



NORCE Norwegian Research Centre AS
www.norceresearch.no

Socio-economic analysis

Interreg Aurora

Final Report

Jan 29, 2021

Jukka Teräs, Sindre Myhr, Vigdis Nygaard

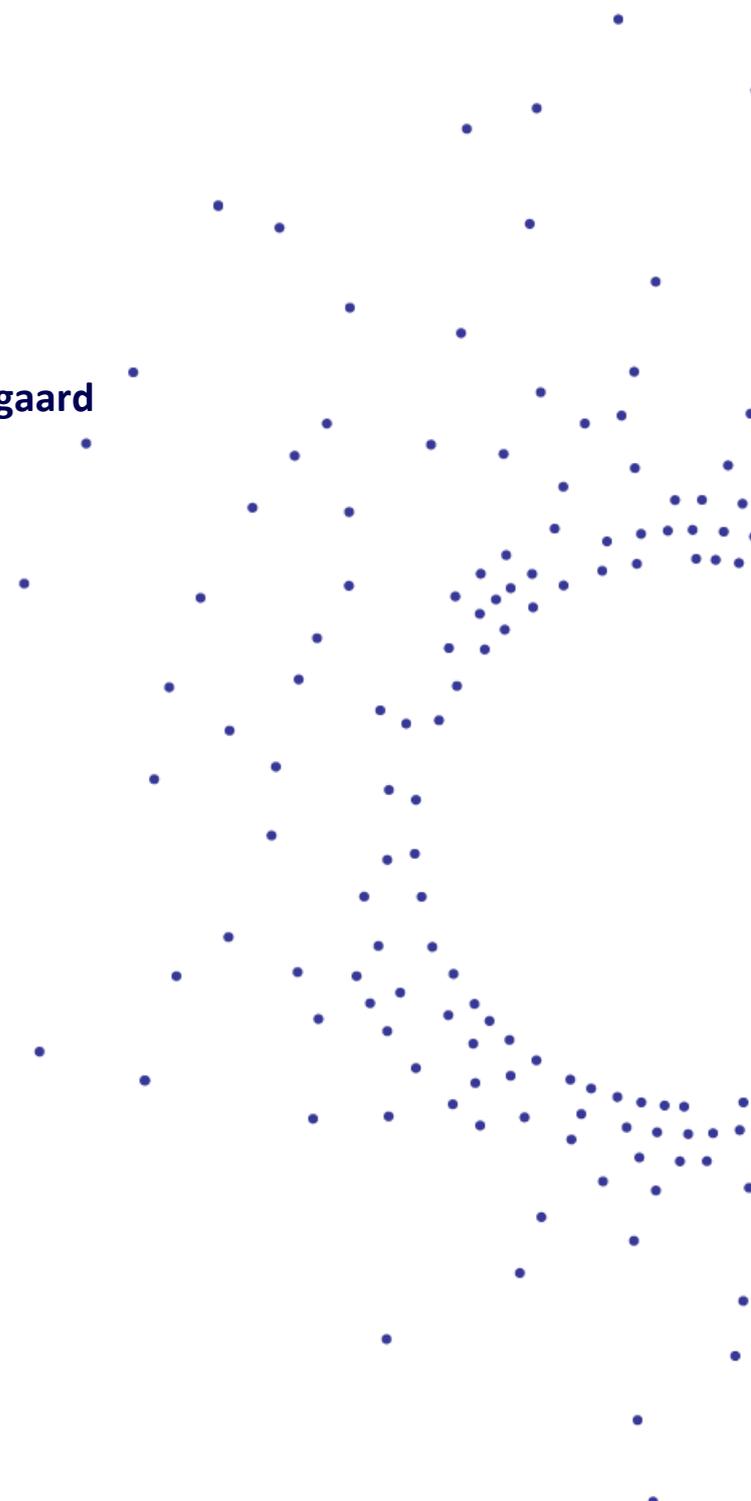


Table of contents

Foreword.....	2
Executive Summary.....	3
1 Background.....	4
2 Regional facts	5
3 Demography.....	7
4 Labour market and industry structure	14
5 Health & Healthcare	24
6 Smart & green	29
7 Infrastructure and connectivity	34
8 Culture and cultural heritage.....	38
9 Functional area.....	40
10 Smart specialisation.....	41
11 Interreg Aurora in a Nordic context.....	45
Conclusions / SWOT analysis	46
References	48

Foreword

The Finnish Ministry of Economic Affairs and Employment, the Swedish Ministry of Enterprise and Innovation and the Norwegian Ministry of Local Government and Modernisation have jointly decided to draw up a cross-border co-operation programme under the European Territorial Co-operation goal called the Interreg Aurora 2021-2027. The Interreg Nord Programme and the Interreg Botnia-Atlantica Programme have been implemented in the periods 2007-2013 and 2014-2020, and they comprise regions from Finland, Norway and Sweden. The starting point of the Interreg Aurora Programme 2021-2027 will be the geographical area of the two 2014-2020 programmes. The programme area also covers the Sápmi areas in Norway, Finland and Sweden.

NORCE has been assigned by the co-operation programme group to prepare a comprehensive socio-economic overview of the regions including the Sapmi. The purpose is to highlight areas that have a great need for follow-up through, among other things, cross-border cooperation.

The final reporting of the work includes *Part A* (this document) and *Part B* (Appendix including Figures and Tables & additional statistics).

Executive Summary

Interreg Aurora 2021-2027 is a cross-border co-operation programme with a combined geographical area of the two Interreg 2014-2020 programmes Interreg Nord and Interreg Botnia-Atlantica. The Interreg Aurora programme area also covers the Sápmi areas in Norway, Finland, and Sweden. This document includes socio-economic analysis of the new Interreg Aurora programme area including themes of regional development selected by the reference group appointed for the analysis.

The key findings of the analysis include:

- Interreg Aurora programme area is a highly interesting combination of the major strongholds of the previous Interreg Nord 2014-2020, including abundance of natural resources and high level of knowledge especially related to Arctic conditions, and the previous Botnia-Atlantica 2014-2020, including coastal regions of the Gulf of Bothnia with higher population density, economic structure partly different from the Interreg Nord, and specific characteristics
- Major challenges of the Interreg Aurora programme area include infrastructure and connectivity, unlocking the full potential of the natural resources as well as human capital, and attracting competent labour force. The challenges differ, however, considerably within the programme area regarding e.g. demography and long distances. The rich variety of geography, economy, and culture in the programme area opens up possibilities for joint transregional learning and new cross-border initiatives
- Climate change, green transition, and sustainable use of natural resources are high in the agenda of the Interreg Aurora 2021-2027, also including new international initiatives such as the EU Green Deal, with significant effect on the programme area
- The unexpected COVID-19 pandemics in 2020 has changed the economic and social landscape in the programme area with dramatic changes in the outlook of e.g. tourism. Recovery from COVID-19 in the programme area, as well as building up resilience for potential future shocks, needs to be given extra attention.

The major themes of the EU policy for 2021-2027 of a smarter Europe, a greener and low-carbon Europe, a more connected Europe, a more social Europe, and a Europe closer to citizens fit into the regional development of Interreg Aurora in an excellent way. The cross-border nature of the Interreg Aurora in 2021-2027 plays an essential role especially in promoting and strengthening the interregional and transnational cooperation.

1. Background

Interreg is one of the key instruments of the European Union (EU) supporting cooperation across borders through project funding. The fifth period of Interreg, called Interreg V, took place in 2014-2020. In May 2018, the European Commission presented its financial and legislative proposals for Cohesion Policy during the 2021-2027 period. According to the proposals, cross-border co-operation under the European Territorial Co-operation (Interreg) Objective will continue in 2021-2027. The Interreg Nord Programme and the Interreg Botnia-Atlantica Programme comprise regions from Finland, Norway, and Sweden. Both programme areas have gained experience on Interreg cooperation, with the latest Programmes implemented in the period 2014-2020. The starting point of programming the new Interreg Aurora Programme 2021-2027 will be the geographical area of the two 2014-2020 programmes. The programme area also covers the Sápmi areas in Norway, Finland, and Sweden.

The requirements specification for the socio-economic analysis defined the content and scope of the socio-economic analysis. The assignment is an extension of the socio-economic analysis based on the work that Norwegian research center NORCE has prepared in September-October 2020 done for the regions Nordland & Troms og Finnmark and Sápmi in Norway. The analysis will therefore also include relevant regions and the Sami areas in the programme area in Finland and Sweden. In the socio-economic analysis, the Sápmi community is integrated in each thematic area - this means there will be no specific chapter about Sápmi community.

The joint knowledge base is prepared having in mind the five EU policy themes for 2021-2027: a smarter Europe, a greener and low-carbon Europe, a more connected Europe, a more social Europe, and a Europe closer to citizens (fostering the development of urban, rural and coastal areas and local initiatives).

This report has been prepared by NORCE. The preparation work has been steered by the Interreg Aurora Programme reference group. The research plan for socio-economic analysis has been introduced NORCE to the Joint Programming Committee on November 3, 2020, followed by Status Report presentation on December 11, 2020. COVID-19 pandemics causes significant changes in the business and social environment and expectations of future activities. The analysis presented in this report is based on statistics until the end of 2019. The consequences of the COVID-19 pandemics in the programme area have been considered under qualitative analysis where relevant in this report.

2. Regional facts

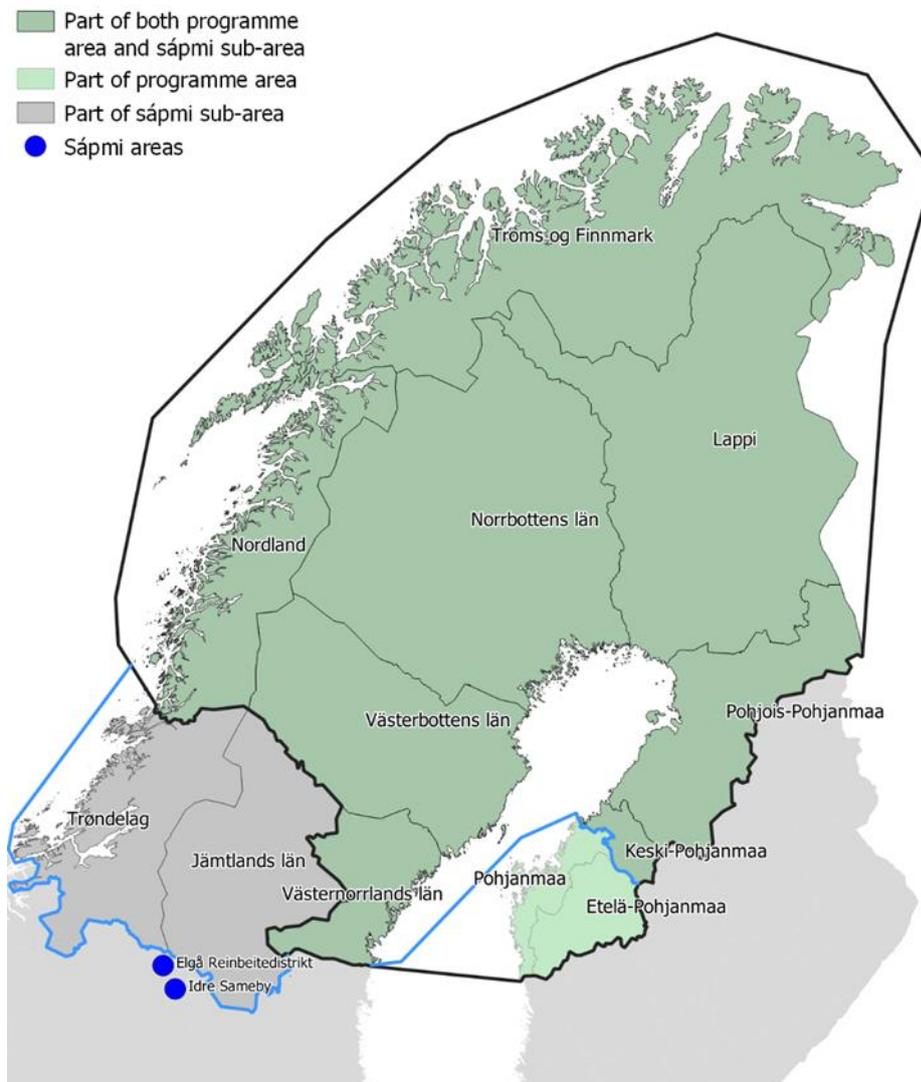


Figure 1: Overview of programme area and the sápmi sub area covered by the new Sweden-Finland-Norway (SV-FI-NO) Programme 2021-2027 (NORCE, Eurostat).

