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EUROPEAN RESEARCH PROJECT //

Collecting and analysing data for the post-27 INTERREG (Core-IB)

Sweden-Finland-Norway (Aurora)

Border profile

March 2026

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This delivery does not necessarily reflect the opinions of members of the ESPON 2030 Monitoring Committee.

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1 Introduction

1.1 Context and objective of the border profile

The ESPON Core-IB project (Collecting and analysing data for the post-27 INTERREG) provides evidence-based, non-binding analytical work to support the next generation of Interreg programmes post-2027. By collecting and analysing harmonised territorial data, the project highlights key socio-economic characteristics, cross-border interactions, and governance structures. Its spatial focus covers 48 cross-border cooperation areas (40 land and 8 maritime), including all EU internal border regions and those bordering Liechtenstein, Switzerland, and Norway. The findings are analytical and informative; they do not create regulatory or policy obligations for Member States, the European Commission, or programme authorities. Each border profile serves as a comparable knowledge base for policymakers at EU, national, and regional levels, supporting dialogue and reflection rather than prescribing policy choices. The profiles aim to provide consistent, data-driven territorial evidence that can inform strategic discussions about future cross-border cooperation and contribute to the preparation of Interreg programmes post-2027.

The Core-IB border profiles are designed to support the upcoming steps in the Interreg programming process with analyses based on data that is available at the European scale, including ESPON, Eurostat, DG REGIO, JRC, and Interreg databases. Their main purpose is to ensure comparability of data analyses and to provide programme areas with access to recent harmonised data at high geographical resolution (NUTS3 level or finer). Member States may hold additional or more detailed data which can further enrich or contextualise the findings beyond the Core-IB project. These national sources are essential for refining and validating territorial evidence in policymaking processes, including additional regional, fine-scale information and insights from political processes related to prioritisation and objective setting. All border profiles follow a systematic and methodologically robust approach. They provide territorial evidence, structured along 6 thematic dimensions, offering insights into the geographic, economic, environmental, socio-economic, border security and governance characteristics of the border region. Quantitative data and qualitative analyses are combined to ensure meaningful insights into all 48 border areas. Due to methodological constraints and limited resources, local studies and national datasets falling outside the European data framework could not be included. Visualisations, such as maps and charts based on descriptive statistics, facilitate understanding and support evidence-based policymaking. The profiles analyse the border region as a whole at NUTS3 (2021) level (corresponding to the current Interreg VI-A programme area)[1] and position it within a broader European context. For comparative purposes, several reference categories are applied:

- European averages (EU27 + Norway, Switzerland and Liechtenstein, depending on data availability)
- National averages
- National border region averages
- Aggregated border region averages

To complement the quantitative evidence, the profiles also draw on strategic and qualitative sources, including:

- Strategic documents from the Interreg Programme 2021-2027
- Border Orientation Papers from the 2021-2027 programming period
- Information from the keep.eu database on cross-border cooperation activities
- Information from the Cohesion Open Data platform
- Information from the b-solutions initiative
- Information from recent ESPON Projects (i.e., CROSSGOV, House4All, PROFECY Update, CPS 2.0)

[1] As defined by Annex 1, Commission Implementing Decision (EU) 2022/74 of 17 January 2022, as amended by Commission Implementing Decision (EU) 2023/1638 of 14 August 2023 (OJ L204, 17.8.2023, p. 9): https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng

