denmark have the highest NGA network coverage in the Nordic Region

Access to fast broadband-enabled services is a necessary condition for citizen access to digital services and businesses competitiveness. It also contributes to the promotion of more inclusive societies, enhancing a wider daily use of digital technologies (Internet of Things, smartphones, blockchain, social media) for both citizens and businesses.

Basic broadband is available to everyone in the European Union (ibid.). In the Digital Agenda for Europe, one of the seven pillars of the Europe 2020

Figure 12.1 NGA networks coverage in European countries in 2014–2016. GL & FO: No data. Åland included in Finland.



Data source: EU DESI.

strategy, the European Union has set itself a 2020 target of achieving Next Generation Access (NGA) networks, offering speeds above 30Mbps, for all households in Europe. NGA networks are viewed as a vehicle for economic growth and innovation and as having a positive effect on GDP growth (OECD, 2015). The graph (figure 12.1) on NGA networks coverage indicates the number of households that, in principle, have access to fast broadband in European countries in 2014, 2015 and 2016.

The European average increased between 2014 and 2016, from 68% to 76%. The countries with the highest figures correspond to those with relatively small territories and important population densities, standing out in terms of their high NGA network coverage, Malta and Belgium have reported values of around 99% since 2014. The graph however shows a significant difference in development terms at the national level between the Nordic countries. Iceland has the highest share with more than 95% of households having NGA network coverage in 2016, closely followed by Denmark with 93%, both are well above the European average. Norway and Sweden are also

Iceland has the highest share with more than 95% of households having NGA network coverage in 2016, closely followed by Denmark with 93%, both are well above the European average

above the European average with values around 80% while Finland, with just 75% coverage, is below the European average. These differences between the Nordic countries can best be explained by variations in geography, i.e. in the size of the country and in the concentration of the population to the largest urban areas. Coverage improvements require more resources in large countries with low population densities such as Norway, Sweden and Finland.

High NGA network coverage in the vast majority of the Nordic regions

Zooming down to the regional level, figure 12.2 shows percentage ranges in respect of NGA network coverage in the regions across Europe at the end of 2016. The variation in coverage is represented by blue shading. Darker colours represent NUTS3 regions with a high share of households with relatively good NGA network coverage, while the brightest colours represent regions with a low share. Regions with relatively small territories and important population densities stand out in terms of high NGA network coverage, e.g. urban regions in the Netherlands and Switzerland. Capital city regions also have high NGA network coverage scores, while the more rural regions continue to lag, e.g. in parts of France and Poland. The Nordic countries are characterised by having almost no differences within their territories, i.e. no large variation in terms of NGA network coverage, unlike the clear regional differences in countries such as France or Italy. All regions in the Nordic countries score in the range of 65% to 95% of households having NGA network coverage, except for Etelä-Pohjanmaa in Finland which has a coverage range of 35% to 65% and the Danish statistical region of Østjylland and the capital regions of Denmark and Iceland with scores between 95% and 100% respectively.

The relatively high figures for the Nordic Region can in part be explained by the existence of national and regional digitalisation strategies over the last decade or so. In Denmark, as well as in the other Nordic countries, digitalisation has long been on the national agenda, and the Digitisation Strategy 2016–2020 is the fifth of this kind, marking almost 15 years of common focus on digitisation in the public sector, where the state, the regions and the municipalities have been working to increase digitisation and strengthen cooperation across administrative levels (Regeringen/KL/Danske Regioner, 2016). One of the main goals of these strategies has been to increase the growth and productivity of the business community – and to make it easier and cheaper to establish digital infrastructure.

The regional level has an important role to play in the development of digital infrastructure, hence the relevance of the elaboration of the regional broadband strategy. Cooperation between local and regional authorities is also important in terms of enhancing better broadband coverage in all parts of a

All regions in the Nordic countries score in the range of 65% to 95% of households having NGA network coverage, except for Etelä-Pohjanmaa in Finland which has a coverage range of 35% to 65% and the Danish statistical region of Østjylland and the capital region of Denmark and Iceland with scores between 95% and 100% respectively

region, i.e. both the most and the least densely populated areas. Such regional examples can be found throughout the Nordic Region. For instance, Region Norrbotten in northern Sweden initiated a project called "Platform Lumiora" in cooperation with the municipalities of Norrbotten, Norrbotten County Council and IT Norrbotten, with the aim of speeding up the expansion of high-speed Internet in the region. Also, Region Halland, located on Sweden's west coast, has developed a strategy for the cross-border expansion of high-speed broadband to ensure that 100% of households in rural areas will be offered a fibre connection. Through the broadband policy, the government would like to incentivise all operators to engage in fast broadband expansion and specifically to generate material improvements for users outside the most densely populated areas enabling Sweden to be completely connected (Government Offices of Sweden, 2016).

Well-developed high capacity fixed broadband across Nordic municipalities

High capacity fixed broadband coverage enhances access to digital solutions in both rural and urban contexts across the Nordic Region, thus making these areas good places to live, work and run a business domestically and across national borders

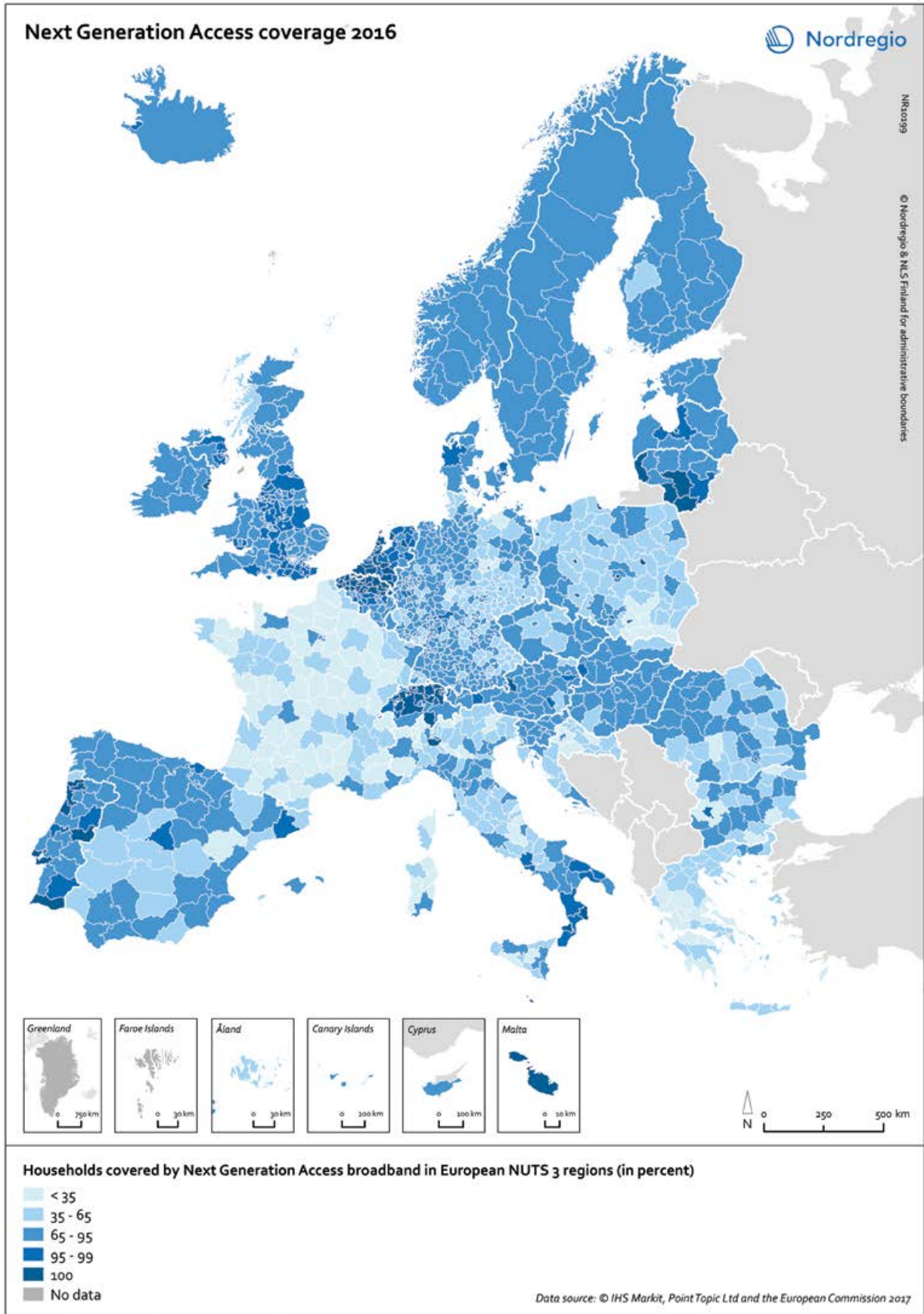


Figure 12.2 Next Generation Access networks coverage in European regions 2016.

The variation between neighbouring municipalities reflects the decision at the municipal level to prioritise investments in broadband infrastructure development as well as the nurturing of a favourable climate for the establishment of data centres requiring fast broadband networks, among other things

(Nordic Council of Ministers, 2017). An investigation of household coverage by high capacity fixed broadband at a local level (figure 12.3), i.e. municipalities, in the Nordic Region shows a more varied picture than that at the regional level (figure 12.2). The average figure for Nordic municipalities was 63% in 2016, with more homogeneous figures in Denmark and Sweden than in Norway and Finland. The variation between neighbouring municipalities reflects the decision at the municipal level to prioritise investments in broadband infrastructure development as well as the nurturing of a favourable climate for the establishment of data centres requiring fast broadband networks, among other things.

Fifteen Nordic municipalities, located in Sweden and Norway, had already reached the 100% mark for household coverage by high capacity fixed broadband in 2016. In Sweden, these municipalities are located in both the capital city region and in Skåne. In Norway, they are found in the more remote and rural parts of Møre og Romsdal (e.g. Giske), Troms (i.e. Lavangen) and Finnmark regions (Båtsfjord). Municipalities having values above 90% are mostly located in capital city regions as well as in more rural contexts in Jylland (Denmark), southern Sweden and northern Finland and Norway. One explanation for the high coverage in some Norwegian municipalities is the presence of data centres located on the western coast (in Stavanger municipality and Vågsøy municipality) which benefit from free cooling from adjacent fjords and abundant access to low cost, renewable hydropower. Interest-

ingly, one of these data centres is in Sogn og Fjordane which is the county in Norway with the lowest share of households with access to broadband.

The largest group of municipalities has values ranging between 60% and 90%. Most are located across Sweden and in the rural parts of Denmark, Finland and Norway. The second largest group is municipalities with a value between 30% and 60% of households with high capacity fixed broadband coverage; they are mostly located in rural Norway and Finland and in northern Sweden. Only few municipalities have a range lower than 30% and these are found in both Finland and Norway: only one in Denmark (Samsø) and one in Sweden (Högsby) display this level of coverage.