The starting point of the Interreg Aurora programming has been the geographical area of the two 2014-2020 programmes of Interreg Nord and Botnia-Atlantica. The programme area also covers the Sápmi areas in Norway, Finland, and Sweden (see Figure 1). The following NUTS III regions are covered by the programme (Mandate letter 2020):

FINLAND: Lapland, North Ostrobothnia, Central Ostrobothnia, Ostrobothnia, South Ostrobothnia

SWEDEN: Norrbotten, Västerbotten, Västernorrland

NORWAY: Nordland, Troms og Finnmark

SÁPMI SUB AREAS: Sápmi Sub areas covers the whole of Norrbotten, Västerbotten, Västernorrland and Jämtland, as well as Idre Sameby in Dalarna. Lappland, North Ostrobothnia and Central Ostrobothnia in Finland. For Norway, the Sápmi sub area covers Troms og Finnmark, Nordland and Trøndelag as well as parts of Innlandet (Elgå Reinbeitedistrikt).

Table 1 presents in a nutshell the geographical area, population, and key industries of the Interreg Aurora regions. The Interreg Aurora programme area is a mixture of sparsely populated areas in the north part of the programme area with large distances, and higher population density areas in southern programme area. Sustainable utilization of natural resources available in the region provides a base for many industries in the programme region. Advanced knowledge of specific technologies as well as service industries and subcontracting related to the key industries provide jobs for a significant part of people living in the Programme area.

Table 1: Interreg Aurora regions in a nutshell: Geographical area, population, and key industries.

Region	Land area (km ²)	Population (end of 2019)	Population density (population per km ²)	Key industries
Troms og Finnmark	70 930	243 311	3,4	Fishery, oil & gas, energy, tourism
Nordland	35 760	241 235	6,7	Fishery, energy /hydropower, process industry, oil& gas, tourism
Norrbotten	97 242	250 093	2.6	Mining, process industry, forestry, and hydro power
Västerbotten	54 664	271 736	5.0	Process industry, forestry, energy & cleantech, life science, ICT, service industries
Västernorrland	21 548	245 347	11.4	Forestry, ICT
Lappland	92 676	177 161	1.9	Process industry (Sea Lapland), Mining, Tourism
North Ostrobothnia	36 816	412 830	11.2	Information & Communication technology, forest industry, metal industry, health & wellness
Central Ostrobothnia	5 020	68 158	13.7	Chemical, bioeconomy, mineral industries, International trade
Ostrobothnia	7 754	180 445	23.3	Energy sector, automation
South Ostrobothnia	13 444	188 685	14.2	Agriculture, forestry, food processing, metal industry, SME & entrepreneurship
Programme area	435 854	2 279 001	5,2	

3. Demography

Table 2: Demographic characteristics of Interreg Aurora.

Region	Population (end of 2019)	5-year population change	Population by degree of urbanization, municipalities. ¹	People living in settlements (2019) (NO: Tettsted; SE: Tätort; FI: Taajama) ²	Demographic vulnerability index ³ (10=most vulnerable)
Troms og Finnmark	243 311	1,8% ⁴	Urban: 76 974 Intermediate: 45 492 Rural: 120 845	179 346 (74%)	6
Nordland	241 235	-0,2% ⁴	Urban: 0 Intermediate: 109 005 Rural: 132 230	172 457 (71%)	8
Norrbotten	250 093	0,0%	Urban: 0 Intermediate: 198 547 Rural: 51 546	207 259 (83%)	10
Västerbotten	271 736	3,6%	Urban: 128 901 Intermediate: 84 834 Rural: 58 001	215 187 (79%)	5
Västernorrland	245 347	0,9%	Urban: 0 Intermediate: 142 611 Rural: 102 736	195 445 (80%)	8
Lapland	177 161	-2,5%	Urban: 0 Intermediate: 105 351 Rural: 71 810	136 310 (78%)	9
North Ostrobothnia	412 830	1,1%	Urban: 205 489 Intermediate: 73 423 Rural: 133 918	344 200 (84%)	6
Central Ostrobothnia	68 158	-1,0%	Urban: 0 Intermediate: 47 681 Rural: 20 477	53 732 (79%)	7
Ostrobothnia	180 445	-0,4%	Urban: 0 Intermediate: 86 844 Rural: 93 601	150 990 (84%)	9
South Ostrobothnia	188 685	-2,4%	Urban: 0 Intermediate: 78 059 Rural: 110 626	138 060 (74%)	8
Programme area	2 279 001	0,4%	Urban: 411 364 Intermediate: 971 847 Rural: 895 790	1 792 986 (79%)	9

¹ Based on the Eurostat definition DEGURBA

² Norway has a slightly different definition of these areas than Sweden and Finland: all three countries defines it as a cluster of at least 200 inhabitants. However, in Norway, the main rule is that there should not be more than 50 meters between houses (could be increased to 200m if the space between is occupied by large office buildings etc.), while for Sweden and Finland it is a maximum of 200 meters.

³ Based on 10 indicators in Nordregio Working Paper 2019:1 (age balance, gender balance, birth rates, death rates and international migration balance). See also map in this chapter.

⁴ Note that Tjeldsund municipality was moved from Nordland to Troms & Finnmark county in 2020 (and merged with Skånland). If using the *current* municipality structure, the 5-year change would have been a 0,3% increase in Nordland and a 1,2% increase in Troms & Finnmark.

Population and migration

NORWAY: The well-known patterns of an aging population and centralization are central features of northern Norwegian demography. Some of the regional centers have a history of increasing population, but this is fueled by migration from the less urban parts of northern Norway and from abroad. Domestic migration streams, also from the regional centers, and especially young women, goes south, mainly to the capital area.

Immigration, which has been a staple of the northern Norwegian population increase since 2008, has sharply decreased over the last years. Net immigration in 2019 was 1907, down 65% from the peak in 2012. Together, a failing birth surplus and the downswing in immigration lead to the first year of decreasing population in northern Norway since 2007, and the largest decrease since 1997, of 1 905 people. Only 13 of 80 municipalities⁵ had an increase in population, mainly Bodø, Tromsø and Alta. These towns have a strong public sector and university campuses which contributes to attracting young people and competent labor.

SWEDEN: There has been a population increase in the programme area the last five years, with a divide between urban and rural, where the most rural municipalities have had a decrease in population. The places experiencing an increase in population are mostly the larger towns along the east coast, while the inland rural municipalities have negative migration streams and a negative birth surplus.

The Swedish regions have had large positive immigration streams from abroad, contributing to the population increase, but just like in Norway they have dwindled the last couple of years.

FINLAND: Most of the Finnish regions have had a population decrease the last five years, with the exception of North Ostrobothnia, which has Oulu as an urban hub. The most rural municipalities have by far the largest population decreases, especially among young age groups.

The Finnish regions have seen stable net immigration recent years, but it has been and still is at a lower level than Norway and Sweden.

SAPMI: The population dynamics of Sámi municipalities follow the same pattern as other rural municipalities in the north; more people are moving to the urban areas, particularly the young ones.

⁵ Municipalities as of 2020.

Projections

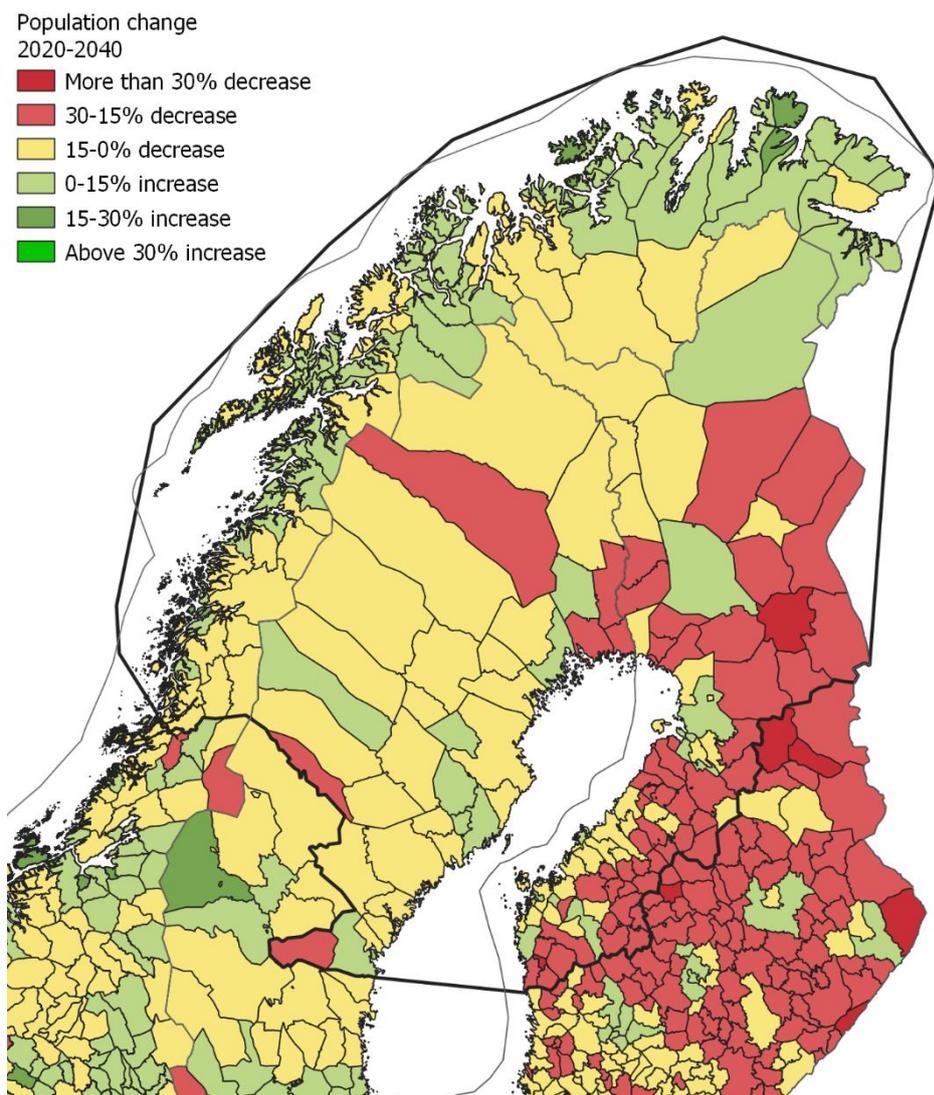


Figure 2: Population projections for municipalities, change from 2020-2040. Sources: Statistics Norway, Statistics Sweden, Statistics Finland.

Figure 2 illustrates population projections for municipalities for 2020-2040. It should be noted that the different countries run different models and have different assumptions when preparing population projections. When breaking down the numbers on municipalities, there is a lot of uncertainty, especially about migration. There have been some discussions among Norwegian regional authorities about the newest projections, and that they might be too optimistic for many of the rural municipalities.

Most of the municipalities (70%) in the programme area are projected to have a population decrease over the next 20 years. In Finland, 90% of the municipalities in the region are

expected to become less populous, while the same is true for 75% in Sweden and 45% in Norway.

In total, the programme area population is expected to decrease by 2%, with a large divide between urban and rural municipalities (and coastal/inland municipalities). The most urban municipalities (Tromsø, Umeå and Oulu) are projected for a 10% population increase, while population in the most rural municipalities in total are expected to decrease by 9% -- most decrease in Finland, least in Norway.

Ageing

Table 3: Age structure of the programme area.

	Median age	Average age	People 20-64	People above 65+ by people 20-64	People below 18 by people 20-64
Nordland	42	42,5	57 %	36 %	38 %
Troms&Finnmark	39	41,2	59 %	31 %	37 %
Norway, programme area	40	41,8	58 %	34 %	37 %
Västernorrland	43	43,8	53 %	45 %	41 %
Västerbotten	39	41,7	57 %	37 %	39 %
Norrbottnen	44	44,0	55 %	44 %	37 %
Sweden, programme area	42	43,1	55 %	42 %	39 %
South Ostrobothnia	44	44,4	52 %	49 %	42 %
Ostrobothnia	41	42,8	54 %	43 %	41 %
Central Ostrobothnia	41	42,5	52 %	45 %	47 %
North Ostrobothnia	38	40,6	55 %	36 %	46 %
Lapland	46	45,2	55 %	46 %	36 %
Finland, programme area	41	42,6	54 %	42 %	43 %
Programme area	41	42,6	55 %	40 %	40 %
Programme area, urban	35	38,8	61 %	26 %	38 %
Programme area, intermediate	41	42,4	56 %	39 %	40 %
Programme area, rural	45	44,6	52 %	49 %	42 %
Norway	38	40,5	59 %	30 %	39 %
Sweden	39	41,3	57 %	35 %	40 %
Finland	42	43,2	57 %	39 %	37 %

NORWAY: The global threat of an ageing population and a greater burden for the remaining labour force is also present in Northern Norway. The share of people in the labour force in the region is expected to decrease in the coming decades. The ageing pattern is present across the whole region, and all levels of centrality. The population in northern Norway is older than the national average, with a larger fraction of people aged 50+, who has left or will leave the work force in the next 20 years. In a 30-year perspective, just over half the

population in northern Norway will be in the age group 20-64, supporting a growing elderly population. The average age in northern Norway has increased from 40 to 42 years over the last 10 years, and in 2020, 58 % of the population was between 20-64 years, expected to increase to 52 % in 2050.