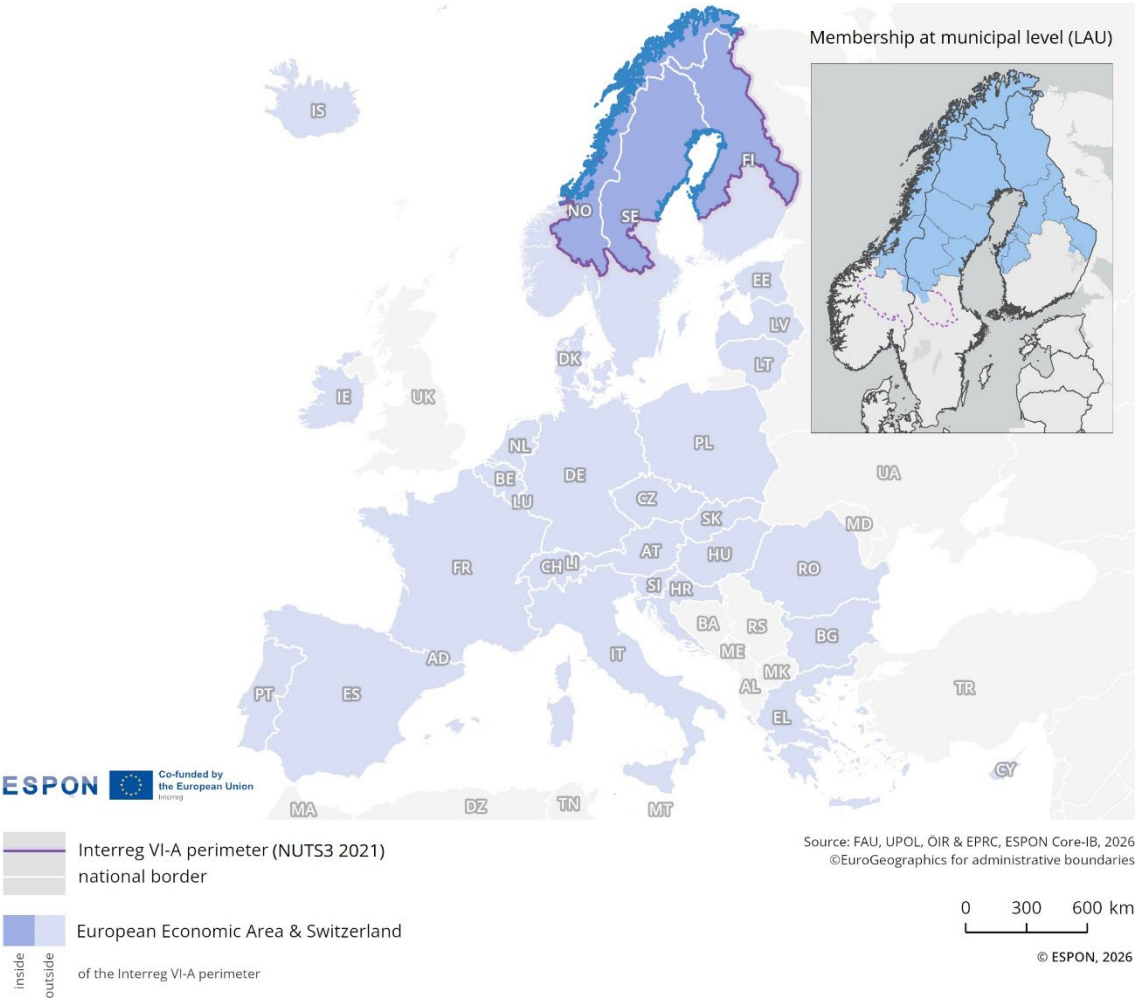
Within the ESPON framework, the CROSSGOV project (Governance mechanisms for cross-border functional areas) has been implemented in parallel to Core-IB. The CROSSGOV hub[2] provides a comprehensive platform for interactive data exploration, and selected data have been incorporated into this study.

Additional project-related information can be explored separately in the Core-IB **Final Report**. Further technical information on this border profile can be found in a separate **Technical Annex** providing an overview of data and methods.

1.2 Presentation of the border area

The Interreg VI-A 'Sweden–Finland–Norway (Aurora)' programme covers the area between northern Sweden, northern Finland, and northern Norway (see Figure 1.1).