The Finnish landscape displays varying states of fast broadband accessibility. Closer municipal scrutiny shows that rather significant differences can be found even between neighbouring municipalities. For instance, in Österbotten, the "broadband hotspot" municipalities of Vaasa, Evijärvi and Nykarleby are surrounded by municipalities with a rather low rate of fast broadband accessibility (varying by as much as 10%). There are several possible explanations for the diversity in fast broadband access on the municipal level. Some areas, such as Utsjoki (98% access to 30 Mbts broadband) in the north, and Valtimo and Rautavaara in the eastern part of Finland, that have deliberately championed fast broadband access, have attained their goals through participation in the national broadband strategy and the state aid that was associated with it. Moreover, given that the Finnish municipal system is constructed around strong, rather autonomous municipalities, another explanatory factor for the high percentage of fast broadband access relates specifically to individual municipal attractiveness. This is particularly so for municipalities located in rural areas, where "own activeness" plays a significant role (Viestintävirasto, 2013). Different kinds of public sector pilots, on both the regional and the municipal level have been introduced to promote the demand for broadband. Thus, active municipalities that have undertaken public services projects or broadband plans for schools have enjoyed a better chance of receiving national funds and have better addressed the demand for fast broadband. The existence of many of the high-speed rural fibre optical networks can be explained by reference to national action plans and to state aid programmes since half of the top 14 municipalities with the fastest and most inclusive broadband access are small, rural municipalities that have been

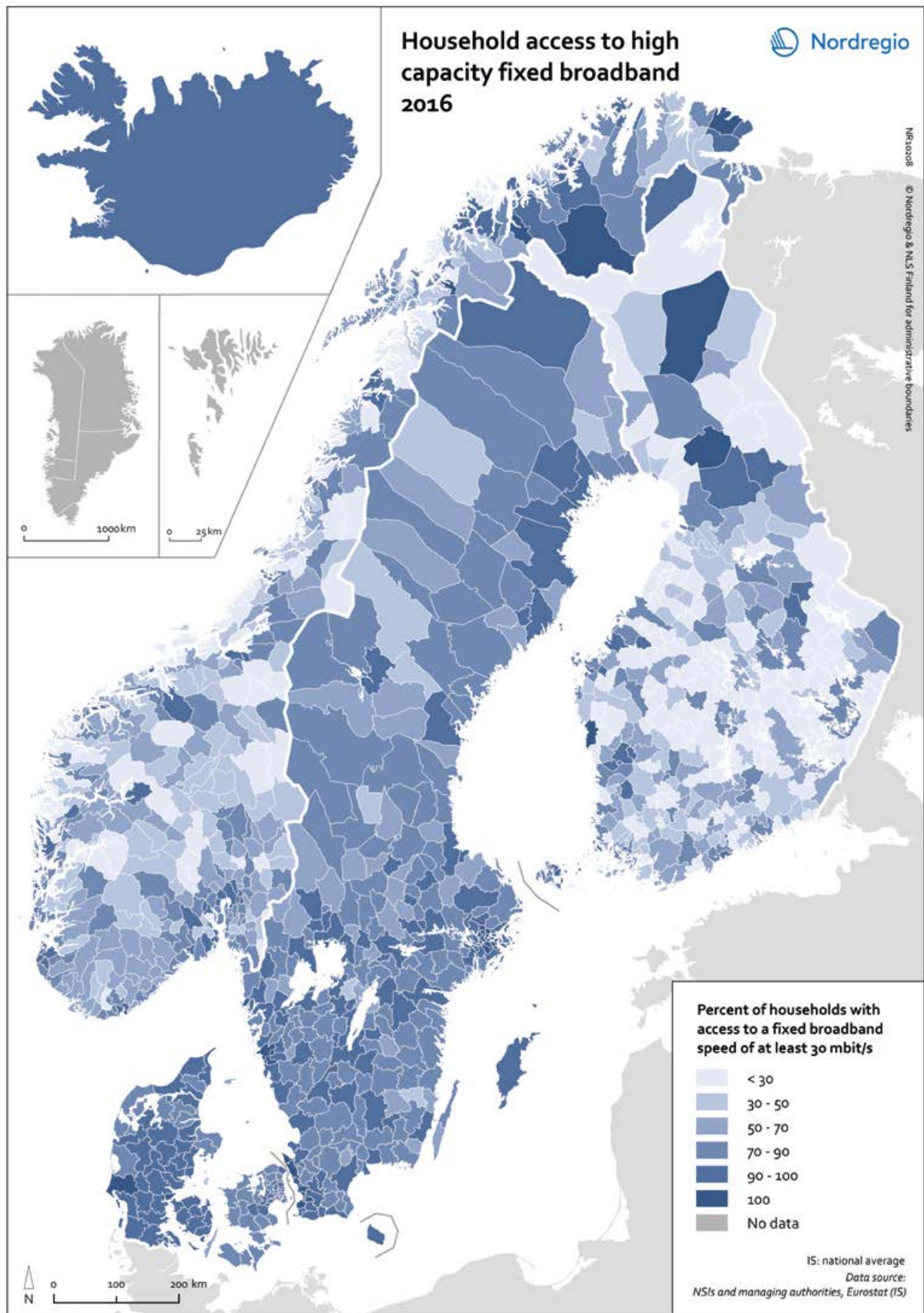
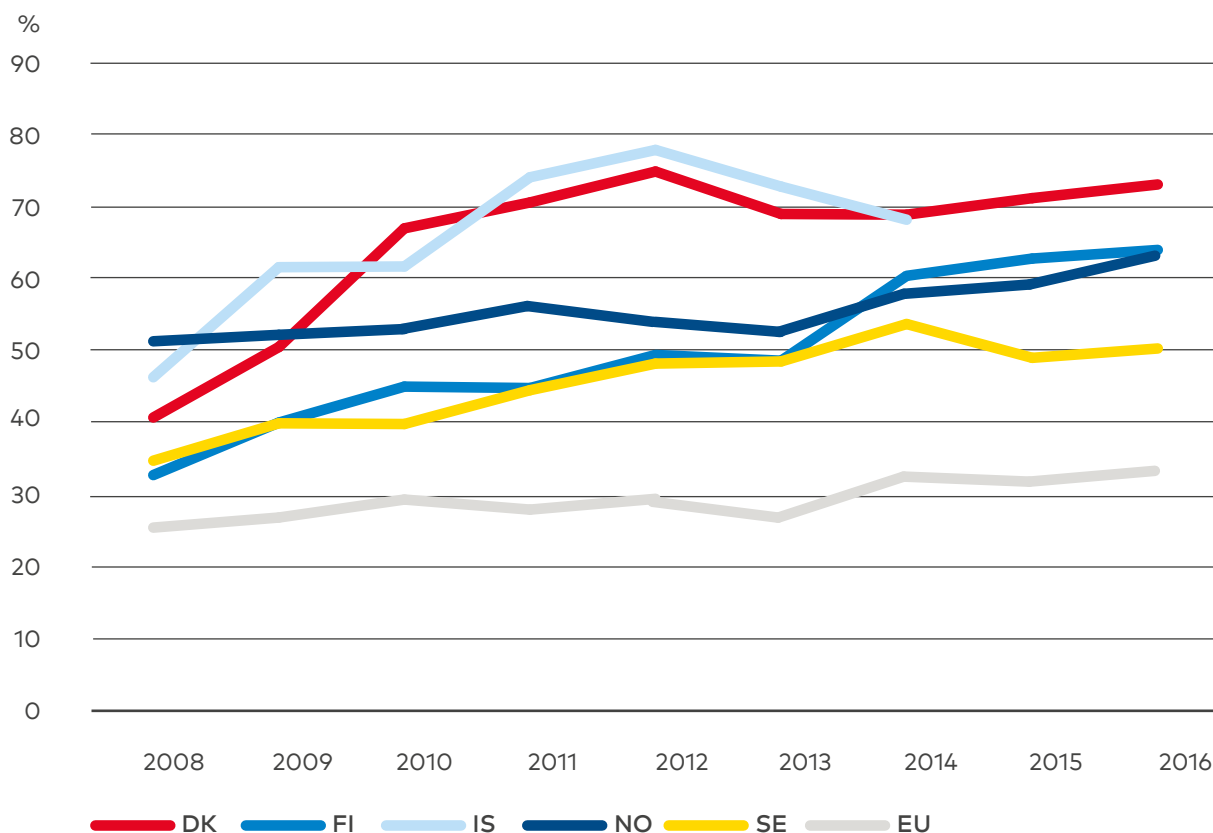


Figure 12.3 Household access to high capacity fixed broadband 2016.

Figure 12.4 Individuals submitting completed forms to public authorities over the internet in the Nordic countries between 2008 and 2016. IS: from 2008 to 2014.



Data source: Eurostat (survey).

granted "Fast Broadband" or "Broadband for all" state aid. Nonetheless, the other half of the leading group of municipalities consist of small municipalities that have not been part of the latest national project. To highlight the power of small municipalities, Helsinki ranks only 23rd when it comes to access to 30 Mbt broadband, and 93rd (5%) in terms of 100 Mbt broadband in 2016 (Viestintävirasto, 2016).

Substantial number of Nordic citizens using digital public services

The modernisation and digitisation of public services can lead to efficiency gains for the public administration, citizens and businesses, including better services through digital channels. The citizen's use of completed forms also indicates

the degree of digital skills and trust in the society (European Commission, 2017). The potential cost-savings on public service delivery going from paper-based communication to digital or web-based communication with citizens and businesses are considerable, in addition to more efficient public service delivery, positive environmental impacts and increased trust across society are also often mentioned (Norwegian Ministry of Local Government and Modernisation, 2016).

A good indication of the efficiency and inclusiveness of public service delivery can be measured by the extent to which citizens and businesses submit completed forms to public authorities over the Internet. Figure 12.4 indicates the percentage of individuals who use the Internet and who have submitted completed forms to the public authorities over the Internet in the Nordic countries and the EU28 countries

average between 2008 and 2016. The EU28 average slightly increased between 2008 and 2016, from 25% to 34%. The Nordic countries are all well above the European average while their increases over the same period are also more significant than the European average.

Denmark is the leading Nordic country and the second in Europe (after Estonia) with 73% of individuals with Internet access having submitted completed forms to the public authorities over the Internet in 2016. Denmark's latest digital strategy states that it must provide good conditions for growth and reduce administrative burdens and should contribute to sustaining an inclusive society. Iceland also provides modern digital services to its citizens, gaining in efficiency and producing a reduction in public administration expenditure levels. Consequently, 68% of those individuals with Internet access, have submitted completed forms to the public authorities over the Internet in Iceland (data for 2014), making it the third highest scoring European country after Estonia and Denmark. Finland ranks 4th with 64%, thanks to the specific focus on the investments of the Finnish government promoting the wider digitalisation of public services at all levels of government, particularly at the local level. Digital solutions will also allow the once-only principle from 2019 (European Commission, 2017), where a piece of information is only collected once and used in all relevant applications. Norway is also a frontrunner in the provision of digital public services and occupies 5th place on the list (63% in 2016), thanks to significant efforts since the 1990s with its citizen-centred approach. For instance, Norway abolished the amendment in 2014 which made it mandatory for the public sector to receive consent from recipients before online correspondence. The option to opt out of receiving individual decisions digitally and other important messages from the public sector was introduced instead positively affecting the use of public services (Norwegian Ministry of Local Government and Modernisation, 2016). The relatively low and stagnating figures for Sweden within the Nordic context reflected in its 9th rank in a European context (50% in 2016) and can be put down to two issues. On the one hand, the municipalities are facing significant challenges in respect of providing digital public services, mostly due to capability deficits in relation to their development. On the other hand, many forms no longer need to be filled in online. The latter are now being replaced by mobile applications.

The Nordic countries are all well above the European average while their increases over the same period are also more significant than the European average

Looking at the context within Denmark, Finland, Norway and Sweden (table 12.1), the highest rates of submission in respect of completed forms are found in the capital city regions, except for Sweden where the NUTS 2 region of Sydsverige is two points ahead of Stockholm. While all the regions in Denmark show high rates ranging from 69% to 73%, disparities are larger in the three other countries. The largest disparity is found in Sweden with a rate of 35% in Norra Mellansverige and a rate of 56% in Sydsverige. Disparities are also discernible in Norway. These regional differences likely stem from the regional population structure, as in Norway some 82% of the jobseeker registrations occur online whereas only 58% of the pension documents were sent in digital form. Thus, regions with a high percentage of pensioners may produce more paperwork.

Concluding remarks

The promotion of digital inclusion remains a high priority across all Nordic digital agendas, since good NGA coverage does not automatically result in Internet usage by all people. Recent surveys (table 12.1) show that there is still a part of the population that has never used the Internet. The figures indicate that there is still a need for a more accessible digital infrastructure and for the further development of digital skills, even though the results highlight a better situation in the Nordic Region than in Europe more generally. The shares in Nordic sub-regions ranges between 0% in Trøndelag and 8% in Mellersta Norrland with most regions returning values between 2% and 4%, but all with lower figures than the European average of 14% in 2016 (table 12.1). The most digitally inclusive areas in the Nordic Region can be found in Norway, Övre Norrland, Östra Mellansverige and in the Danish capital region Hovedstaden. In addition, capital areas in each country generally host less non-Inter-

Country	Region	Individuals who submitted a completed form on the Internet (%)	Individuals who never used the Internet (%)
Denmark	Hovedstaden	73	1
	Sjælland	69	3
	Syddanmark	69	4
	Midtjylland	72	2
	Nordjylland	70	3
Finland	Länsi-Suomi	57	5
	Helsinki-Uusimaa	68	2
	Etelä-Suomi	59	4
	Pohjois- ja Itä-Suomi	55	7
Norway	Oslo og Akershus	68	1
	Hedmark og Oppland	58	1
	Sør-Østlandet	62	3
	Agder og Rogaland	62	2
	Vestlandet	53	1
	Trøndelag	67	0
	Nord-Norge	59	4
Sweden	Stockholm	54	1
	Östra Mellansverige	44	1
	Småland med öarna	42	5
	Sydsverige	56	2
	Västsverige	47	3
	Norra Mellansverige	35	6
	Mellersta Norrland	47	8
	Övre Norrland	42	1
Iceland	National (2014)	67	1
EU average		31	14

Table 12.1 Nordic NUTS2 regional scoreboard for two indicators, in 2016. Survey with results in percentage of individuals 16–74.