FINLAND: The ageing situation in the Finnish regions resembles Northern Norway, but more advanced. A larger proportion of people is already past working age, but ageing is expected to continue at a slower pace than in Norway and end up on the same level in 2040. The eldest population inhabits the rural municipalities, while the urban population is about 6 years younger on average. 54% of the population is between 20-64 years, only 50% in rural municipalities.

SWEDEN: As in the other countries, average age and proportion in working age is expected to decrease in the next decades. The ageing situation is more advanced than in Norway, similar to Finland, but is also here expected to increase at a slower pace, and in 2040 is expected to have the same proportion in working age as Norway and Finland. However, in Sweden this is to a larger degree due to larger proportion of children, and less due to people over 65 years. 55% of people on the Swedish regions are between 20-64 years, 50% in rural municipalities.

Gender

NORWAY: The trend with especially young women moving out of the region has over time lead to a surplus of men compared to women. While Norway has over 98 women for each 100 men on average in 2020, Northern Norway has 96,5. The discrepancies are particularly prevalent with women in the age group 25-35. In this group there are only 91 women per 100 men in Northern Norway, and 89 women per 100 men in former Finnmark county. For the age group 35-44, Nordland and former Troms county lies near the national average of 94 women per 100 men, while former Finnmark county has a distinct lack of women at 87 women per 100 men.

SWEDEN: The number of women per men in both Sweden and the regions in the programme area has decreased somewhat in the last decades, and currently there are 97 women per 100 men in the programme area compared to 99 in Sweden as a whole. As in Northern Norway, the deficiency of women is most pronounced for people in their twenties and thirties, with only 88 women per 100 men in the age group 25-34 in the programme area. Norrbotten county has the largest deficiency among young women. In the other end of the age spectrum, there is a large surplus of women, starting with people ages 65 and up.

FINLAND: The change in gender pattern over time in Finland is very similar to that in Sweden, but with a slightly higher share of women. There are 103 women per 100 men in

Finland, and 99 in the Finnish programme area regions. As in the other countries, however, there is a deficiency among women in their twenties and thirties, with 91 women per 100 men in the region aged 25-34. For ages 55 and up, there is a surplus of women.

SÁPMI: Lack of statistical data on the Sámi population limits the possibility to analyze gender specific topics. There are reasons to believe that the Sámi people follow the same pattern as the majority population in rural areas; particularly young women leave for urban areas contributing to a female deficit in the traditional Sámi areas.

Demographic vulnerability

An index on demographic vulnerability has been compiled by Nordregio (see Figure 3). The index has 10 indicators, including birth and death rates, age structure and gender balance.⁶ The programme area as a whole is vulnerable in 9 of these 10 indicators (all excluding gender balance for ages 15-64). The largest differences inside the region we find between rural and urban municipalities: The sum of the 3 most urban municipalities⁷ (according to DEGURBA) are only vulnerable in gender balance (all ages), while the 174 most rural municipalities as a total have all vulnerabilities. The sum of the 30 intermediate municipalities has 8 of 10 vulnerabilities (all except gender balance for ages 15-64 and net migration). For a classification of each municipality, see the map below. A table of vulnerabilities for different regions is also included in the Appendix (Part B).

⁶ The 10 indicators are: More men than women, <17,3% of age 0-14, <12% of age 15-24, <39,1% of age 25-54, >12% of age 55-64, >19,5% of age 65+, Less than 93 women per man of age 15-64, Birth rate less than 10,6, Death rate above 8,9, Negative net migration.

⁷ This category only covers Tromsø, Umeå and Oulu for the programme area.

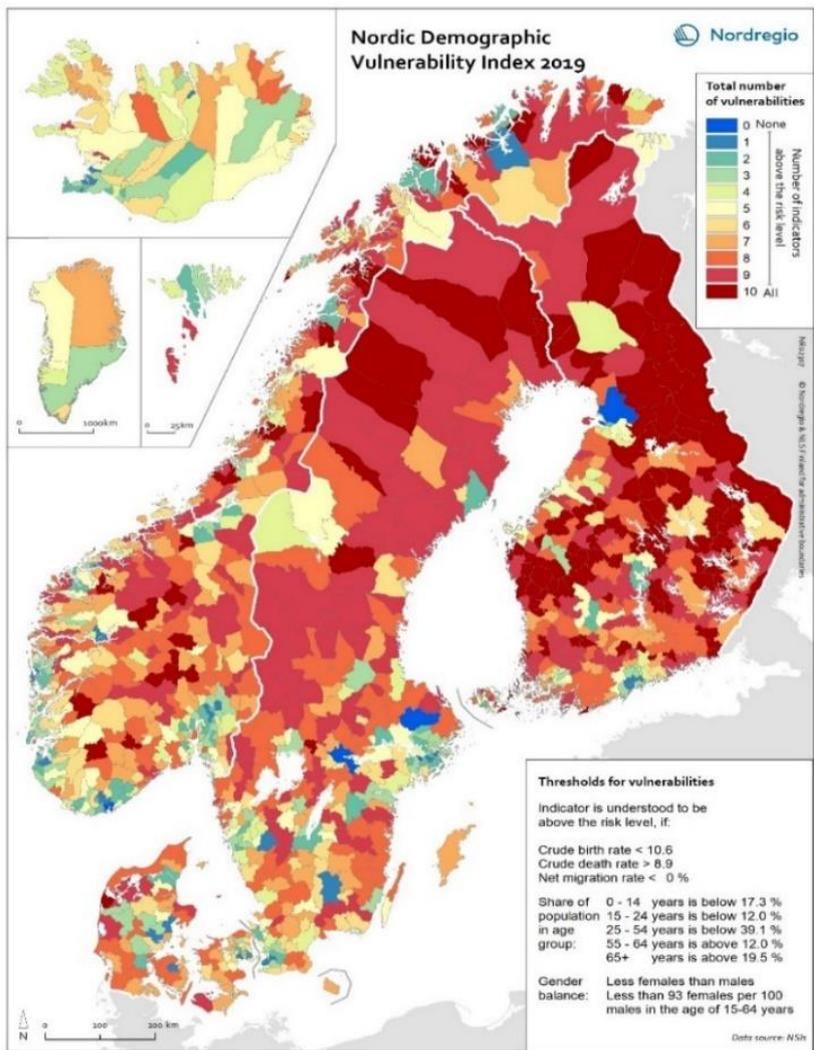


Figure 3: Demographic Vulnerability Index of municipalities in 2019. Source: Nordregio.

Summary: Demography

- ***The Programme area is likely to experience an overall population decrease – but with some (mainly) coastal areas with a forecast of growth***
- ***The population is ageing, and this trend is expected to continue, causing a smaller proportion to be of working age over time, especially in rural regions.***
- ***The demographic development in the Sámi area follows the same pattern as other rural areas in the north.***

4. Labour market and industry structure

The regions in the Interreg Aurora programme area have some structural differences from the rest of their respective countries. The biggest differences include relative employment in private services in transport, hotels and restaurants, trade and business services (32%) being lower in the programme area than in the countries, while higher in health services (21%). There is also higher relatively higher employment in primary (4%) and secondary (22%) industries.

The largest differences between the countries within the programme area include Finland having higher (25%), and Norway lower (18%), employment in secondary industries, while Norway has relatively more personnel in the health sector (25%). Not surprisingly, primary and secondary industries are placed predominantly in the rural regions, while the urban regions are hallmarked by more services. In Norway and Sweden, education is more centered around urban centers than in Finland.

The regional statistical overview of the employment by sector is presented in Table 4.

SÁPMI: The Sámi area has a low percentage of private businesses. Public sector is important for employment, particularly in municipalities with Sámi institutions. Traditional Sámi industries like reindeer herding are important for employment in some core Sámi municipalities, and lay the foundation for securing Sámi culture and language.

Table 4: Employment by industry and sector for different regions (2019). Sources: Statistics Norway, Statistics Sweden and Statistics Finland (For more detailed statistics see Appendix/Part B).

	Primary industries	Industry, construction, energy	Trade, transport, hotels, business services	Public administration etc.	Education	Health sector	Other personal services	Total employment
Nordland	5 %	20 %	31 %	8 %	9 %	24 %	3 %	116690
Troms og Finnmark	4 %	16 %	31 %	9 %	11 %	25 %	3 %	124463
Norway, programme area	5 %	18 %	31 %	9 %	10 %	25 %	3 %	241153
Västernorrland	4 %	20 %	34 %	7 %	11 %	19 %	5 %	117080
Västerbotten	4 %	20 %	31 %	5 %	13 %	21 %	4 %	135590
Norrbotten	4 %	23 %	32 %	8 %	10 %	18 %	4 %	123930
Sweden, programme area	4 %	21 %	32 %	7 %	11 %	19 %	4 %	376600
South Ostrobothnia	8 %	26 %	30 %	4 %	6 %	20 %	5 %	76696
Ostrobothnia	5 %	30 %	30 %	4 %	7 %	18 %	4 %	80025
Central Ostrobothnia	7 %	23 %	33 %	3 %	8 %	22 %	4 %	28532
North Ostrobothnia	4 %	23 %	35 %	4 %	8 %	19 %	5 %	165128
Lapland	4 %	20 %	35 %	7 %	7 %	20 %	6 %	71385
Finland, programme area	5 %	25 %	33 %	4 %	7 %	19 %	5 %	421766
Programme area	4 %	22 %	32 %	6 %	9 %	21 %	4 %	1039519
Programme area, urban	1 %	17 %	38 %	5 %	11 %	22 %	5 %	205742
Programme area, intermediate	2 %	23 %	34 %	7 %	9 %	20 %	4 %	472758
Programme area, rural	9 %	24 %	27 %	6 %	9 %	21 %	4 %	361019
Norway	2 %	19 %	38 %	6 %	8 %	21 %	4 %	2692494
Sweden	2 %	19 %	40 %	6 %	11 %	16 %	5 %	5054893
Finland	3 %	21 %	41 %	5 %	7 %	17 %	5 %	2373668

Labour market status

The work force participation in the programme area is somewhat lower than in the respective countries. This is partly due to a larger population in the upper end of the age spectrum included in the labor force survey, which to a low degree participates in the labor force. When adjusting for different age structures, the regions in the programme area have good participation in the labour market.

In Norway and Sweden, a slightly larger fraction of men than women are employed, generally differing with a few percentage points, while in Finland, the opposite is true: In Finland part of the programme area, 73% of women aged 18-64 are employed, and 71% of

men. Men have a higher unemployment rate in Finland, though, making up for the difference.

Value added - Gross Regional Domestic Product (GRDP)

The industry structure often reflects the economic contribution and growth in a region. GRDP per employed is an indicator that measures the average contribution of value added from human capital. The regions in the programme area (see Table 5) lag on average behind compared to other regions in their respective countries when it comes to productivity, but some cities and clusters are caught up with the overall national level. Notably, Norrbotten has a higher regional product per capita and employed than the national average, with Gällivare and Kiruna (which has a large mining industry) and Jokkmokk contributing to the high production. In Finland, the two northernmost sub-regions, Tunturi-Lappi and Pohjois-Lappi also contribute to a higher GRP with their mining industry and tourism. In Norway, Nordland, which has a larger industry sector than the rest of northern Norway, lies closer to the national average for GRP per employed but has a larger population outside the workforce and thus a lower GRP per capita.

Table 5: Gross regional product in regions (2018)⁸. National numbers are sum of regional products and does not include for example offshore production. Sources: Statistics Norway, Statistics Sweden and Statistics Finland.

	Gross regional product, mill. EUR	GRP per capita	GRP per employed
Nordland	11272	46 318	93 699
Troms	8119	48 660	88 057
Finnmark	3598	47 336	89 956
Norway, programme area	22989	47 281	91 046
Västernorrland	9980	40 650	85 784
Västerbotten	10807	40 163	82 762
Norrbotten	12071	48 156	98 164
Sweden, programme area	32858	42 937	88 806
South Ostrobothnia	6239	32 977	80 317
Ostrobothnia	7266	40 229	91 330
Central Ostrobothnia	2615	38 290	92 501
North Ostrobothnia	14363	34 820	86 117
Lapland	6935	38 994	96 840
Finland, programme area	37418	36 383	88 270
Programme area	93266	40 907	89 129
Norway	268828	50 608	96 506
Sweden	470673	46 304	92 330

⁸ Exchange rates used are average 2018 rates from ECB. 9,5975 from NOK to EUR and 10,2583 from SEK to EUR.

Finland	233664	42 365	98 440
NO+SE+FI	973165	46 358	94 878

Education, competence and supply of workforce

As illustrated in Table 6 and 7, the programme area lags the rest of the countries when it comes to people with higher education, with a few percentage points of their respective populations.

Table 6: Completed education (2019) for population 16+ (NO) and 15+ (FI). Sources: Statistics Norway and Statistics Finland.