Figure 1.1: Overview map



The Aurora was created as a new programme for the 2021-27 period by merging the previous Interreg Nord and Botnia-Atlantic programmes. In Sweden, the programme area includes the regions of Norra Mellansverige, Mellersta Norrland and Övre Norrland, located in Northern Sweden, comprising a total of 5 NUTS3 regions: Norrbotten, Västerbottern, Jämtland, Västernorrland and Dalarna. In Finland, it covers parts of the regions of Länsi-Suomi and Pohjois-Suomi and Itä-Suomi, encompassing a total of 7 NUTS3 regions: Lappi, Etelä-Pohjanmaa, Pohjanmaa, Keski-Pohjanmaa, Pohjois-Pohjanmaa, Pohjois-

[2] ESPON CROSSGOV Hub: https://gis-portal.espon.eu/arcgis/apps/experiencebuilder/experience/?id=27e3b86ef44441b08793a2239c370607

Karjala and Kainuu. In Norway, it includes the regions of Innlandet, Nord-Norge, and Trøndelag, comprising 4 NUTS3 regions: Inland, Trøndelag, Nordland and, Troms and Finnmark. This profile focuses on data covering the Aurora programme area based on the NUTS3 (2021) classification[3], rather than distinguishing between the 2 geographical sub-areas: Aurora and Sápmi, cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter on the Norwegian, Swedish and Finish side, as shown in the small map in the upper right part (dotted lines for the NUTS3 perimeter and the blue colour indicating the membership at municipal level). More specifically, in the Norwegian part of the border area, only the municipality of Engerdal is a member, rather than the entire NUTS3 region of Innlandet. In the Swedish part of the border region, it is only the municipality of Älvdalen that is a member, rather than the entire NUTS3 region of Dalarnas län. In the Finish part, the municipality of Heinävesi is a member of the programme at LAU level but is not captured in the NUTS3 (2021) geometry, as the regional boundaries changed slightly in the NUTS3 (2024) version. For the statistical analyses, the district level (NUTS3 in the 2021 version) is used as the reference level due to data availability. This should be taken into account when interpreting the results. To provide a general impression: the municipal members of this cooperation area account for approximately 1,87 million inhabitants out of 2,53 million within the NUTS3 perimeter (i.e., approximately 74%; values refer to 2023).

Figure 1.2 illustrates the geomorphological features and the perimeter of the current Interreg VI-A programme area. Spanning approximately 615,000 km², the Aurora programme area exhibits significant heterogeneity. The map illustrates the area's topographical and functional differences, ranging from sub-areas of significant international importance to more peripheral regions.

Starting at the Avdalen River in the south, the Aurora programme area extends northwards across northern Norway, Sweden and Finland, primarily following the Skanden (Scandinavian Mountains) along the Norwegian–Swedish border. It encompasses large parts of Sápmi (Lapland), including Arctic territories extending to the Barents Sea and Europe's northernmost point at Nordkapp.

Except for the mountain ridge in the west, which forms a distinct highland backbone, the landscape is predominantly flat or hilly. Vast boreal forests (taiga), extensive wetlands, mires and tundra ecosystems dominate the terrain, particularly on the Finnish and Swedish sides. Numerous rivers, including the Torneälven, Kalixälven, Kemijoki and Tana, traverse the programme area from inland towards the Arctic Ocean or the Baltic Sea, creating important hydrological networks. The programme area also contains countless lakes, including Lake Inari and Lake Torneträsk.

The programme area's northern location places it largely above the Arctic Circle, resulting in distinctive phenomena such as the Midnight Sun and Polar Night. The programme area has a subarctic to arctic climate with long, cold winters and short, cool summers. Permafrost conditions are present in some of the northernmost areas and snow cover can persist for much of the year.

The mountainous regions of northern Norway and Sweden feature rugged peaks, high plateaus and glacial valleys, with elevations often exceeding 1,000 metres. These mountains give way to lower, flatter terrain in eastern Sweden and in Finland. The entire programme area lies within one of Europe's least densely populated zones and encompasses large, protected areas, including national parks and UNESCO biosphere reserves. This reflects the programme area's ecological diversity and relatively untouched natural environments.

These natural and topographical features have a strong influence on the programme area's accessibility, infrastructure and spatial development patterns, as well as on its role in climate regulation, biodiversity conservation and renewable energy production.