Data source: Eurostat (survey at NUTS2 level).

net users than rural areas. Norway's ranking in the number of non-Internet users places the country ahead of other Nordic countries in digitalisation terms with the highest value found in Nord-Norge (4%). Swedish regions continue to lag in terms of

introducing the Internet to the rest of its citizens while although northern and eastern Finland have experienced a positive downwards trend in non-users, they still contain 7–8 % of inhabitants who have never used the Internet.

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Chapter 13

HEALTH AND WELFARE

We continue to live longer,
but inequalities in health and
wellbeing are increasing

Authors: Nina Rehn-Mendoza and Ryan Weber
Maps and data: Shinan Wang

The Nordic countries are among the highest ranked in international comparisons on health, welfare and well-being. The United Nations Sustainable Development Solutions Network publishes the World Happiness Index as a measure of wellbeing using six happiness indicators: social support, generosity, healthy life expectancy, perception of corruption, GDP per capita and freedom to make life choices. In the 2017 rankings, the Nordic countries are at the very top – Norway sits in first place, followed by Denmark (2nd) Iceland (3rd), Finland (5th) and Sweden (10th) out of 155 countries (Helliwell et al., 2017).

The Nordic Welfare Watch, a leadership programme initiated during the Icelandic Presidency of the Nordic Council of Ministers in 2014, has developed 30 national indicators to monitor welfare trends and policy making throughout the Nordic Region in a comparable manner (Friðleifsdóttir et al., 2017). This report applies a number of these indicators at the local and regional level to further understand Nordic health and welfare trends, as well as discussing the emerging issue of health care accessibility and the development of e-health innovations.

In general, the Nordic welfare model is based on high employment rates for both men and women (see chapter 5), and is therefore contingent on the

Finland has increased life expectancy by more than 12 years

existence of a healthy workforce and the contribution it can make to the labour market. In more remote regions, the importance of physical and mental wellbeing is even more pronounced and chronic diseases, also known as noncommunicable diseases (NCDs), are a burden for both local health care and the local labour force.

Longer life expectancy in the Nordic Region

As one of the UN Sustainable Development indicators for good health and well-being, life expectancy at birth measures the general health status of a population. Life expectancy at the national level is highly correlated to national income indicators such as GDP per capita. Most of Europe has however reached a level where further increases in wealth no longer increase average life expectancy.

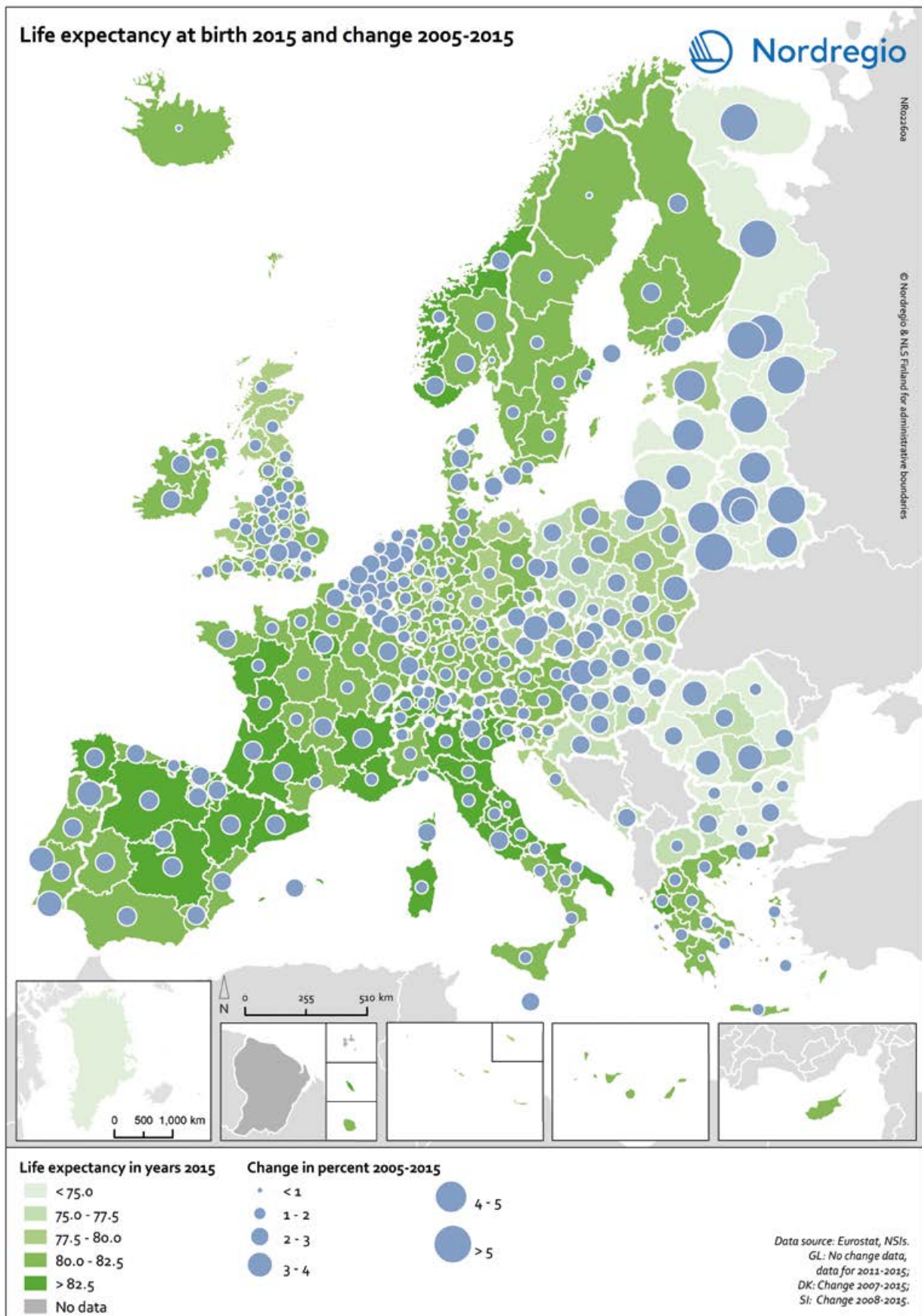


Figure 13.1 Life-expectancy at birth in Europe 2015 and change during the period 2005 to 2015.

	Male	Female	Total	Year
Denmark	78.8	82.7	80.8	2015
Finland	78.7	84.4	81.6	2015
Norway	80.5	84.2	82.4	2015
Sweden	80.4	84.1	82.2	2015
Iceland	81.2	83.8	82.5	2015
Greenland	69.7	74.1	-	2011–2015
Faroe Islands	79.9	84.7	82.1	2015/16
Åland	80.3	84.32	-	2013–2015

Table 13.1 Life-expectancy at birth in Europe 2015 and change during the period 2005 to 2015.

Data source: Eurostat and NSIs. Note: GL & AX: No data for total population.

Looking back to the 1960s, Finland has increased life expectancy by more than 12 years, while Denmark, Norway and Sweden have seen it increase by about 8–9 years. Finland's relative progress was based on its improvement from a lower life expectancy base compared to the other Nordic countries in the 1960s (WHO, 2014).

Figure 13.1 shows that the longest life expectancies are found in parts of Spain, France, Italy, Switzerland and Norway. In 2015 there is still a visible East-West divide, where countries in Eastern Europe, in the south-east of the Baltic Sea Region and Northwest Russia have a significantly lower life expectancy. The size of the blue bubbles indicate however that these regions have witnessed the largest increases over the last ten years. If their economies continue to grow it is likely that their life expectancy will continue to increase for some years to come.

Table 13.1 indicates that Iceland, Norway, Sweden, the Faroe Islands and Åland share similar life expectancies of around 82 years, followed by Finland, and Denmark. Denmark's lower performance is due to higher rates of heart disease, lung cancer and liver cirrhosis, which are mainly caused by unhealthy diets and relatively high tobacco and alcohol consumption. For Finnish men, deaths from suicides and accidents are more common than in other Nordic countries. Greenland experiences a shorter life expectancy than the rest of the Nordic region by about 10 years. This large gap is explained by high infant and child mortality, suicide, accidents and violent deaths, as well as lung and cervical cancers. Regional differences in life expectancy of several years within the Nordic Region are observed for

both men and women in each country. For men, the largest variation exists in Finland (including Åland) with a four-year difference between male life expectancy in Etelä-Savo (76.3) and Åland (80.3). In comparison, the difference is 3.4 years in Norway, 2.5 years in Sweden and only 1.2 years in Denmark. For women, the largest variation exists in Norway, with a 2.9 years difference between Østfold (82.3) and Finnmark (85.2). In comparison, the difference is 2.4 years in Finland, 2 years in Sweden and only 1.1 years in Denmark (Wang, 2017).

Regional differences are partly due to individual characteristics, but also to the local environment as well as the politics and institutions that influence the local economy, access to local services and care, general educational levels and the local norms that influence lifestyles. Regional differences are mainly manifested in the low income and least educated population group (Hartman & Sjögren, 2017).

Coronary heart disease is still the most common cause of death

One of the targets of the UN's Sustainable Development Goals is a 33% reduction, by 2030, in premature mortality from non-communicable diseases through prevention, treatment and the promotion of mental health and well-being. To measure this, two indicators are used: mortality rate from non-communicable diseases (NCDs) and suicide mortality rate.

The four main NCDs are cardiovascular diseases (heart attacks and strokes), cancers, chronic res-