	Primary school	(Upper) secondary/ vocational school	Higher education	Total
Nordland	30 % Female: 29 % Male: 31 %	43 % Female: 38 % Male: 47 %	27 % Female: 32 % Male: 22 %	199876
Troms&Finnmark	29 % Female: 27 % Male: 31 %	39 % Female: 34 % Male: 43 %	32 % Female: 38 % Male: 25 %	201372
Norway, programme area	30 % Female: 28 % Male: 31 %	41 % Female: 36 % Male: 45 %	30 % Female: 35 % Male: 24 %	401248
South Ostrobothnia	28 % Female: 27 % Male: 30 %	46 % Female: 42 % Male: 50 %	26 % Female: 31 % Male: 20 %	157493
Ostrobothnia	27 % Female: 26 % Male: 28 %	42 % Female: 37 % Male: 46 %	31 % Female: 36 % Male: 26 %	149527
Central Ostrobothnia	29 % Female: 27 % Male: 30 %	46 % Female: 42 % Male: 49 %	26 % Female: 31 % Male: 21 %	55337
North Ostrobothnia	24 % Female: 24 % Male: 25 %	45 % Female: 42 % Male: 49 %	30 % Female: 35 % Male: 26 %	333463
Lapland	26 % Female: 24 % Male: 27 %	47 % Female: 43 % Male: 51 %	27 % Female: 33 % Male: 22 %	150751
Finland, programme area	26 % Female: 25 % Male: 27 %	45 % Female: 41 % Male: 49 %	29 % Female: 34 % Male: 24 %	846571
Norway	25 % Female: 24 % Male: 26 %	40 % Female: 36 % Male: 43 %	35 % Female: 39 % Male: 30 %	4370991
Finland	26 % Female: 25 % Male: 27 %	42 % Female: 39 % Male: 45 %	32 % Female: 36 % Male: 28 %	4654256

The tables for Norway and Finland, and Sweden are separate as Sweden reports started education, while Norway and Finland reports completed education.

There is a large difference in the educational level between urban and intermediate municipalities, where institutions for higher education are located, and rural municipalities. The proportion of people with a higher education (completed in NO/FI, started in SE) is 15-25% higher in the most urban municipalities than in the most rural, while a larger proportion of people in the rural municipalities has only completed primary education.

Table 7: Started education (2019) for population 16+. Source: Statistics Sweden.

	Primary school	(Upper) secondary/vocational school	Higher education	Total
Västernorrland	21 % Female: 20 % Male: 23 %	49 % Female: 45 % Male: 52 %	30 % Female: 34 % Male: 25 %	201593
Västerbotten	17 % Female: 15 % Male: 18 %	46 % Female: 42 % Male: 50 %	37 % Female: 43 % Male: 32 %	223085
Norrbotten	18 % Female: 17 % Male: 19 %	52 % Female: 47 % Male: 56 %	30 % Female: 35 % Male: 25 %	208800
Sweden, programme area	19 % Female: 18 % Male: 20 %	49 % Female: 45 % Male: 53 %	33 % Female: 38 % Male: 28 %	633478
Sweden	20 % Female: 19 % Male: 21 %	43 % Female: 40 % Male: 46 %	37 % Female: 41 % Male: 33 %	8375824

One challenge for many young people is whether there will be access to relevant competence work in their home region when they have completed their education. And when a mismatch arises, maybe the newly graduated student prefers to resettle outside the programme area.

In SÁPMI, there is a lack of statistics on the educational level of the Sámi population. Sami children have rights to learn Sami language and taught in Sámi language at school, but these rights differ in the three countries and they differ within diverse municipalities in the same country according to the Sámi language status of the municipality. The possibilities to receive higher education taught in different Sámi language and adapted to the needs of the labour market are limited. The Sámi areas are in huge need of competence in the different Sámi languages and cultures, particularly in the public sector like health care and education.

Enterprises, gender, and R&D

Enterprises

Although there are some large and important companies in the programme area, the vast majority of enterprises (99%) are small, with less than 50 employees. A large fraction of the small companies, again, are personal enterprises with no employees at all. Almost all new enterprises have none or at most a few employees.

There were more new companies than closures in all counties in the programme area in 2019, but a direct comparison between the countries is difficult, as comparable data is hard to come by. According to Bolagsverket⁹, there were about 4000 new enterprises in the Sweden programme area in 2020 (3500 in 2019). Almost half were joint stock companies, 41% personal enterprises. In the Norwegian programme area, there were about 4700 openings in 2019 (excluding primary sector and public administration), of which 92% had no employees. 57% were personal enterprises, and 41% stock companies. In Finland, there were about 5300 new enterprises in the programme area.

Gender

There are still marked differences between gender in entrepreneurship, board memberships and leadership positions in companies. About 70% of entrepreneurs in the Swedish and Finnish parts of the programme area are men: although, the gender differences are much more marked in stock companies than in personal enterprises. In Northern Norway, 63% of new personal enterprises are being started by men, and 80% of CEOs and board members of stock companies are men.

R&D

Of almost 8000 R&D man years/full time equivalents (FTEs) in the private sector in the programme area, half are located in the Oulu region in North Ostrobothnia (see Table 8). Oulu, with one of the major universities in Finland, has spawned a significant increase in R&D even outside the university. It should be noted that Troms og Finnmark and Västerbotten, and also Nordland, have significant R&D personnel in the university sector.

The numbers on R&D expenditure should be treated with some care, as the split between private sector, public sector and university sector expenditures might differ between the countries in statistical data.

Additional statistics on R&D expenditure and R&D personnel in the programme area is available in the Appendix (Part B).

⁹ Statistics retrieved from <https://bolagsverket.se/be/sok/etjanster/statistik/statistik-1.3538>.

Table 8: R&D expenditures and R&D personnel in the private sector. Sources: National statistics authorities. 2018 for Norway, 2019 for Sweden and Finland.

	R&D expenditures (mill EUR)¹⁰	R&D personnel	R&D FTEs
South Ostrobothnia	30	325	239
Ostrobothnia	225	1 273	1 114
Central Ostrobothnia	13	106	83
North Ostrobothnia	534	4 866	3 915
Lapland	21	190	131
Västernorrland	55 (563 MSEK)	962	589
Västerbotten	71,5 (733 MSEK)	792	593
Norrbottn	103,5 (1062 MSEK)	622	447
Nordland	68 (653 MNOK)	950	425
Troms og Finnmark	64,5 (619 MNOK)	671	359

Table 9 provides an overview of major universities, universities of applied sciences, R&D centres and research institutes in the programme area. The table demonstrates the rich variety of R&D in the programme area.

¹⁰ Finnish and Norwegian numbers include a small amount of extramural R&D (R&D not performed by the companies themselves, but bought from external partners).

Table 9: Highlights of major universities, universities of applied sciences, and R&D centres in the respective regions of the Programme area.

Region	Major universities, research institutes and R&D centres
Troms og Finnmark	UiT The Arctic University of Norway, Sami University of Applied Science; Nofima, Norsk Polarinstitutt, NORCE, NIBIO, Havforskningsinstituttet, Akvaplan-Niva
Nordland	Nord University, The High North Center, Nordland Research Institute
Norrbottn	Luleå University of Technology RISE Interactive Institute Swedish ICT (Piteå), RISE SCIS North (Luleå), RISE Energy Technology Center (Piteå), RISE SICOMP AB (Piteå), RISE ICE Data center (Luleå) Swerea MEFOS (Luleå), Winternet (Boden), EISCAT (Kiruna) & Swedish Institute of Space Physics.
Västerbotten	Umeå University with several research centers at the University and the University Hospital. SLU Umeå (The Swedish University of Agricultural Sciences). Luleå University of Technology in Skellefteå. RISE Interactive in Umeå
Västernorrland	Mid Sweden University; RISE Processum
Lapland	University of Lapland, Lapland University of Applied Sciences; Regional units of Geological Survey of Finland (GTK), Natural Resources Institute Finland (LUKE), Sodankylä Geophysical Observatory (SGO) and Arctic Space Centre /FMI
North Ostrobothnia	University of Oulu, Oulu University of Applied Sciences; VTT Technical Research Centre of Finland Oulu unit
Central Ostrobothnia	Kokkola University Consortium Chydenius, Centria University of Applied Sciences
Ostrobothnia	University of Vaasa, Vaasa University of Applied Sciences Novia University of Applied Sciences, Åbo Akademi University Vaasa unit, Hanken School of Economics Vaasa unit, University of Helsinki Vaasa unit, Centria University of Applied Sciences
South Ostrobothnia	University Consortium of Seinäjoki, Seinäjoki University of Applied Sciences

Innovation scenery

Figure 4 illustrates the European comparison of innovation. *Innovation Leaders* includes 38 regions with performance more than 20% above the EU average. *Strong Innovators* includes 73 regions with performance between 90% and 120% of the EU average. *Moderate Innovators* includes 97 regions with performance between 50% and 90% of the EU average. *Modest Innovators* includes 30 regions with performance below 50% of the EU average. The figure reveals that the majority of the Interreg Aurora Programme area falls into “Strong Innovator” category, that is, below the Innovation Leader regions in Europe but above the average European innovation performance. North Norway is largely characterized by product and process innovation and incremental innovation, has the lowest R&D intensity in Norway (Regionale utviklingstrekk 2018). North Norway is, however, characterized as strong innovator by Regional Innovation Scoreboard, with increased innovation performance of 34,2 % in the period 2011-2019 (Regional Innovation Scoreboard 2019). In Finland, North and East Finland (including e.g. Lapland, North Ostrobothnia, Central Ostrobothnia) is characterized as Strong+ innovator whereas West Finland (Ostrobothnia, South Ostrobothnia) as Leader – innovator. In Sweden, Övre Norrland (Norrbotten, Västerbotten) is considered as Strong+ whereas Mellersta Norrland (incl. Västernorrland) as Moderate + innovator.

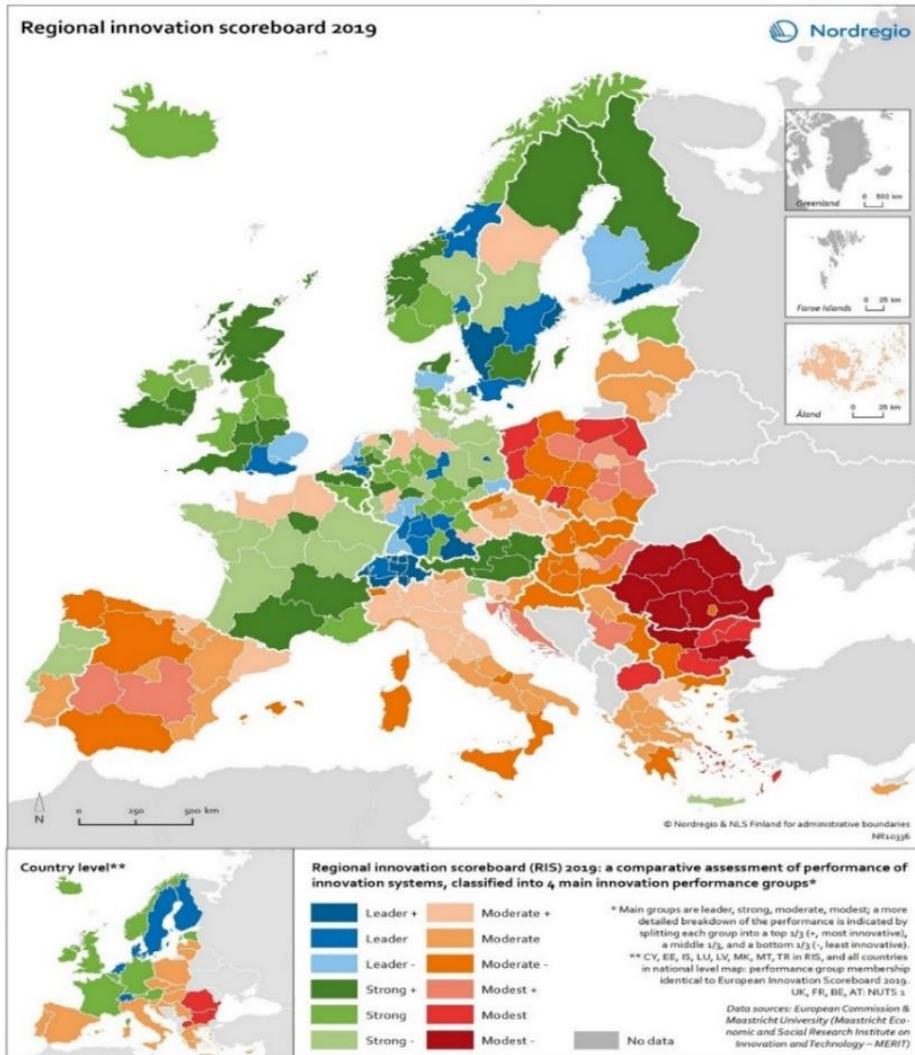


Figure 4: Regional Innovation Scoreboard 2019. Source: Nordregio.