[3] The use of NUTS3 geometries is of fundamental importance in this project, as the applied pan-European datasets as well as the newly developed indicators in the ESPON CROSSGOV project refer primarily to the NUTS3 level (in the 2021 version, see also the final report of the project).

Figure 1.2: Geographical features and characteristics[4]

Elevation in metres above sea level

0
200
500
1.000
1.500
2.000
2.500
3.000

inside outside of the Interreg VI-A perimeter

Hydrography

large lakes
large rivers
other rivers

inside outside of the Interreg VI-A perimeter

Level of detail: 1" grid
Source: FAU, UPOL, ÖIR & EPRC, ESPON Core-IB, 2026
Origin of data: EU-DEM, WISE Large rivers and lakes, 2007
©EuroGeographics for administrative boundaries

Interreg VI-A perimeter
perimeter coastal line
national border
NUTS 3 border
ferry

0 120 240 km

© ESPON, 2026

[4] The selection of displayed settlements is based on factors such as size, administrative or cultural importance, transport links, regional coverage and cartographic clarity. This is part of a standard cartographic generalisation process with no pre-set thresholds, and the main aim is to provide orientation.

2 Cross-border analysis

2.1 Territorial dimension

The territorial dimension refers to the spatial characteristics and dynamics of a border region. It specifically depicts how factors such as population density, demographic trends, changes in settlement areas and accessibility influence and reflect cross-border integration.

2.1.1 Population and settlements

This sub-dimension illustrates the population characteristics and land use dynamics of the border region, based on analysed indicators. It examines population density, population development by age groups, and changes in settlement areas. The analysis highlights whether the border functions as a catalyst for integration or as a barrier. Comparisons with the respective countries and the EU average provide context for understanding the border region's dynamics.

2.1.1.1 Population density

Indicator description

Population density refers to the number of residents per km². This indicator shows the number of inhabitants per square kilometre in a 1x1 km grid. It therefore provides information on the distribution and concentration of population across the region and allows to identify agglomerations of high density. In particular agglomerations at or close to the border area of key interest.

- **Source**: Eurostat
- **Temporal coverage**: 2021
- **Unit**: Inhabitants/km^2

Please refer to the technical annex for more information.

Although the programme area is largely sparsely populated, it also includes scattered urban centres with more than 30,000 inhabitants, including areas with Sápmi populations. Along the Norway-Sweden border, population density is generally low, except in the southern part of Norway around towns such as Lillehammer, Hamar and Trondheim. Sparse population is also characteristic to the border area between Finland and Norway and the border between Finland and Sweden. In Finland, larger cities include Rovaniemi and further south cities such as Oulu, Vaasa, Seinäjoki, and Joensuu. In Sweden, the largest cities in the programme area are Östersund, Luleå, Umeå and Falun.