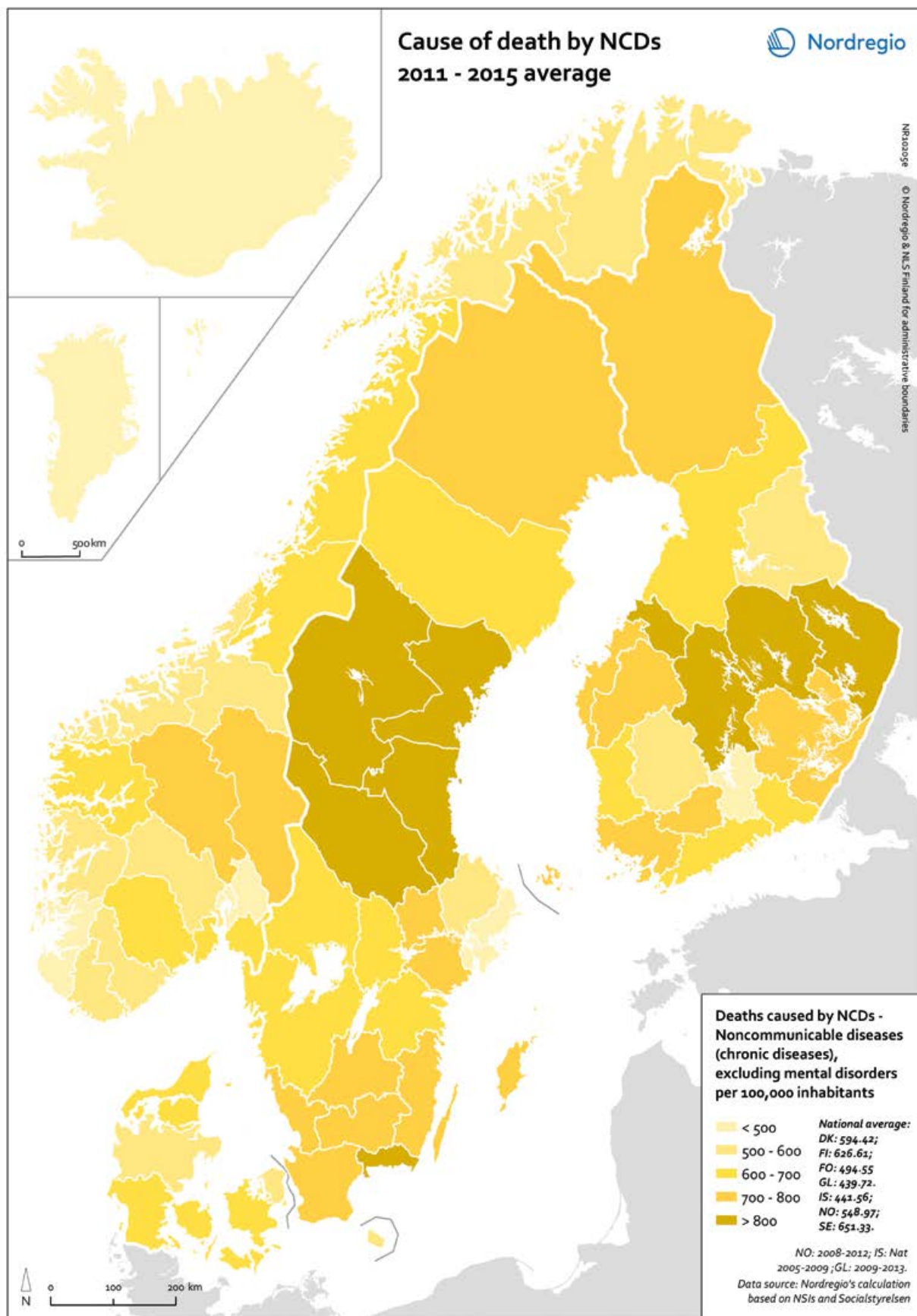


Figure 13.2 Mortality due to non-communicable diseases, 2011–2015 average.

piratory diseases (e.g. asthma) and diabetes. Globally, NCD's are responsible for 70% of worldwide deaths – a substantial proportion of which are caused by four lifestyle risk factors: alcohol, tobacco, unhealthy diet and limited physical exercise. NCDs tend to be long-term and their increasing mortality rates are the result of a combination of factors, including rapid urbanisation, globalisation of unhealthy lifestyles and population ageing.

The most common cause of death in all Nordic countries is coronary heart disease, followed by strokes in Norway and Sweden, lung cancer in Denmark and Alzheimer's/Dementia in Finland and Iceland. Coronary heart disease deaths have been greatly reduced since the 1980s, due to earlier diagnostics and better treatment options. This is the single biggest explanation for the increase in life expectancy across the Nordic Region.

Collectively, various forms of cancer are the second most common cause of Nordic mortality even though mortality rates have remained steady since the 1980s. Lung cancer and breast cancer remain the two most common cancer forms, but noteworthy changes have occurred in their predominance. In Norway for example, lung cancer has taken over from breast cancer as the deadliest form of cancer among women, due to advances in breast cancer screening and treatment (WHO, 2017).

Figure 13.2 shows clear regional differences in mortality due to NCDs. Finland and Sweden both have higher nationwide rates of NCDs than the other Nordic countries with the east and north of Finland seeing higher NCD death rates than the south and west of the country. High NCD mortality rates in Sweden are found in Blekinge, Dalarna, Jämtland and Västernorrland.

In Norway, Østfold, Hedmark, Oppland, Nordland and Finnmark have the highest share of overweight people, and people who eat the least amount of fruit and vegetables, drink lots of sugary drinks and do the least amount of exercise (Statistics Norway, 2016). Consequently, they are the regions among the highest NCD mortality rate. According to Statistics Norway, the healthiest population can be found in the capital city where only 19% of the population is overweight compared to the national average of 28% (Statistics Norway, 2016). The slightly lower NCD mortality in Greenland masks high mortality from other causes such as acute infections, accidents, violence and suicide (WHO, 2017).

About 3,500 people commit suicide every year in the Nordic Region

Large difference in suicide rates within the Region

Another important NCD disease category is that of mental health disorders which can lead to long-term disability or even death. Mental disorders are increasing globally and are now the leading cause of YLDs (years lived with disability) worldwide. Approximately 40% of the total burden is caused by depressive disorders, followed by anxiety, drug and alcohol abuse disorders and schizophrenia. If figure 13.2 included mental health disorders, some regions in Denmark (Sjælland and Nordjylland) and Norway (Telemark and Hedmark) would show noticeably higher levels of NCD burden.

The most dramatic manifestation of mental ill-health is suicide. About 3,500 people commit suicide every year in the Nordic Region, and there is a 3:1 male to female ratio. The Faroe Islands has the lowest rate of suicide by a wide margin, followed by Denmark, Norway, Åland, Sweden and Iceland, which are all at similar levels. Finland has a slightly higher than average rate of suicide, but Greenland's suicide rate, being almost five times that of Finland, is the highest in the world.

In Norway, a significant reduction has occurred in suicide among young people, while in Sweden young people is the only category that has not decreased. Mental wellbeing among young people is generally declining in all of the Nordic countries, which may lead to increased numbers of suicides and suicide attempts in the future (Nomesko, 2017).

Figure 13.3 shows that suicide rates are higher in the rural areas in Finland, Norway and Sweden and lower in the capital regions in Denmark, Norway and Sweden. Gotland and Jämtland in Sweden, Vestfold in Norway and many regions in Finland all have higher suicide rates than their respective national averages. At the same time, there are some important regional outlier observations:

- Greenland's suicide rate is the highest in the world by a wide margin. Males between the age of 15–24 have the highest suicide rate, followed by women in the same age group. Many theories are put forward offering possible explanations, in-

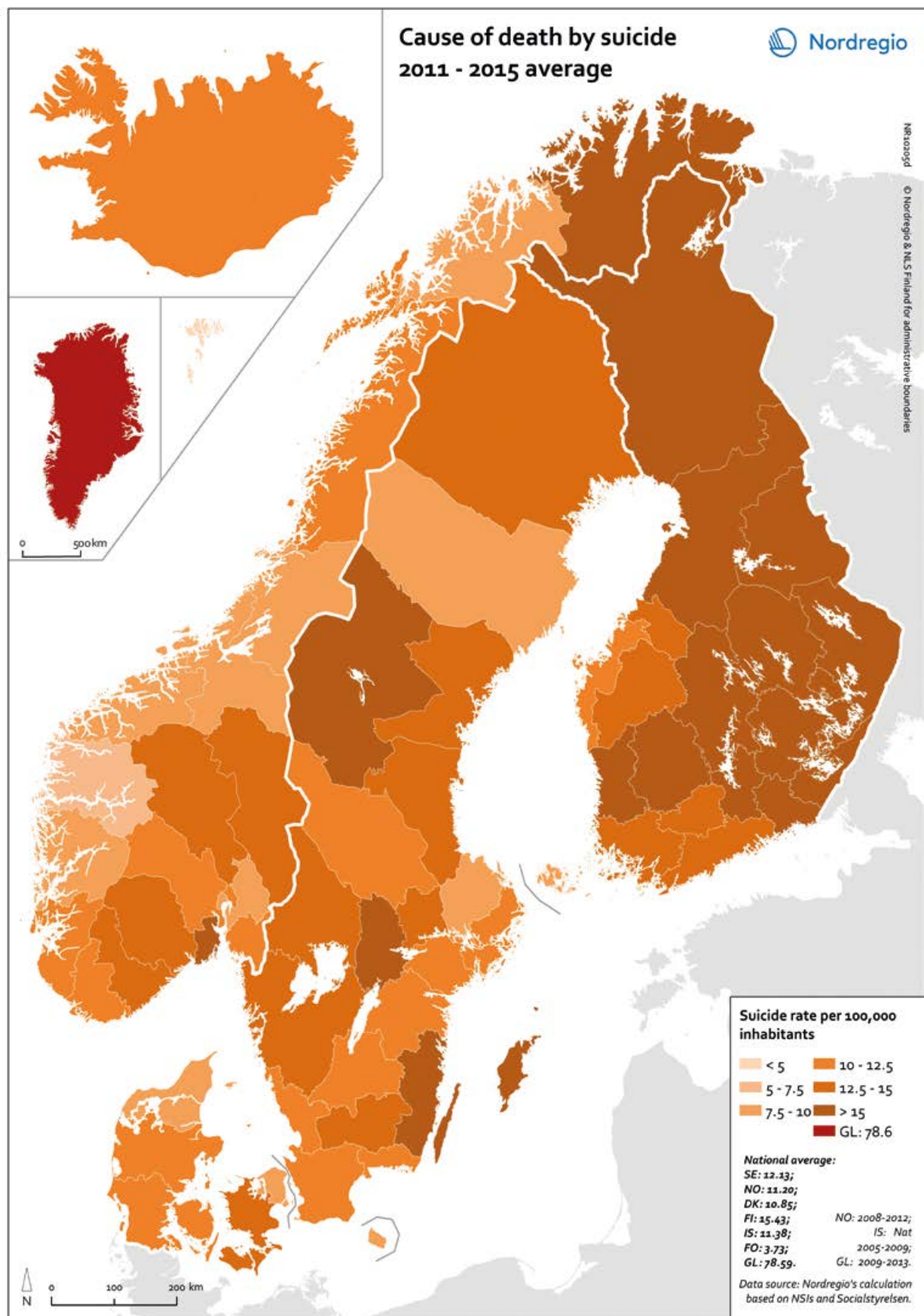


Figure 13.3 Mortality due to suicide, 2011–2015 average.

cluding poor emotional environments at home, high levels of depression, alcoholism, violence and complex effects of the modernization process (Bjerregaard & Lynge, 2006).

- Among men that hunt (and have access to guns) in eastern and northern Finland, the rate of suicide is higher than in the rest of the Nordic Region. Alcohol abuse is likely a combined factor in these suicides (Isometsä, 2017).
- Studies in Sweden show elevated rates of suicide attempts and psychosis among immigrants who may have faced traumatic experiences, and may now face chronic stress, unemployment and segregation (Socialstyrelsen, 2009).
- The Faroe Islands and Sogn og Fjordane are rural and remote areas that experience low suicide rates. Sogn og Fjordane in Norway is unofficially known as "trivselfylke", a region with satisfied, healthy and happy inhabitants. It is less urbanised and has a history of religious influence.

Social inequalities in health

Social inequality in health is defined as avoidable disparity in risk and incidence of disease and access to health care between groups of people, due to social and economic factors. Common inequality variables include demographic factors such as age, income levels, gender, education and ethnicity. While immigrant populations born outside Europe tend to have longer life expectancies than the general population, their self-perceived health status tends to be lower. This is due to challenges associated with poverty, inadequate housing, unemployment, refugee status, non-existent social networks, language barriers and illiteracy. The Ministry of Health and Care Services in Norway has developed a national strategy for immigrant health 2013–2017, which highlights some of the specific health challenges in a heterogeneous immigrant population, e.g. tuberculosis, HIV, mental health, oral health, women's genital mutilation, and reproductive health (Helse- og omsorgsdepartementet, 2013).

Health differences due to social status are consistent and can be detected in both mortality, illness and experienced wellbeing. For example, the number of years lost among people aged 25–80 in Finland is three times higher in the lowest income group compared to the top 40% income group. This difference is explained by alcohol related deaths (about

Immigrant populations born outside Europe tend to have longer life expectancies than the general population

25%), heart disease (about 25%), accidental deaths and suicide (about 20%). The role of alcohol is higher in Finland than in the other Nordic countries (Karvonen et al., 2017). Social inequality is also evident given that high-income segments tend to utilise health services more than low income segments, for example in Norway and Finland. This is mainly due to the higher availability of occupational and private health services.

The distribution of social welfare

Financial social assistance is granted in all the Nordic countries when all other support options with loss of income have been exhausted. It is the last resort in the social security system and is given either as substitute for other sources of income or as a supplement to low personal income. The regulations for when, to whom and how much assistance is given vary greatly between the countries. For example, in Denmark and Iceland such assistance is subject to tax, while in Finland, Sweden and Norway it is a net benefit and tax exempt. Figure 13.4 illustrates the regional distribution of recipients of social assistance, but it also shows that national regulations for social assistance vary between the Nordic Countries. The percentage of the population receiving social assistance is highest in Finland (3.3%), followed by Denmark (2.4%), Sweden (2.0%), Norway (1.6%) and Iceland (1.4%) (Nomesco-Nososco, 2016).