Summary: Labour market and industry structure

- **Labour market participation in programme area is somewhat lower compared to the country average**
- **Unemployment rate in the programme area is on par with countries as a whole**
- **The Sámi Area is in need of a more diversified competence and business structure to provide jobs for the young Sámi population**
- **The programme area falls largely into Strong Innovator category in a European comparison. The R&D expenditure and share is lower than e.g. in the metropolitan regions of Finland, Sweden, and Norway**

5. Health & Healthcare

Social life

In this analysis, a selection of questions from the European social survey (ESS)¹¹ have been used to discuss differences in the social life and friendships of people of the programme area. We must be careful not to blindly interpret the results as different levels of loneliness, as it is not necessarily the same as being alone. The level of social life is a product of culture as well as individual characteristics.

How often do you meet socially with friends, relatives or work colleagues?

There are some marked differences between how often people meet between the three countries in the region. While only 13% of people in the Finnish region of the programme area say they meet friends, relatives or colleagues every day, the same is true for 37% and 32% for Norway and Sweden. The people of Finland more typically meet people between a couple of times a month and once a week.

In general, people from the programme area seem to be more social than the rest of their respective countries, according to European social survey.

Compared to other people of your age, how often would you say you take part in social activities?

Regarding this question, there are much less differences, at least in the average. This is probably because the respondents compare themselves to people in their own region, thus the average being near the middle. As with the previous question though, the people from Finland consider themselves to be somewhat less social compared to the two other countries.

How many people, if any, are there with whom you can discuss intimate and personal matters?

The vast majority of the respondents in the survey has at least one confidant. The country that stands out here is Sweden, with more confidants than the other two countries. The other thing to note that, even though people in Finland seems to be less social, they still have close friends on about the same level as Norway (see Table 10).

¹¹ Note that Jämtland is included in the results from ESS due to the data only being split by NUTS2 regions in Sweden. Note on weighting: Weights for individual regions were calculated by normalizing the design weight (pspwght) for the region analysed, to a mean of 1. Note on sample size: The total sample size of the programme area is 650: 327 in Finland, 142 in Norway and 181 in Sweden. For the countries the sample sizes are 1755 for Finland, 1406 in Norway and 1539 in Sweden.

Table 10: How many people, if any, are there with whom you can discuss intimate and personal matters? Source: European social survey.

	None	1	2	3	4-6	7-9	10 or more	Average (scale: 1-7)
Finland, programme area	2 %	10 %	15 %	30 %	33 %	5 %	5 %	4,2
Norway, programme area	2 %	16 %	15 %	24 %	27 %	4 %	11 %	4,2
Sweden, programme area	3 %	4 %	12 %	22 %	42 %	9 %	8 %	4,6
Programme area	2 %	10 %	15 %	27 %	34 %	6 %	7 %	4,3
Finland	2 %	11 %	16 %	31 %	31 %	6 %	4 %	4,1
Norway	3 %	10 %	15 %	22 %	32 %	8 %	8 %	4,3
Sweden	2 %	4 %	11 %	21 %	40 %	12 %	11 %	4,7

Lifestyle and health

Subjective health

Far more people from Finland than the two other countries seem to have some sort of health problem, deeming their health to be “Fair” rather than “Very good”. Only 5% of people in the programme area consider their health to be bad or very bad.

Everyday hindrances because of health

34% of people in the programme area says they are at least to some extent chronically hampered in their daily activities because of a health problem. There are mostly small variations between regions and countries, but for the programme area, people in Norway seems to be somewhat more hindered than people from the other two countries (see Table 11)

Table 11: Are you hampered in your daily activities in any way by any longstanding illness, or disability, infirmity or mental health problem? If yes, is that a lot or to some extent? Source: European social survey.

	Yes a lot	Yes to some extent	No	Average (Scale: 1-3)
Finland, programme area	7 %	27 %	65 %	2,6
Norway, programme area	8 %	30 %	63 %	2,5
Sweden, programme area ⁷	6 %	25 %	69 %	2,6
Programme area	7 %	27 %	66 %	2,6
Finland	8 %	27 %	65 %	2,6
Norway	6 %	23 %	71 %	2,6
Sweden	5 %	21 %	74 %	2,7

Mortality rate

There are some differences in mortality rate between the regions in the programme area – the Swedish regions having the highest mortality rate. Note that mortality rates are largely a product of age structure. The programme area has an older population than the rest of the countries, and there for relatively more mortalities.

The Sámi population

Indigenous people often experience poor health service and health status. This is not the case for the Sámi people. Different national studies indicate small differences in health status compared to the majority of population. Mortality and life expectancy are similar to the majority of population. Some studies indicate a lower level of cancer risk, but a higher level of musculoskeletal pain and overweight (Mienna & Axelsson, 2019).

Surveys in all three countries have documented that the Sámi population still experience discrimination based on ethnic and cultural values. This discrimination takes form of bullying on the individual level as well as on the group level where Sámi people are deprived rights stated in international and national law. Long term discrimination affects the health and psychological wellbeing of individual Sámi's and is visible in the form of higher rates of suicide compared with the majority population. The numbers are particularly higher in Finland and among men (Sanks and Sami Council, 2017).

Hospitals and health care centers

The three countries have a similar healthcare system, where the majority of healthcare is publicly financed, either directly by public healthcare or by buying private services. In all three countries, patients can freely choose hospitals and to a large degree also private treatment centers.

Northern Norway has four hospitals, spread over 11 different locations. In the Swedish part of the programme area, there are 8 hospitals, and 5 in the Finnish region. In addition, there are regional clinics and wards as well as private institutions. There are fewer hospitals in the programme area than the rest of the countries compared to the geographical extent, leading to long travel times from some areas as Figure 12 clearly illustrates.

There are large areas especially in northern Finland, inland Sweden and the Indre Finnmark (Kautokeino/Karasjok) region in Norway, where travel times to the nearest hospital (and other services) can be very long.

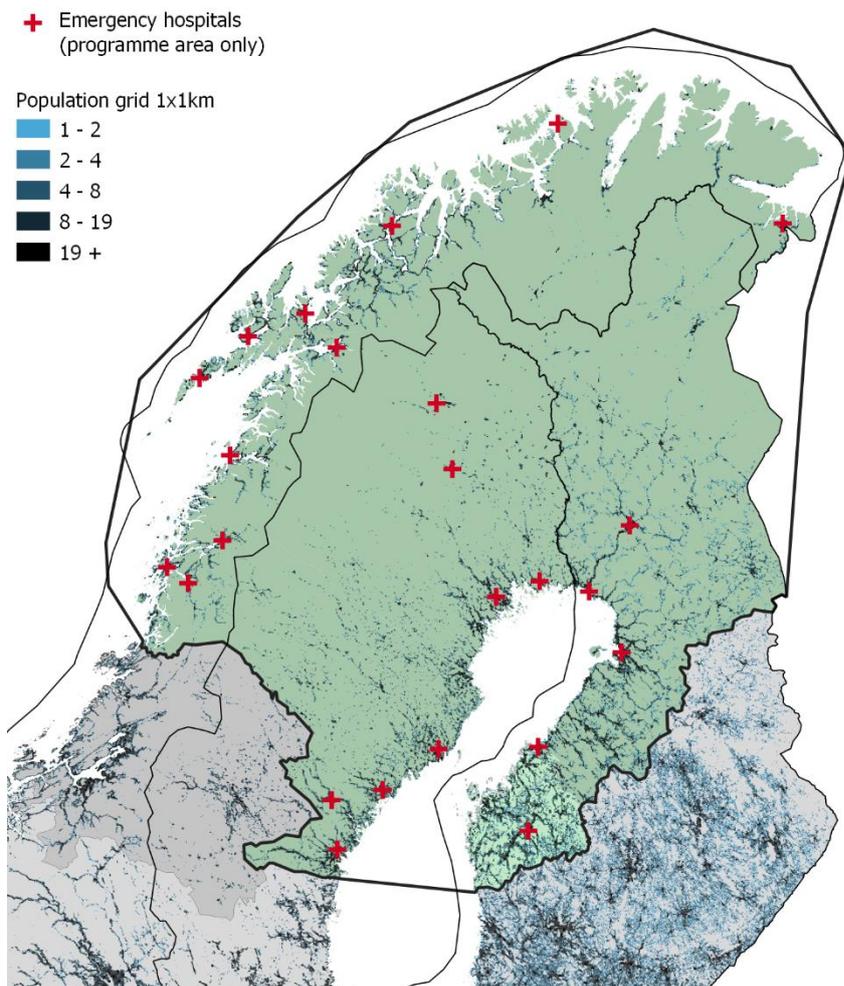


Figure 5: Emergency hospitals and population grid. Source: NORCE, national health authorities, national statistics authorities.

Cross border health service and cooperation

Finnmark hospital has signed an agreement with Region Jämtland-Härjedalen, Sweden and the Lapland region in Finland to receive Sami patients in need of consultations and treatment at the Sami National Centre for Mental Health (SANKS). The Sámi people in Finland and Sweden do not have a similar service, and they can be referred to SANKS by their general practitioner or hospital. SANKS has experienced an increase in the number of patients from the Swedish and Finnish part of Sapmi. The Northern Norway Regional Health Authority has signed an agreement with Finland and Russia about cross border cooperation

for ambulance services.¹² There is also a collaboration between Västerbotten and Ostrobothnia, where Norrlands universitetssjukhus receives stroke patients with ambulance planes from Finland.¹³ There is also close cooperation between Tornio and Haparanda, including cross-border rescue services.

Summary: Health and healthcare

- ***34% of people in the programme area are hindered by illness or disability***
- ***Travel time to the nearest emergency hospital extends to several hours in some more peripheral parts of the Programme area***
- ***The health status of the Sámi population is not much different from the majority population, except from a more negative psychological wellbeing.***

¹² Utredning sammenslåing av Universitetssykehuset Nord-Norge HF og Finnmarkssykehuset HF, 7. november 2019. <https://helse-nord.no/utredning-av-sammenslaing-av-unn-og-finnmarkssykehuset>, accessed 2020-01-08.

¹³ See <https://www.mynewsdesk.com/se/regionvasterbotten/pressreleases/klart-med-avtal-foer-ambulansflyg-oever-kvarken-2848646>, retrieved 2021-01-29.

6. Smart & green

In this chapter, we provide an overview of the major sectors of economy in the Programme area. Moreover, we describe initiatives to promote green transition in the regions.

Norway

Bioeconomy: The northernmost counties in Norway play a significant role in the value creation of Norway related to marine industries, with fishery and fish farming accounting for 7,0 % share of GNP in Nordland and 6,12 % in Troms and Finnmark. The marine related industries are of specific importance for employment in the more peripheral municipalities, too.

Oil & gas: Oil & gas sector has been highly important employer with 3 700 jobs in north Norway (SINTEF 2018). The oil and gas sector is well-established in northern Norway and continues to be an important source of investment, skills and business development.

Tourism: The tourism sector possesses considerable growth potential but with the challenge of low profitability in North Norway. The balance between value creation and sustainability of tourism activities has become an issue of growing importance. The downturn of international tourism in North Norway, caused by the covid-19 pandemics, puts tourism in a new situation.

Construction industry is the most important sector of infrastructure business in North Norway, with 17,3 % of gross production in Nordland and 14,8 % in Troms & Finnmark. Public sector investments in infrastructure, social and healthcare, and housing have contributed to the growth of the sector, as well as investments in the marine sector.

Energy: A significant proportion of recent and planned offshore activities is located in North Norway in the Norwegian and Barents Sea. The northern regions also play an important role in the national energy sector with the renewable hydroelectricity and wind power (OECD 2017). Several potential areas for increased offshore wind power have been analysed in North Norway, too.

Process industry is an important industry in Northern Norway, especially in Nordland, where process industry has an annual export of more than NOK 13 billion. The centre of this industry in Northern Norway is Helgeland in Nordland.

Minerals and metals: The mineral industry in 2019 had a turnover at approximately 2700 million NOK, and 1100 people were directly employed by this industry. There are plans for new mining initiatives in North Norway including the Nussir copper project in Kvalsund and Sydvaranger AS iron ore project in Sor-Varanger.

The public sector, and the private sector services: Troms & Finnmark has the highest proportion of public sector jobs among the Norwegian regions (counties) whereas Nordland is number three in national comparison. Private sector services are not highly represented in North Norway. A specific challenge is the lack of KIBS (knowledge-intensive business services) in North Norway.

Finland

In Lapland, the Kemi–Tornio region is responsible for 80% of industrial production, with large-scale industrial operators include Outokumpu (stainless steel), the Metsä Group (forest industry) and the Stora Enso (forest industry). The mineral cluster, with mines e.g. in Kittilä and Kemi, employed directly 3 800 people in Lapland in 2017 (Prime Minister's Office 2017). Tourism, with annual turnover of about EUR 1000 million, employed up to 10 000 person-years in Lapland – until the covid-19 in 2020. Big investments are currently being planned for Lapland's bioeconomy sector. Metsä Fibre bioproduct mill project in Kemi with EUR 1.5 billion investment is expected to have investment decision at early 2021 at the earliest (Metsä Fibre 2020).