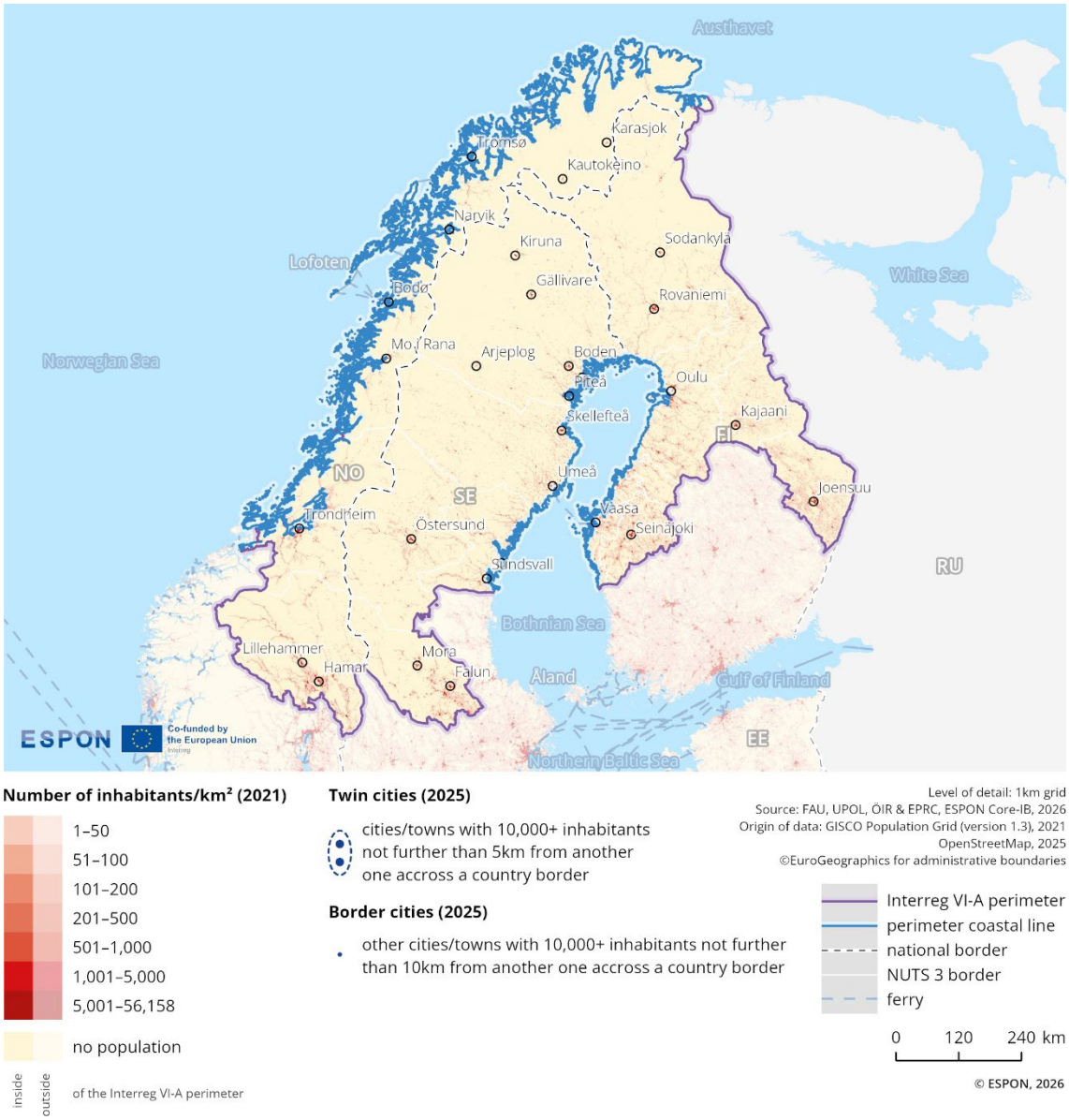
The population density in the entire programme area is 6 inhabitants/km², which is much lower than the EU average of 109 inhabitants/km² (according to EUROSTAT), and much lower than the aggregated average of all EU evaluated border regions, which is 125 inhabitants/km².

The part of the programme area in Sweden has an average population density of around 4 inhabitants/km², which is lower than the national average population density in Sweden (23 inhabitants/km²).

The part of the programme area in Norway has an average population density of around 7 inhabitants/km², which is similarly lower than the national average population density in Norway (18 inhabitants/km²).

The part of the programme area in Finland has an average population density of around 6 inhabitants/km² and is also lower than the national average population density in Finland (16 inhabitants/km²).

Figure 2.1: Spatial patterns of population distribution[5]



[5] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.1.1.2 Population development (by age groups)

Indicator description

Population development refers to the percentage change in population at regional level between 2014 and 2024. The data reflects on the total population, as well as on the age groups 0-14, 15-64 and 65+.

- **Source**: Annual Regional Database of the European Commission (ARDECO)
- **Temporal coverage**: 2014-2024
- **Unit**: Change in %

Please refer to the technical annex for more information.