The high rate in Finland is associated with 18–24-year-olds of whom 14.9% are on social assistance, compared to the next highest of 7.4% in Sweden. Sweden also has several areas where the proportion of the population on assistance is high, including Södermanland and Värmland. Norway has only a few such areas, mainly in the far north. Overall, the distribution of recipients in Denmark is evenly spread across the country, with no areas with a significantly higher proportion of recipients.

Recipients of social assistance are mostly outside the labour market due to various factors such

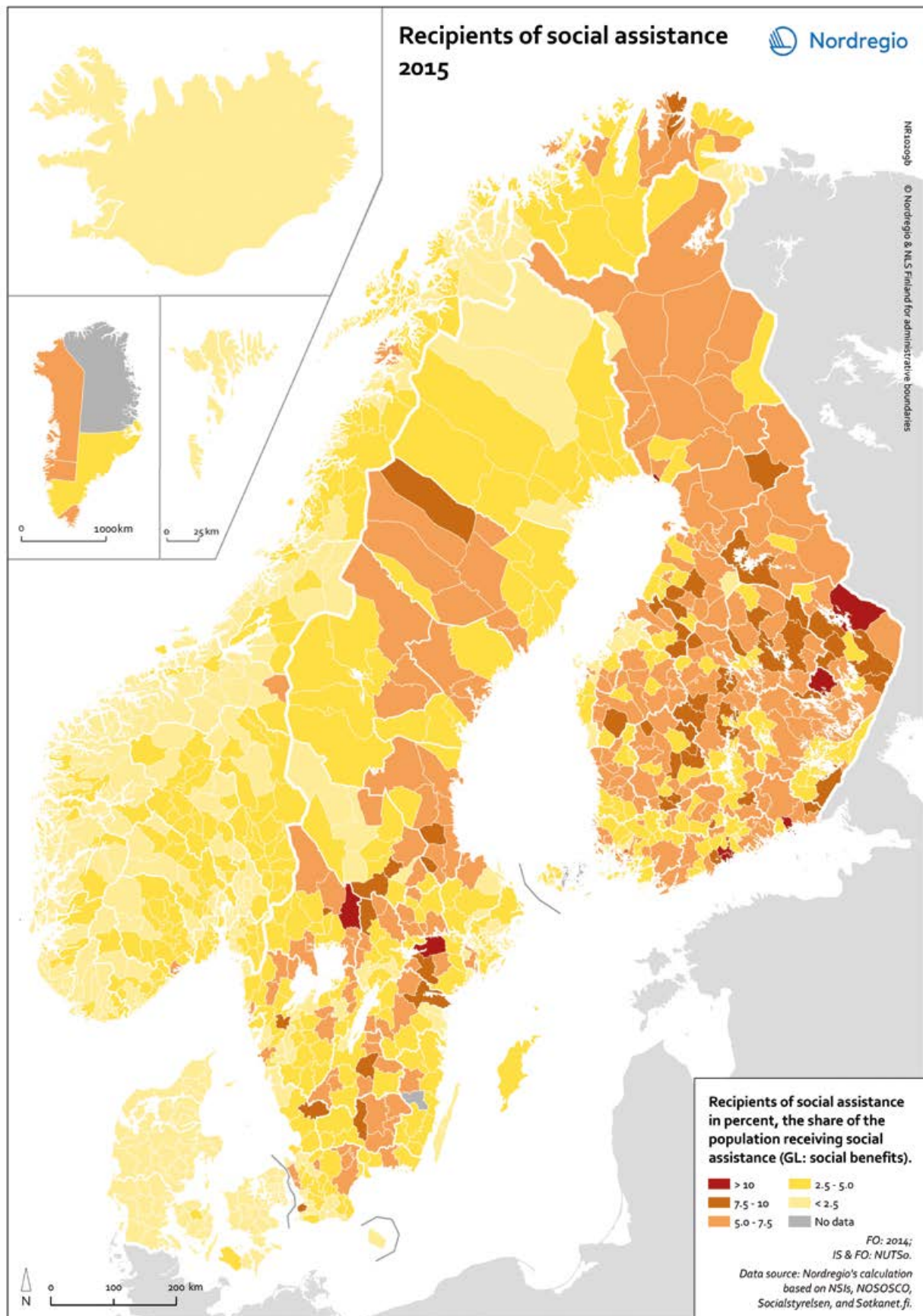


Figure 13.4 Recipients of social assistance 2015.

Health differences due to social status are consistent

as long-term illness or disability, or their pensions are too low to cover their basic needs. In a 2016 Finnish study for example, almost 30% of people aged 20–54 years and almost 20% of people aged 55–74 years reported that they had to forego medicines, doctors' visits or some food items due to lack of money (Karvonen et al., 2017). Regions may be particularly vulnerable if they have high rates of newly arrived immigrants, if they suffer from downsizing industries or if they have large numbers of less-educated workers on low salaries or engaged in predominantly part-time work.

Risk of poverty is based on a calculation of disposable household income after social transfers (60% of the national median disposable income is used as the cut-off point). The experience of a person being at risk of poverty is therefore relative to the society that directly surrounds them, as is manifest by having less monetary resources than one's peers to maintain well-being. It results in a limited ability to sustain a normal diet, lifestyle or activities given the local societal context, and leads to detrimental physical health effects as well as psychological or social challenges.

The lowest income quintile is often made up of people with low educational attainment, people outside the labour market or single-parent/single-person households. In the Nordic Region, the proportion of the type of household at highest risk varies by region; in Denmark and Norway it is working-age single person households, in Finland and Sweden it is retired single person households and Iceland it is single parent households. General trends in this area have been rather stable in the Nordic countries, except for Sweden where there has been an increase since 2010 (Nomesco-Noscosco, 2016).

According to figure 13.5, Sweden has the highest share of people living in a household at-risk-of-poverty (15.1%) followed by Finland (12.8%), Denmark (12.1%), Norway (10.9%) and Iceland (7.9%). Regional variations are somewhat more difficult to discern compared to the other health and well-being indicators. This is in part caused by the higher administrative scale that is shown for Sweden compared to Denmark, Finland and Norway, as well as the lack of the cross-border dimension in this indicator.

It is notable however that municipalities within the metropolitan areas of larger centres like Oslo and Copenhagen show higher percentages of the population being at risk of poverty. This reflects the reality of higher income variance in metropolitan areas, which can be an important factor causing segregation and social exclusion, and further reinforcing negative effects on well-being. Metropolitan areas also face higher variance in housing structure, with more single person households than rural areas and small and medium sized towns. Coupled with high rents, this leads to a burdensome cost of housing and risk of poverty. The capital region of Finland shows a much different picture and is in fact an outlier with lower percentages of people at risk of poverty compared to the rest of the country.

Digital solutions can improve accessibility to health services

While social inequalities have been shown to contribute to inequitable health service accessibility, another aspect determining health care service quality is physical accessibility, which is still mainly determined by the location of doctors' offices, health clinics and hospitals. The Nordic Region is not alone in experiencing significant urbanisation combined with shrinking and ageing rural communities (see chapter 2), but it is challenged in this regard by its expansive area with large sections of sparsely populated rural areas and long distances between towns. As a result, rural health accessibility has generated significant policy debate in each of the Nordic countries – as governments try to strike a balance between ensuring health service accessibility for people living in rural areas and the need for managing health services in an economically viable way.

For example, Iceland's Regional development institute, Byggðastofnun, commissioned Nordregio to conduct a full national accessibility analysis for all health locations in the country. The results showed significant regional fluctuations in service accessibility, particularly for specialised care, including emergency and surgical services. In Finland, a major reform (SOTE) of health care and social service provision is currently being prepared with one of the key elements of the reform being the transfer of health care provision from the municipalities and joint municipal authorities to new, regional authorities, that will have a particular focus on specialised

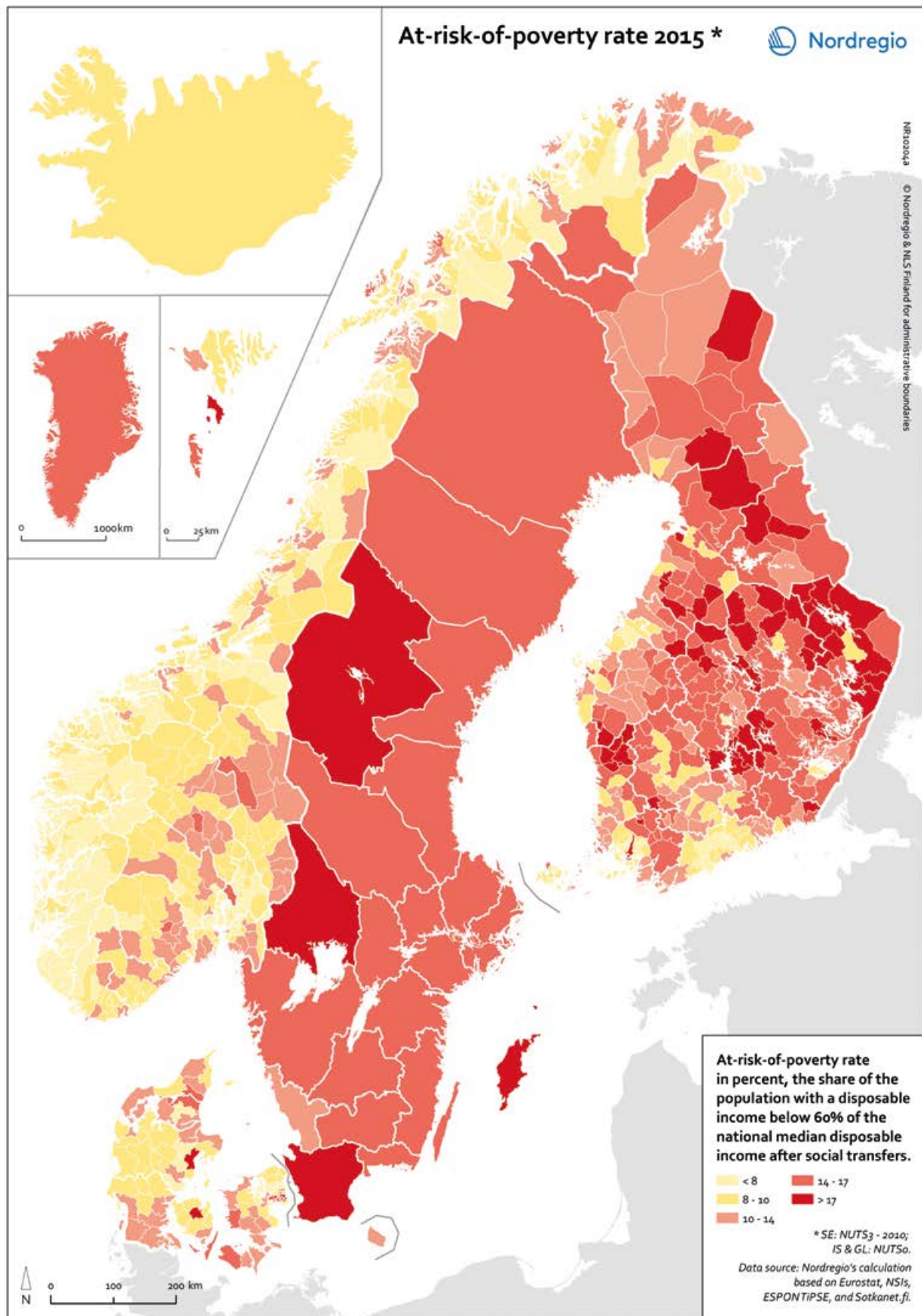
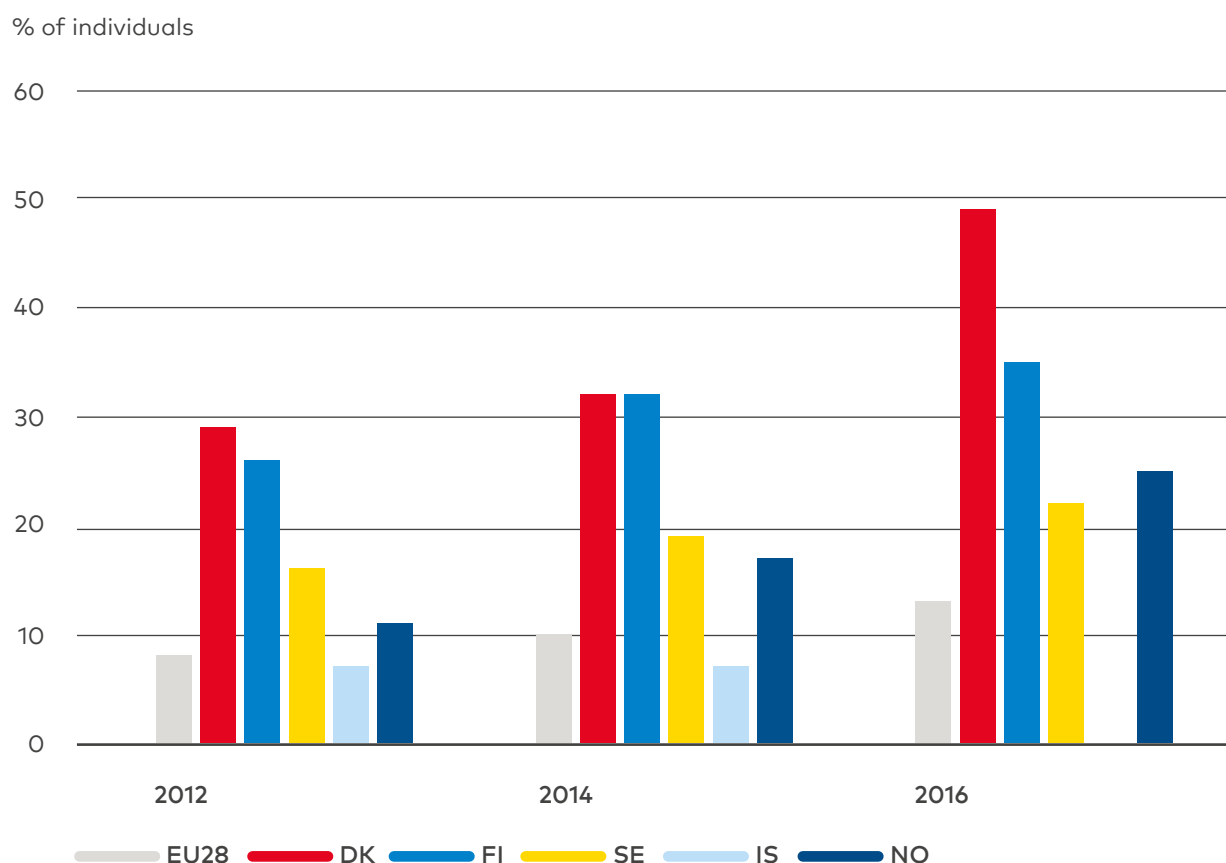