In North Ostrobothnia, the Information and Communication Technology (ICT) concentration plays a significant role with strong actors such as the University of Oulu, the VTT research centre, and the ICT cluster companies such as Nokia and Elektrobit. Moreover, the region has an abundance of healthcare and wellness technology companies. There are also advanced clusters such as e.g. the printed intelligence cluster Printocent. The region has Stora Enso paper mill in Oulu which has recently been converted into packaging production, and operational metal mines, SMEs in the metal industry. The region has also strong know-how in the forest and timber product industry and bioenergy. In the area of cleantech, the region has expertise particularly related to water and air purification.

Central Ostrobothnia has the coastal city of Kokkola as the biggest urban concentration. Kokkola Industrial Park KIP hosts 17 industrial companies and over 60 service companies (e.g. Boliden, Freeport Cobalt) employing a total of 2 300 people. The Port of Kokkola is an important logistics hub in the region. Central Ostrobothnia invests also in R&D on battery chemicals, and the region possesses significant lithium reserves.

In Ostrobothnia, the biggest city Vaasa is home to the biggest concentration of energy technology companies in the Nordic countries. Vaasa's share of export in industrial production is nearly 80%, which makes it the biggest exporting city in Finland. Wärtsilä with 3018 employees and ABB with 1797 employees in 2018 are the biggest private sector employees in Ostrobothnia. Ostrobothnia has expertise on shipping, composite technology, fur farming, too.

South Ostrobothnia is known for entrepreneurship, strong agrobioeconomy: agriculture sector with food industry, technology industry, and wood & furniture industry. Atria PLC,

one of the leading food companies in the Nordic countries, is the flagship of region's food industry cluster. South Ostrobothnia is also known for Power Park amusement park, Ähtäri Zoo with Pandas and especially big summer festivals. Region's capital Seinäjoki is a growing commercial, industrial and public service centre.

Sweden

Norrbotten has a nature-based economy that is built on mines and minerals, steel and forestry. Another characteristic of the economy is the relative lack of specialisation in manufacturing and the service sector compared to other regions in northern Sweden. The five biggest businesses are LKAB, Samhall, SSAB, Coop Norrbotten, and Boliden. The biggest public sector employers are the municipalities, the region, the armed forces, and the university. There are imbalances in gender distribution among the employees of businesses. Women are only a fifth of the employees in over 60 per cent of the businesses (Örtqvist 2014).

Västerbotten has an abundance of natural resources and opportunities for innovation e.g. in technical solutions for infrastructure and communication networks over long distances. (see OECD, 2017). Västerbotten has accumulated knowledge on healthcare & life science and energy and environmental engineering. Umeå university plays an important role in the development of Västerbotten, as well as the SLU Umeå and LTU Luleå Skellefteå units. The biggest industrial companies include Boliden (mining), Volvo Lastvagnar, Eitech (electrical installations), Komatsu Forest, Vitec Software Group, Wipro Infrastructure Engineering, and Martinson (forest industry). The Northvolt investment in battery cells and systems, including the battery 'gigafactory' project in Skellefteå, is an example of new investments in green transition in Västerbotten.

In Västernorrland, the biggest city of Sundsvall is dominated by the pulp and paper industry and the aluminium production. The main campus of Mid Sweden university (Mittuniversitetet) is also located in the city. Örnsköldsvik is an important industrial concentration of process industry in Västernorrland with companies such as Modo, Domsjö Fabriker, Holmen, BAE Systems Hägglunds. RISE Processum cluster in Domsjö is an important part of the regional innovation system. Örnsköldsvik includes also Svensk Etanolkemi and Fjällräven.

Sami business development

Traditional *sámi* industries, and in particular reindeer herding, is based on sustainable harvest of natural resources found during the seasons. The traditional knowledge of managing the natural resources is transferred from generation to generation. *Sámi* industries are already environmentally sustainable and green but struggle to achieve economic sustainability and need alternative sources of income in for instance cultural and tourism industries.

The majority of the sámi businesses are micro-enterprises. Reindeer husbandry and handicraft businesses are often structured in such a way that a businessperson does many different things in the same business, depending on the time of year. Processes of change in trade and industry have obviously also affected Sami society. Restructuring towards a more modern and differentiated professional life has naturally led to Sami people being recruited for jobs outside of their traditional primary industries, too (Region Norrbotten 2020).

Green transition: status and initiatives in the Programme region

General situation: The Interreg Aurora Programme area is currently experiencing a green transition, largely triggered by climate change. The 2030 Agenda for Sustainable Development was adopted in 2015 by all Member States of the United Nations. The current efforts are represented by 17 Sustainable Development Goals (SDGs). The most transformative EU commitment to the SDGs to date is through the European Green Deal - the framework agenda on a comprehensive green transition and climate neutrality in the European Union by the year 2050. (European Commission, 2019). Areas given particular attention by the Green New Deal communications and policies include energy-efficiency of industry and infrastructure, development and adoption of renewable and low-emission fuels and energy sources, circular economy, sustainable food production, and pollution reduction.

Norway: Climate change and chase for additional renewable energy sources such as wind power, sets North Norway in transition, too (KMD 2019). The climate change causes challenges for reindeer herding, for fish-related activities, travel patterns, etc. Examples of current initiatives on green transition in North Norway include e.g. Klimapartnere network, arena of knowledge generation on climate challenges in North Norway, with regional hubs in Nordland, Troms, and Finnmark; "Et bærekraftig Nordland" strategy work in Nordland with a preparation of knowledge base and status report on UN SDG goals in Nordland (Nordland fylkeskommune 2020). Practical steps towards developing industrial circular economy in North Norway include e.g. recycling efforts at the Mo Industrial Park. Balance between economic, social, and environmental sustainability in North Norway are high on the discussion agenda, including the youth (see e.g. Nordlys 2021).

Finland: Large-scale investments related to green transition are currently taking place in the Aurora Interreg programme area including investments such as the case of StoraEnso Oulu mill converting towards low-carbon production, and the current plans to establish bio product mills in Kemi and Kemijärvi. Industrial circular economy got a boost in North Finland in 2017 when the Industrial Circular Economy Centre was established in Kemi to promote industrial circular economy. Sustainable and responsible tourism plays a major role in green transition, too, including projects such as "Developing Low Carbon and Economically Sustainable Tourism in Lapland (2020-2022)". Green transition initiatives take place also at the municipal level for example in the Ii municipality initiative on Innovative low-

carbon public services (Ii 2020). In Central Ostrobothnia, the green transition is highlighted by R&D and investments in battery chemicals whereas in Ostrobothnia, the clean energy solutions play an important role. In South Ostrobothnia, examples of green transition include sustainable food production solutions. The EU Structural Funds Programme 2021-2027, as well as the EU Recovery fund, are expected to boost significantly green investments in the coming years in the Interreg Aurora Programme area in Finland.

Sweden: Sustainable development is currently high on the agenda not only nationally in Sweden but also on regional development agendas for both Norrbotten and Västerbotten. The SDGs are part of the current and future regional development discourse in Norrbotten, Västerbotten, and Västernorrland. Several large-scale and capital-intensive industrial projects have placed North Sweden in the global spotlight with regards to sustainable and climate-neutral investments in emerging and fossil fuel replacing technologies. In 2020, the mining conglomerate LKAB announced an extensive investment into the development and scaled-up implementation of a fossil-free steel production. Northvolt investments in battery technology in Västerbotten represent another important green transition investment in North Sweden. The Swedish government announced in December 2020 that a national coordinator (“samordnare”) will be nominated to promote the coordination of issues (competences, infrastructure, housing, climate) related to large-scale investments in Norrbotten and Västerbotten (Regeringskansliet 2020).

Summary: Smart & green Interreg Aurora area

- ***The industry structure in the Interreg Aurora programme area is a combination of sustainable utilization of natural resources and initiatives to promote advanced technology***
- ***Green transition is increasingly in the Agenda especially regarding the big companies and large-scale investments. The period 2021-2027 is going to include an accelerated green transition in the Programme area***
- ***COVID-19 pandemic is set to have severe and long-lasting effects on many economic sectors such as tourism in the Programme area***

7. Infrastructure and connectivity

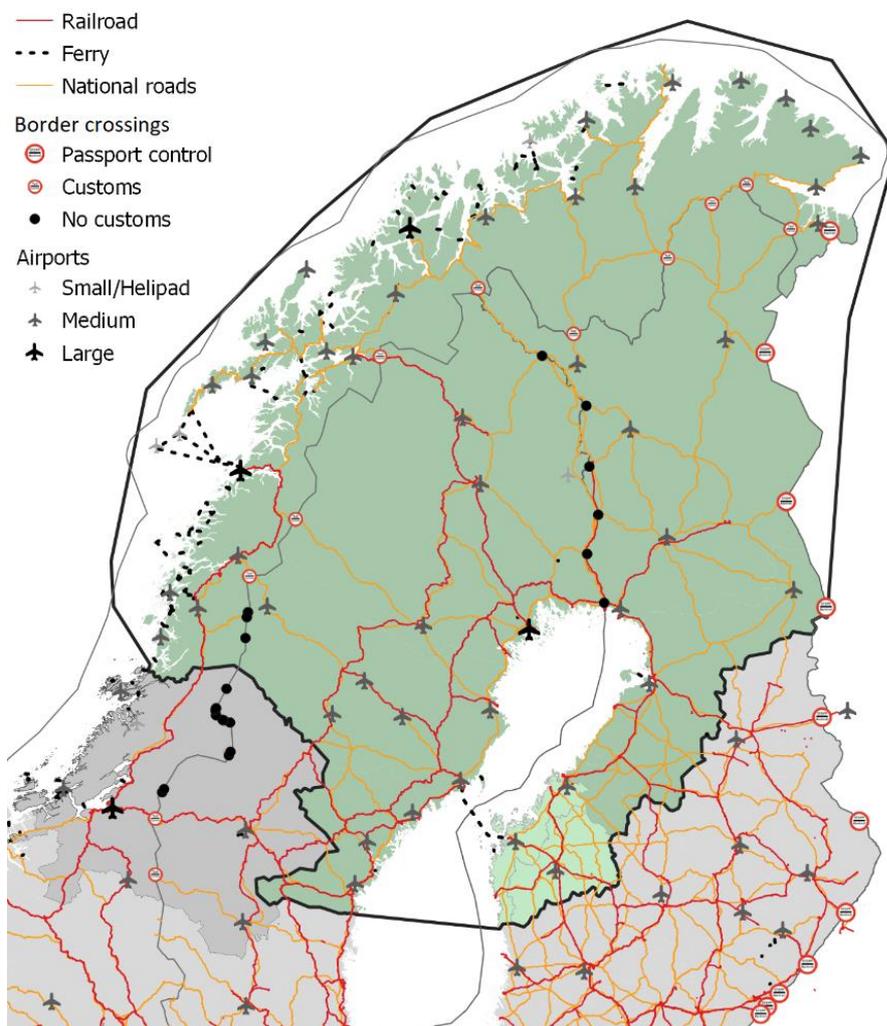


Figure 6: Infrastructure in the programme area. (NORCE, ourairports.com, OSM¹⁴, Eurostat). Airports with scheduled air traffic.

Norway: Northern Norway’s scattered population, long distances, long winters and mountainous terrain make it challenging to maintain a good and stable infrastructure. Many roads through mountain passes are often closed during winter, with the most exposed roads being closed up to 70-80 times in a season. Closed roads and longer distances

¹⁴ Even though much of the map is based on crowd-sourced materials, the data is of high quality and superior to many “official” public sources. The data on roads, ferries, railroads and ferries were cross-checked across different sources.

translate to larger transportation costs for businesses in northern Norway, and longer travel for people traveling to access services.

Mountainous terrain, archipelagos and long distances have also given rise to many regional airports in Finnmark and Nordland, serving local traffic. There are 25 airports and one helipad in northern Norway, making up almost half of the Avinor airports in the country – serving 9% of the population. The region's many islands and fjords make sea routes effective in many areas, and passenger routes along the sea are widespread.

Railroad is limited in the Norwegian part of the programme area, and non-existent in Troms and Finnmark county. Even though there has been some political pressure for extensions of existing rail networks towards Tromsø, no such plan is adopted in the current National Transport Plan. There is an interest in testing and early implementation of electrified aircraft, too, in North Norway.

Sweden: There are large differences in access to services and cities in different parts of Sweden. In a survey done by Trafikverket¹⁵, municipalities with limited access to hospitals, universities, cities and international travel were identified. Most of the municipalities mentioned are in northern Sweden, and especially inland municipalities. Except from some of the municipalities around the larger towns along the east coast, most of the programme area were identified as vulnerable.

There are 14 operational airports in the Swedish part of the programme area, of 41 in Sweden, serving 7,5% of the population, underlining the need for more airports in a region with longer distances to services and less access to other modes of transportation.

Unlike Norway, the Swedish railway passes through the country from the south and (almost) to the north. Although, for people living in the western inland of the programme area, the distance to the railway is still long. There are some plans to upgrade parts of the railway line in the next 5 years¹⁶, but no plans for extensions of the railway in the programme area. The programme area contain 25% of the railway kilometers in Sweden,¹⁷ which might seem much considering the population, but on the other hand, the region contains 42% of the Swedish land area.

Finland: The programme area contains 9 of 19 airports in Finland with scheduled air traffic, serving 19% of the population (Oulu, Rovaniemi, Kittilä and Vaasa as the biggest airports based on number of passengers). Railroad connections in the Finnish programme area

¹⁵ <http://trafikverket.diva-portal.org/smash/get/diva2:1365497/FULLTEXT01.pdf>, accessed 2020-12-18.

¹⁶ <http://trafikverket.diva-portal.org/smash/get/diva2:1396878/FULLTEXT01.pdf>, accessed 2020-12-18.

¹⁷ <https://www.trafa.se/en/rail-traffic/rail-traffic/>, accessed 2020-12-91.

extend from South Ostrobothnia in south to Kolari in the north and Kemijärvi in the northeast. Many of the programme area cities are important railroad hubs even nationally. The Finnish programme area includes a considerable share of the total of 50,750 kilometres of paved roads in Finland.

Interconnectivity

Border crossing arrangements are an essential part of infrastructure and connectivity regarding international cooperation. Even though there are many airports in the programme area, there is not much air traffic between the countries. One needs to travel with a stopover at the capital(s) to get to reach airports in the neighbouring countries, which extends travel time and environmental impact. There have been only few airports in the programme area in recent years with scheduled traffic to one of the other countries (Tromsø airport, with routes to Stockholm and Helsinki as an example), and the current covid situation has even worsened the situation.

The other alternatives are road, railway and seaway. For seaway, there's a ferry between Umeå and Vaasa with a long history. Since 2013 the ferry has been owned jointly by Vaasa city and Umeå municipality. By rail, there is one border crossing between Norway (Narvik) and Sweden (Kiruna) on Ofotbanen/Malmbanan which serves both goods and passenger traffic.

Between Sweden and Finland there is a railway border crossing between Haparanda and Tornio. There are plans to start a new passenger service over the border, connecting Umeå on the Swedish side with Oulu and Rovaniemi in Finland¹⁸. There has also been some work done to investigate possible future railway connections between Finland and Norway, either to Narvik, Tromsø or Kirkenes.¹⁹ By road, there are six crossings connecting Norway and Sweden, six between Norway and Finland²⁰ and six between Sweden and Finland²¹.

Digitalization

Most people in the programme area, eight out of ten people, use the internet every day. In Sweden and Finland, there is a decent amount of people who never use the internet, while this is very rare in Norway. Internet use frequency in the programme area is about on par with the countries in Norway and Finland, but slightly rarer in Sweden (see Table 13).

¹⁸ <https://www.railjournal.com/regions/europe/new-start-for-passenger-trains-in-the-north/>, accessed 2020-12-19.

¹⁹ <https://julkaisut.valtioneuvosto.fi/handle/10024/161367>, accessed 2020-12-20.

²⁰ With 520 000 yearly crossings by car, and 50 000 loaded trucks (2019).

²¹ With 3 220 000 yearly crossings by car, and 123 000 loaded trucks (2019).

Table 12: Internet use (2018). Source: European social survey.

	Never	Only occasionally	A few times a week	Most days	Every day	Minutes each day
Finland, programme area	9 %	5 %	3 %	4 %	79 %	150
Norway, programme area	1 %	4 %	0 %	15 %	81 %	242
Sweden, programme area ²²	7 %	2 %	2 %	8 %	81 %	213
Programme area	7 %	4 %	2 %	7 %	80 %	185
Finland	9 %	3 %	4 %	4 %	80 %	165
Norway	2 %	2 %	2 %	8 %	86 %	241
Sweden	4 %	2 %	3 %	4 %	87 %	244

The coverage of private broadband subscriptions has increased steadily over the last decades. The last couple of years seemed to have been a turning point though, perhaps broadband giving way to modern mobile networks with broadband speeds.

Access to broadband is almost universal in the countries, but the speed varies greatly. Sweden has a long history of focusing on developing broadband and most of the country is covered with access to high-speed internet. In Norway, the internet infrastructure is also well developed, but some areas have challenges with difficult terrain making it difficult to build landlines and blocking wireless signals. Finland has a more centralized broadband structure, with high speed in central regions – but less speeds in more rural areas. This is despite Finland being the first country in the world to make broadband a legal right in 2010.

Summary: Infrastructure and connectivity

- ***The Programme area lacks cross-border air traffic connections***
- ***Low level of connectivity in the cross-border region is a major challenge. In the North: scattered population, long distances, long winters and mountainous terrain. Shorter distances e.g. Gulf of Bothnia. High hopes on transport infrastructure to be improved - especially rail traffic.***
- ***Digital connectivity has improved but remains challenge in some parts of the Programme area. Digitalisation as an innovation enabler is another key challenge especially for the SMEs***

²² Including Jämtland.

8. Culture and cultural heritage

The Interreg Aurora Programme area has a rich and unique natural and cultural heritage. The programme area hosts a wide variety of cultures with their own distinctive cultural identity and a range of indigenous and minority languages.

Based on the Interreg Aurora survey in 2020 regarding the new Programme, a couple of replies by respondents related to cultural heritage could be highlighted:

- Culture in the programme area is already transnational, created by and continuously modified by cross-border networks. The perception of society is the same vertically, despite the national borders
- Traditional livelihoods and [traditional] utilization of the nature are integral part of cultural values, and loss of traditional knowledge is seen as prominent threats/challenges in the programme area, especially in the light of de-population and aging.

The replies take note on the long tradition of cultural interchange, as well as the shared perception of the society in the Programme region. Moreover, nature and traditional livelihoods as well as preserving the traditional knowledge are highlighted.

The new geography of the Programme area sets the cultural heritage in a new situation. Due to vast distances and lacking tradition, the knowledge on areas across borders need be strengthened. At the same time, the rich variety of cultural heritage will be even richer when combining e.g. cultural tradition and heritage of coastal Finland to the northernmost parts of Norway.

These are great assets for developing tourism. Efforts to develop a common integrated tourism offer have already been supported under the Interreg Nord programme 2014-2020 (e.g. Visit Arctic Europe project) and the Botnia-Atlantica programme 2014-2020 (e.g. the Kvarken Destinations projects).

Which kind of opportunities would the extended Programme area provide for developing sustainable tourism concepts while at the same time respecting and promoting cultural heritage, involving and engaging local stakeholders.

The Interreg Aurora programme area is characterized as a multi ethnic and multicultural melting pot. The Sámi culture and language is an important part of this heritage, that needs to be sustained and developed for a functional area and as a basis for traditional and new business development. Sámi adventure and cultural tourism and Sámi culture attract huge

international interest. Sámi tangible and intangible cultural heritage is threatened by majority interventions in use of Sámi traditional land.

9. Functional area

The document *“Border Orientation Paper Sweden-Finland-Norway – Nord (2019)”* sets out key characteristics of the cross-border region between Sweden, Finland and Norway and outlines options and orientations for the programming of the next Interreg programme along that border. The document serves as a basis for a constructive dialogue both within each cross-border region and with the European Commission for the 2021-2027 Interreg Aurora cross-border cooperation programme. The paper defines functional area as follows: *“The cross-border region is not strictly limited to the administrative borders of the Interreg programme but has a flexible geography depending on the topic concerned. This is a functional area.”*

The functional area enables the projects to be more effective as they can build on the experience of a wider range of relevant partners and as they can be located where the impact is bigger. Moreover, the functional area avoids that programmes re-create new borders outside the programme geography, according to the document. The twin city of Tornio-Haparanda and its surroundings is mentioned as an example of functional area.

The Border Orientation Paper provides theme-specific orientation in Growth, competitiveness and connectivity; Greener, low-carbon economy; Employment, education, health, inclusion; and Governance.

The Sámi people are despite borders connected through family ties and common language and culture. To reduce border hindrances is therefore of vital importance for the Sámi people and Sámi businesses.

10. Smart specialisation

The smart specialisation concept is rapidly diffusing across Europe, as an increasing number of regions adopt it and design strategies departing from their own preconditions. How could smart specialisation play a role in the Interreg Aurora programme 2021-2027?

Smart specialisation in North Norway

Nordland was one of the first counties in Norway to apply smart specialisation as an instrument for innovation and regional development. The smart specialisation strategy in Nordland is based on three major export-oriented businesses: Industry processes, services and products; Suppliers to seafood industry; Experience economy: creative, culture and tourism industries.

Finnmark County prepared in 2018-2019 the Regional Innovation Strategy for Finnmark, based on smart specialisation principles (Finnmark County Council 2019). The smart specialisation strategy of Finnmark combines the strong industries/sectors with potential for value creation and higher employment (energy and petroleum, construction industry, extraction and minerals, Arctic bioeconomy, experience-based tourism) with overarching topics (Arctic knowledge, digitalization, sustainability).

Troms County with the business development strategy SNU Strategisk næringsutvikling 2018-2025 highlighted four major focus areas: Experience economy, Circular economy, Industrial and innovation sectors, and Local value creation. By the end of 2019, Troms County had not prepared a regional smart specialisation strategy which follows the EU JRC S3 strategy process, but the essence of smart specialisation thinking with much of the key content of Smart Specialisation can be identified from the Troms business development plans.

The merger of Troms County and Finnmark County in 2020 started a process towards joint smart specialisation structure in Troms & Finnmark County. «*Troms og Finnmark fylkeskommune vil benytte smart spesialisering som metode for regional næringsutvikling i utarbeidelsen av sine planer og strategier fremover.*» (Troms & Finnmark County Council 2020).

Smart Specialisation in the Finnish Programme area

Lapland has been one of the pioneers in introducing smart specialization in Europe. Lapland's Arctic Specialisation Programme was published already in 2013 with the following cornerstones: accessibility, the sustainable use of natural resources and natural conditions, increasing value added, making more efficient use of the expertise already accumulated in Lapland, and Arctic pride. The update version "Strategic Priorities for International and

Smart Specialization 2018-2022” advances the three priorities, which support sustainable regional development of Lapland.

Council of Oulu Region has the following characterization for its regional smart specialisation strategy 2021-2024: renewing, well-being, climate wise. The following focus areas are included in the strategy: Digital products and services, Health and wellness, renewing and low carbon industry, sustainable construction and transport, innovative bio and circular economy, and smart food production (Council of Oulu Region 2020)

Central Ostrobothnia: The regional smart specialisation strategy for Central Ostrobothnia is based on innovative combination of natural resources, energy sector, knowledge on chemistry, and digitalisation. Focus area include renewing the chemical industry, R&D and business in battery chemicals, biomass refinement, circular economy, and sustainable use of natural resources.

The smart specialisation cooperation Lapland, Council of Oulu Region and Central Ostrobothnia has intensified considerably through the ELMO programme in East and North Finland. The East and North Finland in Industrial Transition – smart specialisation strategy 2019-2023 is based on a pilot project “*Regions in Industrial Transition*” launched by the European Commission. The regions of East and North Finland have prepared strategy based on common priorities that have been collected from their regional smart specialisation strategies. The identified sectors of common growth are bioeconomy and new products, sustainable mining, chemical industry, manufacturing industry, sustainable tourism and appeal and new emerging industries (ELMO 2020).

Ostrobothnia: smart specialisation is directed particularly at supporting the region’s largest export industries. There are four thematic priority areas: the system solutions for energy technology and renewable energy, digital solutions in various sectors, advanced production methods and automation and the circular and low-carbon economies.

South Ostrobothnia: The goal of the smart specialisation strategy is to promote the regeneration of business and to answer future challenges in the chosen thematic business sectors, which are of regional significance and also nationally distinctive. The focus points include sustainable food systems and the regeneration of the bioeconomy, smart and energy efficient systems, and regeneration of service and experience production.

Smart specialisation in the Swedish Programme area

Norrbottnen: Regional authorities have recently published both a regional development strategy and a designated Smart Specialisation strategy. Norrbotten has a traditional strong founding in the sustainable use of its abundant natural resources, especially mining industry, forests, and hydropower. Smart specialisation brings in an additional focus and diversity, increasing the attention on significant and innovative hubs in Norrbotten in space technology, digitalization, energy technology, advanced environmental technology, tourism

and experience industry, cultural & creative industries, and to innovation environments and testbeds of know-how and technology in Arctic conditions.

Västerbotten: The current S3 priorities in Västerbotten are innovative healthcare; life science; technology and service in the industry; testing activities; sustainable energy and environmental engineering; experience industries and cultural and creative industries; and digital services. The Regional Council of Västerbotten has been actively involved in inter-regional learning and has started recently an ERDF-financed innovation management project that aims to create an internal structure and organization for coordinating innovation ecosystems, creating a more systematic approach and monitoring of RIS3. The smart specialisation updating process takes place in 2020-2021. It is expected that fewer S3 priorities will be selected, and that e.g. green transition and social innovation will have a more prominent role.