Figure 13.5 At-risk-of -poverty rate 2015.

Figure 13.6 Internet use: making an appointment with a practitioner via website.



Data source: Eurostat.

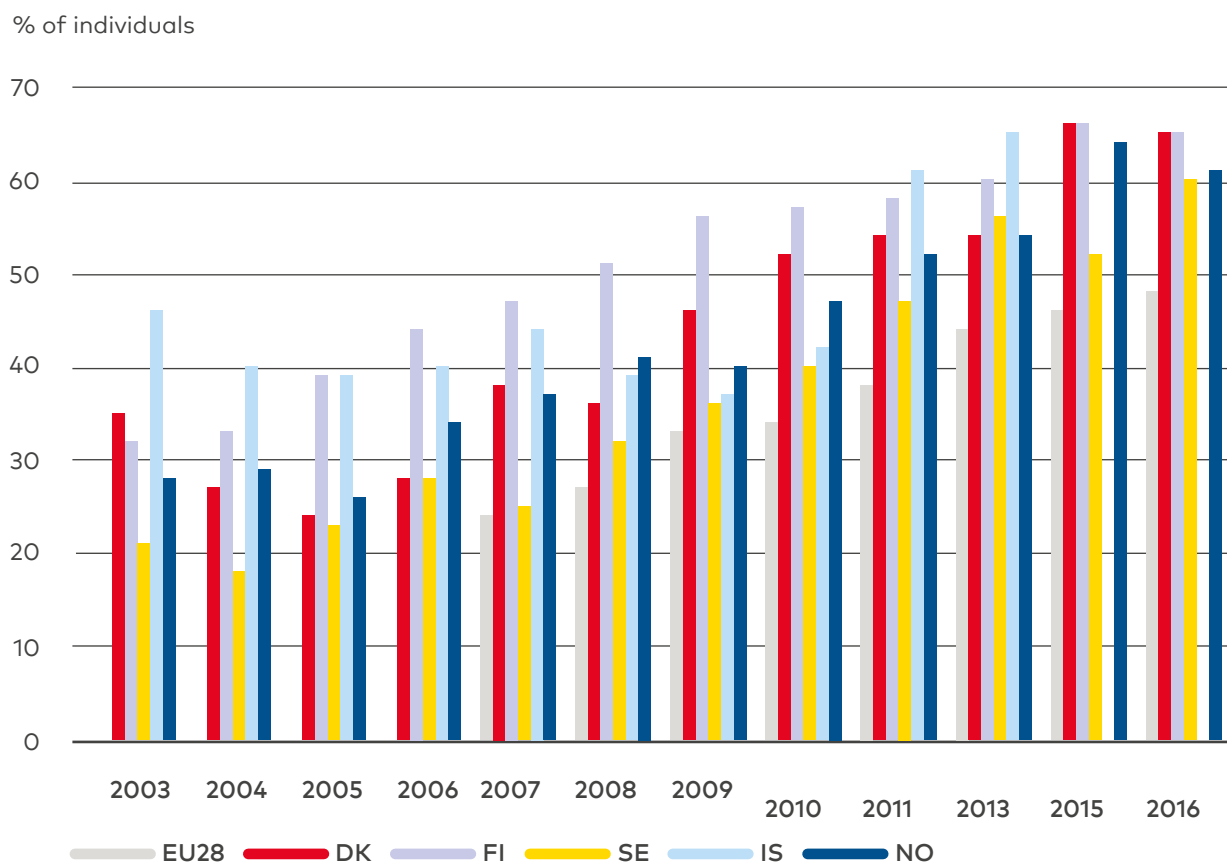
care. This would strengthen the autonomy of regional authorities and reduce the number health care authorities from 219 to 15–20 (National Institute for Health and Welfare, 2015). Since the reform is designed to produce significant savings in public health care provision, it is likely that the process will lead to increased digitalisation of certain health care services accompanied by a reduction in the number of health centres, particularly in respect of specialised care units.

Investment in digital e-health solutions is being publicly supported and viewed as providing an opportunity to reduce social and spatial inequalities in terms of accessibility to health services, at the same time as making healthcare more fiscally efficient. Figure 13.6 shows that all countries except Iceland (data missing for 2016) are above the EU average and are increasingly using the Internet to book doctor appointments, with the most significant growth

here being in Denmark and Norway. Figure 13.7 shows that the Nordic countries are all well above the EU average for using the Internet to seek general health information, in addition to simply booking appointments. Both statistics are representative of significant innovations that are emerging in health service provision in the Nordic Region.

Online doctor consultations are becoming more common in the Nordic countries, as are private sector initiatives for ordering prescription medication. But moving beyond this, multiple Nordic start-up companies are working with even more innovative solutions that will further extend the possibilities of eHealth solutions. This includes comprehensive eHealth platforms that could have the capability for remote diagnosis, treatment and aftercare of certain health conditions such as addiction and abuse disorders.

Figure 13.7 Internet use: seeking health information.



Data source: Eurostat.

Concluding remarks

The people in the Nordic countries continue to live longer and healthier due to a number of factors, including improvements in health care technologies and early detection, increases in education levels and income, and decreases in smoking. Among the challenges to future health and welfare are: ensuring that increases in health and well-being are distributed evenly in the population; addressing the growing mental health problems that all countries are facing, especially among young people; preventing chronic diseases through the more successful promotion of lifestyle choices; and how to support the welfare of economically vulnerable groups, such as immigrants, single parents and old people on low pensions.

However, one common question that needs to be solved in all countries is how to provide good health

care and social services in remote and sparsely populated regions in the future. The eHealth revolution will likely offer significant solutions, but without careful implementation it could also reinforce current challenges, including the continuing need for acute care in rural areas and the ability for elderly citizens to adapt to and interact with digital solutions. Therefore, careful consideration will have to be given to which forms of treatment can be shifted toward eHealth solutions. The vision should be to reinforce and develop health care services rather than identifying opportunities to replace physical consultation with digital options. Thus, continued technological development will offer solutions to rural health care services, but difficult decisions remain for all Nordic countries over how to balance entrenched urbanisation processes while maintaining appropriate health care service levels.

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Chapter 14

CULTURE AND ARTS

An essential area for Nordic co-operation

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Maps and data: Linus Rispling

Culture and arts is an essential area for co-operation within the Nordic Region promoted by the Nordic Council of Ministers to *"manage the historical, cultural and linguistic heritage and ensure continuity, [and...] encourage new cultural expressions and impulses"* (Nordic Council of Ministers, 2016). In the Nordic strategy for cultural co-operation it is clearly stated that the Nordic Region should be a creative and intercultural region, where the inhabitants can participate and access cultural activities. For Nordic cultural collaboration it is fundamentally with facts, research and knowledge that we can exhibit

changes in culture and arts relating for example to demographical or technological shifts. Nordic co-operation on culture does not therefore only call for the exchange of skills and experiences, but also for information about the state of the Nordic cultural sector – that can shed light on social inequalities and barriers for cultural participation.

Displaying cultural data, not only at national but also at regional level, facilitates discussion on accessibility to cultural activities in rural and urban areas in the Nordic Region. From a regional development perspective this information is crucial as it indicates

Beyond Nordic national level cultural indicators

Thus far, cultural statistics and other data has been gathered and disseminated on the national level in each Nordic country. Since the creation of the Nordic Centre for Cultural Policy Analysis in 2016 by the Nordic Council of Ministers, steps have been taken to harmonise Nordic cultural statistics and to increase our ability to develop comparable knowledge on the cultural sector in the Nordic Region. In collaboration with Nordregio, this chapter takes another step forward, namely to look at some selected cultural indicators at the Nordic regional and municipal levels. Future aspects of interest here could also include a comparison between the Nordic Region and non-Nordic countries, although such international, harmonised data is not currently generally available.

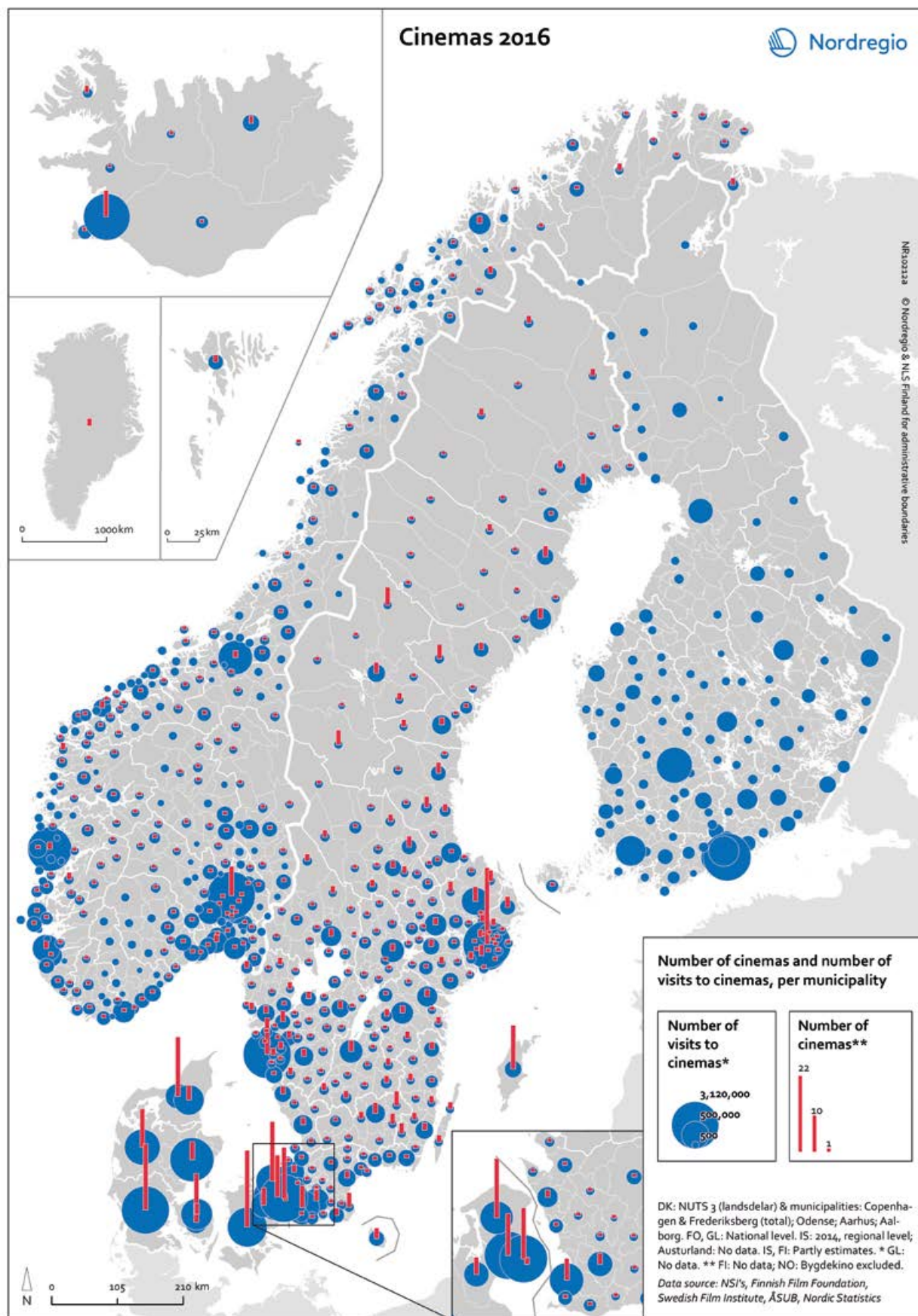


Figure 14.1 Cinemas 2016.

	Visit/inhabitant, national level	Visit/inhabitant, regional level, min-max
Iceland	4.2	0.7–5.5
Norge	2.5	1.8–3.3
Denmark	2.3	1.6–4.5
Sweden	1.8	1.2–2.5
Finland	1.6	0.8–2.1

Table 14.1 Visits to cinemas per inhabitant on the national and regional level.

Data source: Nordregio's calculations based on NSIs and the Swedish Film Institute.

whether polarisation exists in and between regions – where place of residence has consequences for cultural participation. Moreover, it makes it possible to identify similarities and differences not only within the Nordic Region, but also between administrative regions.

In this chapter, a first attempt is made to present comparable data in three cultural sectors; cinemas, libraries and museums. As the chapter demonstrates, challenges remain in terms of making the data fully comparable. In the following sections we present current data within these three areas emphasising the need for improved data harmonisation.

Cinemas are spread across the Nordic Region

The map of cinemas in the Nordic Region exhibits, where possible, the number of cinemas and visits on the municipal level for 2016 (figure 14.1). For Denmark, municipal data was only available for five metropolitan municipalities (Copenhagen and Frederiksberg, Odense, Aarhus, and Aalborg) with the rest only available on the regional level. Data on the number of cinemas for Finland was entirely missing. Sweden has most cinemas (418), compared to Norway (201), Denmark (163) and Iceland (15). However, Iceland has most cinemas per 10,000 inhabitants (0.45). Sweden has 0.42 cinemas per 10,000 inhabitants while Norway has 0.39 and Denmark 0.29.

On the municipal level, data is only available for the number of cinemas in Norway and Sweden. In Norway, 184 of 427 municipalities have one or more cinemas; the equivalent number in Sweden is 259 of 290 municipalities. Even though, several municipalities in Norway lack their own cinema, people still

Iceland has most cinemas per 10,000 inhabitants

attend cinemas in 308 of the country's 427 municipalities. This is made possible by the "bygdekino" (touring cinema) initiative in Norway, which shows cinema films in areas without a permanent cinema (Bygdekinoen, 2017). There are similar initiatives in Sweden and in Finland arranged by organisations of community centres, small cinemas and adult education projects such as National Federation of People's Parks and Community Centres (Folkets hus och Parker) in Sweden, the Film Centre of Central Finland and the Educational centre for audio-visual culture in eastern Finland (ISAK).

Icelanders are the most frequent cinema visitors

The number of cinema visits per inhabitants diverge between the Nordic countries, particularly in respect of Iceland which excels with 4.2 visits per inhabitant/year, compared to Norway (2.5), Denmark (2.3), Sweden (1.8), Finland (1.6) and the Faroe Islands (1.4) (see table 14.1). Visits per inhabitant/year are stable over time (2005–2016), except for Iceland and the Faroe Islands, where visits per inhabitant have decreased (Nordic Agency for Cultural Policy Analysis, 2017). As shown in table 14.1, the number of visits per inhabitant on the regional level is unevenly distributed across the Nordic countries, with Iceland seeing the largest differences between regions and Sweden the smallest. The large regional difference in Iceland is due to the

uneven spread of the population, a large majority of whom live in the capital region.

Data also demonstrates that some municipalities have a high number of visits per inhabitant – not only in the central city municipalities – but also in smaller municipalities. This probably relates to the fact that some municipalities host large cinema multiscreen complexes which attract visitors from other nearby municipalities.

Potential to develop Nordic cinema statistics

Nordic cinema film statistics are collected continuously, but it is important to note that each country has its own agreements with its film sector over what data are to be reported and for what purposes. Consequently, Nordic film statistics sometimes differ in terms of scope, content and availability (Nordic Agency for Cultural Policy Analysis, 2017). Available data exists on cinemas and cinema visits for all Nordic countries and territories on both the national and regional levels, except for Greenland (no data on cinema visits). Data gaps also exist in respect of some variables at the municipal level. Norway, Sweden and Åland have data at the municipal level. Denmark has accessible data on the regional NUTS 3 level, *landsdele*, and for the metropolitan core municipalities of Copenhagen–Frederiksberg, Odense, Aarhus and Aalborg. Finland has data on the number of visits to cinemas in each municipality. Greenland and the Faroe Islands have information on the number of cinemas only at the national level, while for Iceland, data is available only at the statistical regional level.

Several outstanding issues however need to be highlighted here in relation to the development of harmonised and relevant cinema statistics in the Nordic Region. In the new era of digitalisation, where most cinemas in the Nordic Region are digitalised, the social and cultural role of cinema theatres is changing (DGT, 2017). At present, cinema theatres are, to an extent, being used not only to show cinema films, but also for the broadcasting of concerts, theatre plays and opera performances. As such, it is therefore relevant to gather data on the display of performance genres other than cinema films. Finally, information on initiatives such as Bygdekino in Norway, but also the National Federation of People's Parks and Community Centres in Sweden and corresponding initiatives in Finland will provide us

with information about cultural participation – in this case on cinema visits in municipalities without a permanent cinema theatre.

Municipalities with several public libraries have numerous visits

The role of libraries is changing in the Nordic Region. Public libraries are increasingly turning into community centres and public spaces offering additional services other than book lending. Public libraries have of course been offering different types of media for a long time as they have to adjust both to new media developments and public demand. Recently however other types of activities have become more common. These for example include, reading and writing groups for immigrants, education in Internet and digital media use for the elderly and "makerspaces" encouraging the sharing of knowledge, tools and ideas across a wide range of activities.

Figure 14.2 shows the number of public libraries per municipality in the Nordic Region 2016, and the number of visits. The number of public libraries includes both main libraries and sub-branches. Almost all municipalities in the Nordic Region have at least one library; Iceland has the most municipalities without a library (22). The 14 municipalities in the Nordic Region with more than 1.5 million visitors each all had 10 or more public libraries. These 14 municipalities are among the largest municipalities in the Nordic Region with a population between 185,000 and 924,000 inhabitants. Three of the Nordic country capitals are also the capitals of library visiting, namely, Helsinki, Stockholm and Copenhagen. Helsinki has close to 6.3 million visitors to their 37 libraries, compared to 6.0 million in Stockholm (45 libraries) and 4.6 in Copenhagen (20 libraries). Oslo has 20 libraries and the fewest visits, 2.5 visits/inhabitant, among the Nordic capitals.

Finns are the most frequent library visitors

To understand the issue of library use we need to look at use in relation to the number of inhabitants. On a national level, significant differences exist within the Nordic Region in respect of visits per inhabitant. Table 14.2 shows the number of visits per inhabitant for Denmark, Finland, Norway, Sweden and Åland. Finns are twice as frequent library

	Visit/inhabitant, national level	Visit/inhabitant, regional level, min-max
Finland	8.9	7.0–10.1
Denmark	6.6	5.3–9.1
Sweden	6.3	5.3–9.2
Norway	4.7	3.0–8.7
Åland	9.8	-

Table 14.2 Visits to public libraries per inhabitant on the national and regional level.

Data source: Nordregio's calculations based on NSIs, Finnish library services, National Library of Norway, National Library of Sweden, ÅSUB. Note: FI: Excludes AX. IS: No data.

visitors as Norwegians. The table also exhibits the range of visits per inhabitant in the regions of each country. In Finland the differences between regions are rather smaller than those of the other parts of the Nordic Region where much greater variance exists. Norway in particular shows a significant level of differentiation with a regional level distribution of visits that is higher than elsewhere.

Small differences in Nordic library statistics

Since library services is a municipal responsibility in the Nordic countries, and there is an international ISO-standard (2789), the conditions for comparability exist on all levels. Denmark, Finland, the Faroe Islands, Greenland, Sweden and Åland all comply with this standard, and from 2016, Norway revised its statistics to comply with the ISO standard. Data on the number of library visits in Iceland, Greenland and the Faroe Islands is however still not openly available.

As noted previously, the role of libraries in society is evolving. For this reason, it is essential to consider what the relevant indicators are for measuring accessibility or the possibility of taking part in library activities. Book lending, while still probably the primary task of libraries, is however now only one of the many kinds of services provided and, as such, is no longer a general indicator for library use. In the future, it would be relevant to include statistics on other library services. Moreover, in terms of developing knowledge on accessibility to library services in the Nordic Region, it would be relevant to measure opening hours as well as access to library buses and locations where you can access library services re-

Finns are twice as frequent library visitors as Norwegians

motely or without staff. In addition, it would be both interesting and useful to measure access to library services in relation to the mean distance for municipal inhabitants to access their nearest library.

Capital city regions have most museum visits

The map of museums in the Nordic Region shows the number of professional museums and visits per municipality in 2015 (figure 14.3). A professional museum is here considered to have staff employed during the year corresponding to at least one full-time equivalent in total. Stockholm and the Greater Copenhagen area, a cross-border metropolitan region encompassing Eastern Denmark and Skåne in southern Sweden, have most museums and visits in the Nordic Region. Table 14.3 shows that five municipalities in the Greater Copenhagen region (Copenhagen, Malmö, Fredensborg, Helsingborg and Helsingør) have more than 500,000 visits each to museums. These five municipalities together experienced a total of more than 5.5 million visits and creating a region with many visits.