Västernorrland has decided to develop a smart specialisation strategy and are current in process of designing it. While the region has not had a strategy, the region has discussed and worked on smart specialisation since before the start of the current programming period. Innovation policy has also been shaped by a focus on sector- and cluster-linked priorities. The region has also participated in several initiatives and projects linked to smart specialisation (Paulsson 2019)

Smart specialisation and the Programme area

Based on the analysis of regional smart specialisation strategies in the Interreg Aurora programme area, it can be stated that the economic structure of the regions enables a number of synergies and interrelatedness to cooperate in the development of joint smart specialisation initiatives. This is important to guarantee a critical mass of actors and resources in the selected domains. Interregional cooperation in smart specialisation deserves to be further developed to unlock the full potential of smart specialisation concept in the Interreg Aurora area. The ELMO approach of identifying joint S3 challenges is promising and would deserve cross-border exercise, too. One challenge for all regions is to engage key clusters and their companies and entrepreneurs to fully utilize the smart specialisation concept in the coming years.

At the same time, however, it is important to emphasize the place-specific and region-specific nature of smart specialisation. One-size-fits-all does not apply, and it is not likely that the entire Interreg Aurora area should follow exactly the same smart specialisation approach. Moreover, regions are not adopting smart specialisation at same speed - the programme area includes early adopters as well as latecomers regarding smart specialisation.

Summary: Smart specialisation

- *The Programme area is increasingly involving smart specialisation as an instrument of R&D and innovation policy*
- *Interregional/transnational cooperation in smart specialisation has not yet been at the core of activities, with exception of ELMO interregional smart specialisation cooperation in East and North Finland*
- *Sustainable smart specialisation initiatives keep increasing*

11. Interreg Aurora in a Nordic context

The Interreg Aurora Programme area is part of the Nordic area, especially regarding Finland, Sweden, and Norway. As the Programme area is recently extended, it is worthwhile to analyze the Programme area in a broader Nordic context – before the concluding SWOT analysis.

Firstly, the structure of the economies and the key sectors in the Programme area in Finland, Sweden, and Norway have many similarities - but also some differences. Some parts of the Programme area possess an abundance of (Arctic) natural resources with a key challenge is to find ways of sustainable utilization of the natural resources. The oil& gas related activities and blue economy dominate in North Norway, whereas in many parts of Finland and Sweden, green bioeconomy (forestry, agriculture) and mining-related activities play a more dominant role. considerable role. Tourism is shared as an area of interest by all regions of Interreg Aurora. the region-specific focus areas of tourism range from attracting globally tourists to spectacular Northern Lights adventures to attracting domestic visitors.

Secondly, the entire Interreg Aurora Programme area strives to reach higher in the value chain – independently of the sector: How to develop new products for example out of Arctic berries? How to sell the fish in other forms than pure fish only? Innovation performance is high in the programme area when it comes to international comparison. Innovation and R&D is, however, highly concentrated in the bigger cities in the Nordic countries- the Aurora Interreg area has only few significant innovation “hot spots” in a Nordic comparison.

Thirdly, the sustainability issues are currently high in the Nordic agenda. Despite considerable progress in the sustainability activities in the Programme area green transition with innovative green solutions is taking considerable progress steps in the Nordic Arctic, the sustainable use of natural resources remains an issue, as well as matching together economic activities locally e.g. mining and tourism and respecting the Sami community, an issue that is faced at the Programme area.

Finally, the Interreg Aurora area shares the challenge of demography and attracting competent work force. The worries of demographic development are well known, and even in the regions with more favourable demography, there is a constant risk of the talented youth seeking to bigger cities. All regions share the dilemma of simultaneous structural unemployment and lack of competent labour force. The network of universities, research institutes, and learning institutes play a significant role in attracting and keeping the talent in the Aurora Interreg Programme area.

Conclusions / SWOT analysis

STRENGTHS	WEAKNESSES
<p>Economy</p> <ul style="list-style-type: none"> • <i>Strong industries & valuable natural resources</i> • <i>Advanced regional innovation system & R&D institutions in larger cities</i> • <i>Arctic expertise</i> • <i>Strong public sector</i> • <i>Digital connectivity in larger communities</i> • <i>Entrepreneurship (e.g. in the coastal regions in Finland)</i> 	<p>Economy</p> <ul style="list-style-type: none"> • <i>Lack of competent labour & not enough KIBS companies</i> • <i>Low diversification</i> • <i>Peripherality and low accessibility</i> • <i>Economic resilience to meet Covid-19</i> • <i>Exposure to shifts in international markets</i> • <i>Cross-border business possibilities not fully utilized</i> • <i>Low ability to attract private investors</i> • <i>Cross-border obstacles remain</i> • <i>Low values of real estate affect business</i>
<p>Social</p> <ul style="list-style-type: none"> • <i>Relatively low unemployment</i> • <i>High level of education</i> • <i>cultural hubs in larger cities to attract talent</i> • <i>Equality and inclusion at high level</i> • <i>Trust has developed inside Interreg Nord and Bothnia-Atlantica</i> 	<p>Social</p> <ul style="list-style-type: none"> • <i>Lack of inclusion of vulnerable groups in working life</i> • <i>Ageing population & depopulation</i> • <i>Outmigration (young people)</i> • <i>Insufficient knowledge on regions/ New Programme Area</i> • <i>Digitalisation - not for everybody?</i>
<p>Environment</p> <ul style="list-style-type: none"> • <i>Clean natural resources</i> • <i>Strong community and cultural links and heritage</i> • <i>Promising cases of green transition</i> 	<p>Environment</p> <ul style="list-style-type: none"> • <i>Possible negative consequences of climate change to nature</i> • <i>High transport costs with high ecological footprint</i> • <i>Green transition coming only with slow pace</i>
<p>Unique with Sapmi</p> <ul style="list-style-type: none"> • <i>Connectivity to Sami in Sv/Fi/No/Ru</i> • <i>Shared history, heritage, traditional knowledge</i> • <i>Specific Sami industries in interaction with nature and sustainability</i> • <i>Sustainable industries</i> 	<p>Unique with Sapmi</p> <ul style="list-style-type: none"> • <i>Young people moving out</i> • <i>Small business, lack of capital and business structures</i> • <i>Dependence on public sector</i> • <i>Low level of innovation - distances to markets</i> • <i>Unbalance of institutional resources</i> • <i>Cross-border barriers</i> • <i>Lule, South, Pite, Ume, Inari, and Skolt Sámi language endangered</i>

Conclusions / SWOT analysis

OPPORTUNITIES	THREATS
<p>Economy</p> <ul style="list-style-type: none"> • <i>Green transition with new cleantech businesses</i> • <i>New innovative companies</i> • <i>Arctic branding of certain businesses</i> • <i>Business models to recover from covid-19</i> • <i>Skills & competence upgrade</i> • <i>Digital leap to support businesses</i> • <i>Electrical aviation</i> • <i>Bilateral/trilateral S3 solutions</i> • <i>Building up larger projects with broad impact</i> 	<p>Economy</p> <ul style="list-style-type: none"> • <i>Slow pace of green transition affecting businesses negatively</i> • <i>Only few new innovative companies</i> • <i>Covid-19 causing permanent negative changes (e.g. transport, tourism)</i> • <i>Few international/cross-border businesses</i> • <i>Land areas under pressure – (possible conflicts mining, tourism, herding)</i>
<p>Social</p> <ul style="list-style-type: none"> • <i>Digital leap “the Arctic and inclusive way” enabling more remote working; possibility for smaller communities</i> • <i>Integration of immigrants in local communities</i> • <i>Opportunities created by improved gender balance</i> 	<p>Social</p> <ul style="list-style-type: none"> • <i>Depopulation and outmigration continue- lack of critical mass</i> • <i>Urban/rural disparity</i> • <i>Loss of traditional livelihoods</i> • <i>Pressure on services- negative spiral</i>
<p>Environment</p> <ul style="list-style-type: none"> • <i>Successful local adaptation to climate change</i> • <i>Sustainable use of natural resources</i> • <i>Circular economy the Arctic way</i> 	<p>Environment</p> <ul style="list-style-type: none"> • <i>Negative consequences of climate change to nature (land, water, air)</i> • <i>Industry pollution and unsustainable use of natural resources</i>
<p>Unique with Sapmi</p> <ul style="list-style-type: none"> • <i>Cultural and tourism entrepreneurship</i> • <i>Cross-border cooperation in Sapmi</i> • <i>Unique Sami businesses</i> • <i>Sámi knowledge with sustainable use of resources</i> • <i>Businesses and cooperation between traditional and new livelihoods, clustering</i> • <i>Attractive natural environment</i> • <i>Potential for developing new livelihoods</i> 	<p>Unique with Sapmi</p> <ul style="list-style-type: none"> • <i>Knowledge and competence out of the Sámi area-</i> • <i>Migration and draining of Sami human resources –</i> • <i>Competition and restriction on the use of natural and pasture resources</i> • <i>Loss area for sustainable reindeer herding</i> • <i>Climate change challenges</i> • <i>Different approaches to predators</i> • <i>Sami languages and culture are threatened</i>

References

Border Orientation Paper (2019) Sweden-Finland-Norway – Nord.

Council of Oulu Region. Smart Specialisation 2021-2024. <https://www.pohjois-pohjanmaa.fi/en/oulu-regions-smart-specialisation-2021-2024/>

ELMO (2020) <https://elmoenf.eu/smart-east-and-north-finland/>

European Commission. 2019. Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. The European Green Deal. COM/2019/640 final. Accessed 10 October 2020. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52019DC0640>

Finnmark County Council (2019) Summary of Regional Innovation Strategy Finnmark County based on SMART specialisation principles. https://s3platform.jrc.ec.europa.eu/documents/20182/275464/Regionale+innovasjonstrategi_Finnmark+norsk.pdf/837851d0-466c-488e-b676-485ebdc278f3/

Ii (2020): Europe's greenest town. <https://www.ii.fi/en/climate-actions-and-renewable-energy>

Klimapartnere (2020) a Presentation. <https://klimapartnere.no/>

KMD (2019) En systematisk sammenstilling av kunnskap om utviklingstrekk i nord. Jukka Teräs, May-Britt Ellingsen, Nils Aarsæther, Bård Kårtveit, Vigdis Nygård. <https://www.regjeringen.no/contentassets/285684dd041c4f9cbabab18ef50a06b0/rapport-norce-samfunn-24-2019-endelig-versjon.pdf>

Mandate letter (2020) Preparation of "Sweden-Finland. Norway" CBC Programme. Finnish Ministry of Economic Affairs and Employment, Norwegian Ministry of Local Government and Modernisation, Swedish Ministry of Enterprise and Innovation. May 25, 2020.

Metsä Fibre (2020) Kemi bioproduct mill project. <https://www.metsafibre.com/en/about-us/Kemi-bioproduct-mill/Pages/default.aspx#>

Mienna, Christina Storm and Per Axelsson (2019) Somatic health in the indigenous Sami population – a systematic review. *International journal of circumpolar health*, 2019, vol 78.

Nordland fylkeskommune (2020) "Et bærekraftig Nordland" - Ny strategi for Nordland. <https://www.nfk.no/ifront/om-bring-oss-i-front/et-barekraftig-nordland-ny-strategi-for-nordland.1022573.aspx>

Nordlys (2020): Samarbeid for å nå bærekraftsmålene i nord. *Kronikk H Arctander*, Dec 29 2020.

Nordregio (2019): Demografisk Sårbarhet: En gemensam utmaning för kommunerna längs riksgränsen mellan Norge och Sverige. Wang, Turunen, Roto, Arledal Thunell & Nilsson (2019). Nordregio working paper 2019:1.

OECD (2017), OECD Territorial Reviews: Northern Sparsely Populated Areas, OECD Territorial Reviews, OECD Publishing, Paris, <https://doi.org/10.1787/9789264268234-en>

Paulsson D (2019) Report on the implementation of smart specialisation in Sweden. Independent expert report.

Regeringskansliet (2020) Regeringen tillsätter samordnare för samhällsomställning vid större företagsetableringar och företagsexpansioner i Norrbotten och Västerbotten. Dec 18,2020.

Regional Innovation Scoreboard (2019)

https://ec.europa.eu/growth/industry/innovation/factsfigures/regional_en

Regionale Utviklingstrekk 2018. Oslo, KMD.

<https://www.regjeringen.no/no/dokumenter/regionale-utviklingstrekk-rut-2018/id2596450/>

Sanks and Sami Council (2017) Plan for suicide prevention among the Sámi people in Norway, Sweden and Finland.

<https://finnmarkssykehuset.no/Documents/SANKS/Plan%20FOR%20SUICIDE%20PREVENTION%20AMONG%20THE%20S%C3%81MI%20PEOPLE%20IN%20NORWAY.pdf>

SINTEF (2018) Havnaeringen i nord – næringsutvikling og verdikapning frem mot 2040.

<http://hdl.handle.net/11250/2600772>

Region Norrbotten (2020) Strategy Smart specialisation in Norrbotten.

Troms & Finnmark Fylkeskommune (2020) Smart spesialisering.

<https://www.tffk.no/tjenester/internasjonalt/europasamarbeid/smart-spesialisering/>

Örtqvist, D (2014), Tillväxtförutsättningar för Norrbottens näringsliv. En kartläggning av företagens styrkor, svagheter och utmaningar, Länsstyrelsen i Norrbotten