The capital city regions have both the highest number of museums and the most museum visits. Table 14.3 shows that the capital municipalities of Stockholm, Oslo, Copenhagen, Helsinki and Reykjavík have the largest number of professional museums and visits with Stockholm leading in terms of both the number of museums and visits. This is hardly surprising given their large populations and

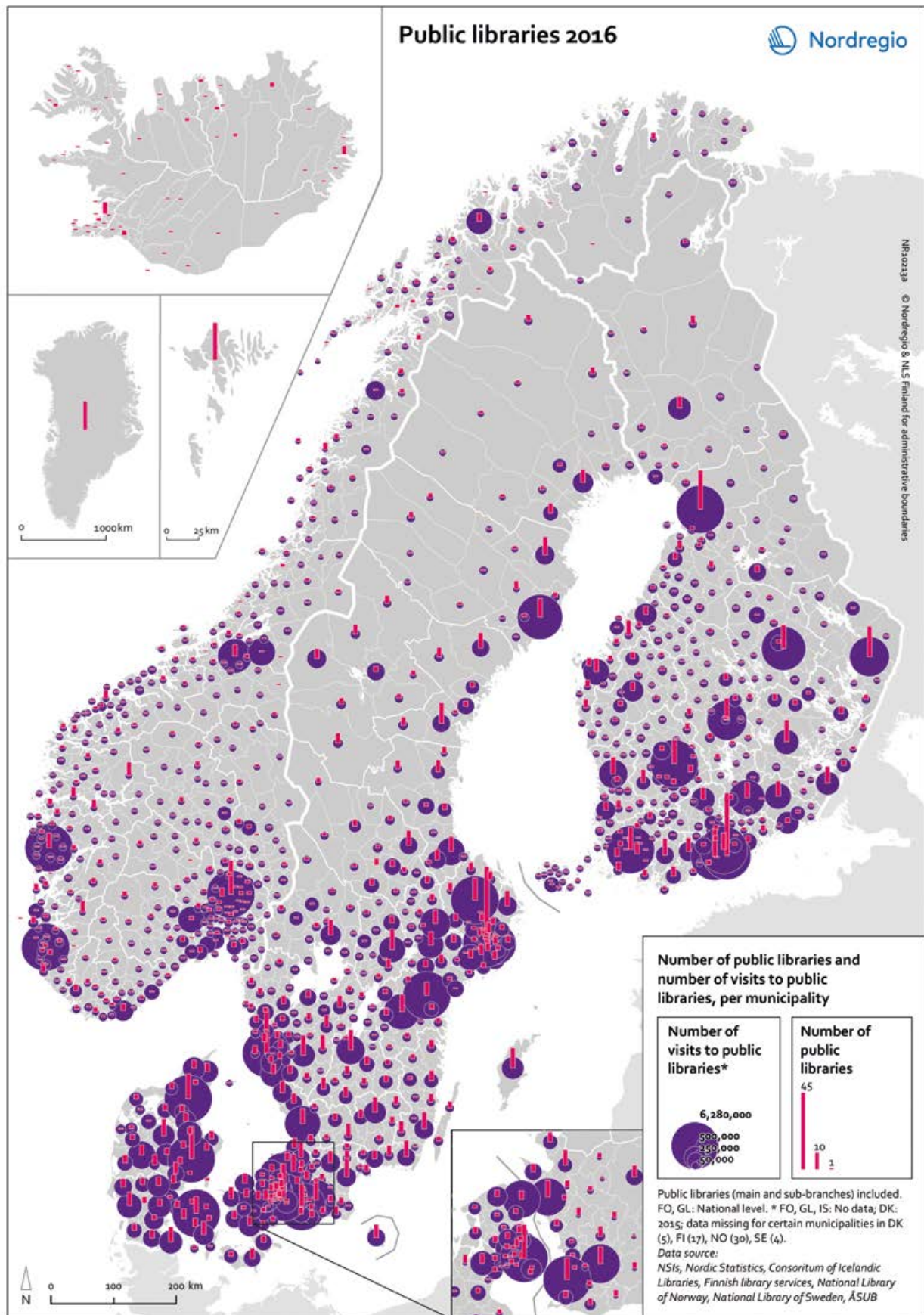


Figure 14.2 Public libraries 2016.

Municipality	Country	Number of museums	Number of visitors to museums	Visits per inhabitant
Stockholm	SE	51	10,047,612	11.02
Oslo	NO	23	4,654,512	7.19
Copenhagen	DK	24	2,912,702	5.02
Helsinki	FI	18	1,910,053	3.08
Greater Reykjavík	IS	29	1,122,055	5.38
Malmö	SE	5	780,828	2.45
Fredensborg	DK	2	764,580	19.22
Uppsala	SE	11	607,977	2.93
Helsingborg	SE	7	551,455	4.07
Västerås	SE	5	521,881	3.63
Helsingør	DK	4	500,142	8.11

Table 14.3 Municipalities¹, located in capital city regions, with more than 500,000 visitors to professional museums. By country, number of museums and visitors and visitors per inhabitant.

Data source: Nordregio's calculations based on NSIs, Museotilasto, Kulturrådet, Kulturanalys.

status as important tourist destinations, both for domestic and foreign tourism. For example, Swedish museum statistics show that more than half of all visitors to some museums are foreign tourists (Kulturanalys, 2017).

In the Nordic Region, professional museums are not located in all municipalities. In the Faroe Islands, professional museums are entirely limited to the capital region. In Sweden, Norway and Finland there are numerous municipalities without a museum. For these countries it is also clear that the second-tier cities host the highest number of professional museums outside the capitals. That said, in the parts of Denmark, Norway and Sweden where rural municipalities have museums, they do in many cases experience a substantial number of visits, often between 50,000 and 100,000 per year.

Same definition of museum, diverging definitions of visits

The International Council of Museums (ICOM) definition of a museum, used by many of the world's countries, is as follows: "A museum is a non-profit,

Greater Copenhagen region (Copenhagen, Malmö, Fredensborg, Helsingborg and Helsingør) have more than 500,000 visits each to museums

permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment" (ICOM, 2007). All Nordic countries and Faroe Islands, Greenland and Åland have national ICOM organisations which organise museums and translate definitions into the national languages. Despite this, differences remain in the museum population displayed in figure 14.3, which to some extent influences the notion of cross-national comparability.

¹ Except Höfuðborgarsvæðið, i.e. Greater Reykjavík (Iceland's Capital Region), which encompasses the entire Reykjavík region.

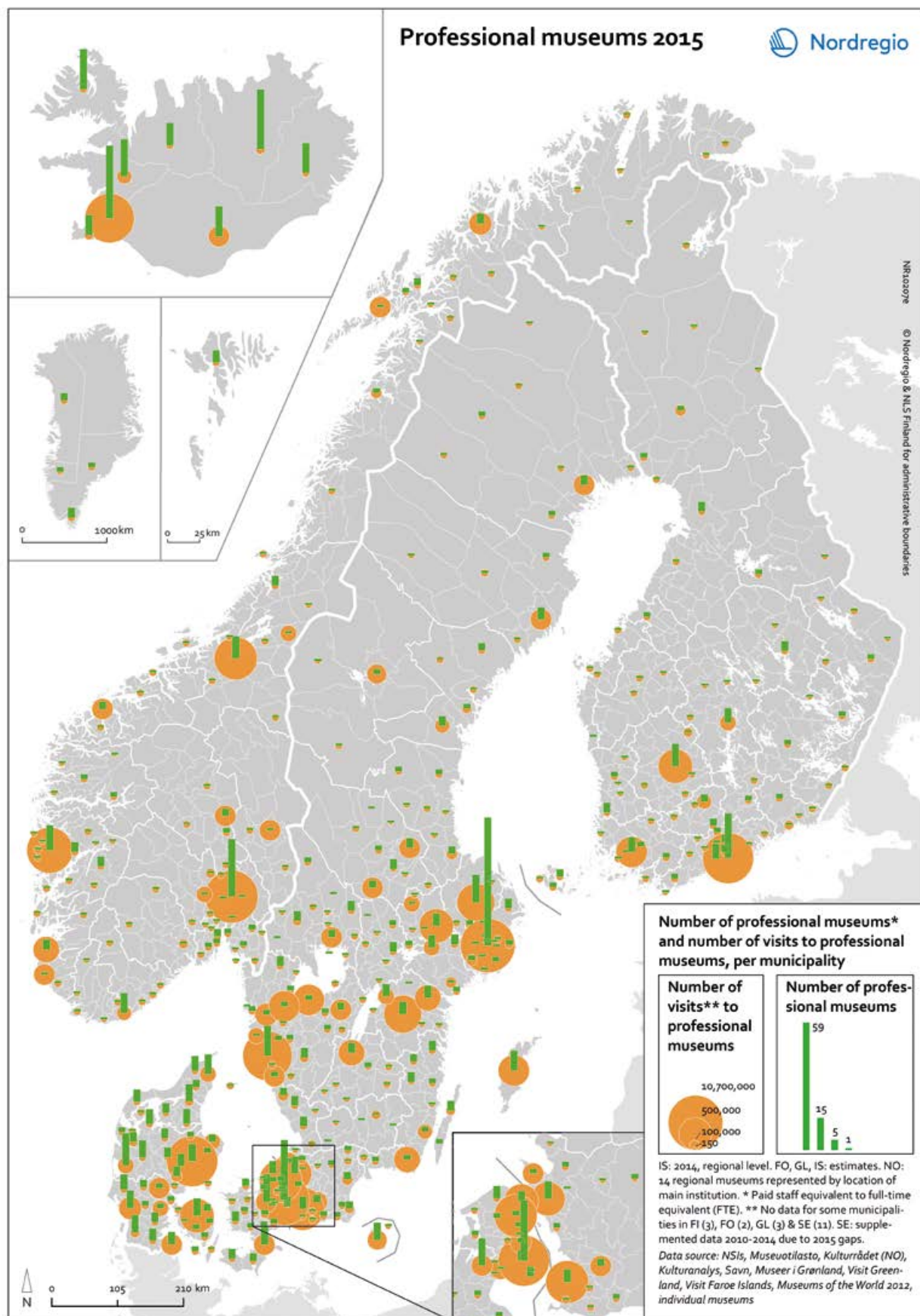


Figure 14.3 Professional museums 2015 (full-time equivalent (FTE)).

Currently, the European Group on Museum Statistics (EGMUS) are addressing museum-related statistics and possible harmonisations throughout Europe, when it comes to the definition of museums but perhaps even more importantly – the definition of visits to museums. There is an ongoing discussion on how to measure museum visits, relating to opinions about the role of museums in society. We have seen an increasing debate recently emphasising the notion that museums are public spaces that should be open and accessible, not only to visit the actual exhibitions, but also to visit the museum facilities – as cultural arenas. This echoes the discussion about the role of libraries. At the same time, the notion that museums should, first and foremost, display exhibitions and be visited for this reason was also expressed. Given this ongoing debate over the nature of museums, two different measurements in respect of counting “visits” have been advocated. Currently, visits are often measured either as facility visits – visits to the museum’s out- and indoors environments, including exhibitions, the restaurant, shop, toilet and entrance, and “exhibition visits” – visits to the actual exhibitions that cost money or would cost money if the museum had an entrance fee.

Moreover, it is vital to develop a common measurement for the digitalisation of museum collections. In recent years, museums have put considerable effort into deciding how to digitalise and exhibit their collections via digital means. Thus, there is a need to develop information about how the digitalisation of museum collections contributes to making them more accessible to visitors.

Concluding remarks: Challenges to overcome for increased comparability

As noted above, this chapter is a first attempt to display comparable data in three cultural sectors in the Nordic Region. The overview produced demonstrates the need to develop new common and relevant measurements that can contribute to our knowledge on equal opportunities in respect of cultural participation regardless of where one lives and the need to make existing data both more readily available and more comparable.

New indicators – for accessibility to cultural activities

The three cultural areas addressed in this chapter are all undergoing significant change in terms of their traditional roles in society. In other words, the role of cinemas, libraries and museums are to some extent shifting in terms of what type of services they offer. Cinema theatres are starting to show concerts, theatre plays and opera performances in addition to cinema films. Libraries are no longer “only” lending books but are important as public spaces, while museums increasingly offer new arenas, not only in terms of the actual exhibition rooms. Museum exhibitions are also, more often, being displayed in digital forums thus changing our understanding of what a ‘museum visit’ can mean. As such, this requires that new indicators which better take these shifts into account need to be developed.

Availability and comparability

As this chapter has shown, cultural statistics covering the Nordic Region are, to some extent at least, both already available and comparable. Nevertheless, gaps remain and various areas thus need to be developed further and improved. For example, the collection of cultural data is useful and relevant not only at the national level but also at the regional and municipal level, as this opens issues for discussion relating to accessibility to cultural activities in rural and urban areas in the Nordic Region. From a regional development perspective, this information is crucial as it provides us with an indication of whether significant polarisation exists in and between regions and suggesting that place of residence may have consequences for cultural participation. In other words, it is essential to contribute further to this data collection task to gather, analyse and utilise data on the regional and preferably also on the municipal level, in order to make it possible to identify similarities and differences between regions across the Nordic Region.

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