Population in the Sweden–Finland–Norway (Aurora) programme area in 2024 (Eurostat): 3.79 million inhabitants, of which:

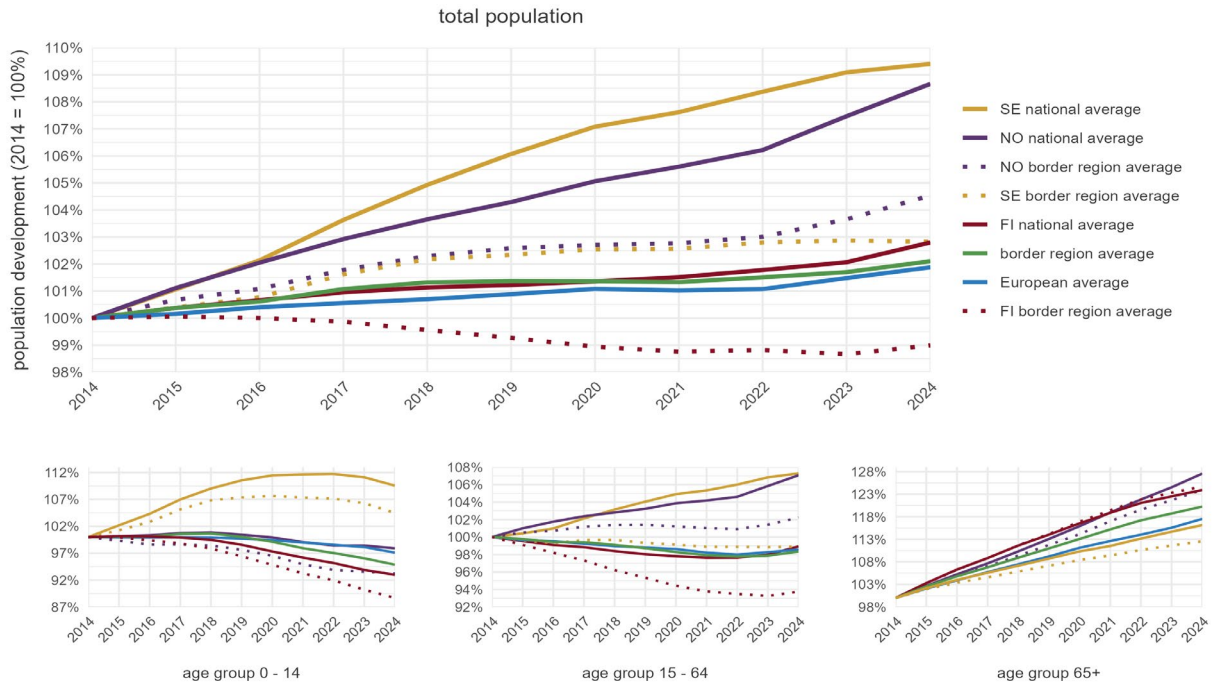
- 33.2% are in the Finnish border territory (1.26 million inhabitants)
- 31.3% are in the Swedish border territory (1.19 million inhabitants)
- 35.5% are in the Norwegian border territory (1.34 million inhabitants)
- Region within the programme area with the highest population change since 2014: Kainuu (FI1D8) at -8.7%

Figure 2.2 shows the population growth in the Aurora programme area between 2014 and 2024. During this period, the programme area has experienced a slight growth of 2.1%, with the highest growth rate observed on the Norwegian side.

Population growth across the programme area is slightly above the European average (2.1% vs. 1.9%) and also slightly above the average development in all border regions (2.1% vs 1.5%). The Finnish border regions show decline in comparison to the national average (-1.0% vs. 2.8%), while the Swedish and Norwegian border regions show substantially lower growth than the national average (2.8% vs. 9.4% in Sweden and 4.5% vs. 8.7% in Norway respectively).

In terms of the development of individual age groups in the programme area, the population aged 0–14 experienced a decrease of -5.1%, while the working-age population (15–64) showed a slight decrease of -1.7%. The population aged 65 and over underwent a substantial increase of 20.3%.

Figure 2.2: Population development (2014=100)[6]



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2.1.1.3 Change in settlement areas

Indicator description

The indicator shows the relative change in settlement areas per LAU in the border region. It considers changes in land cover, from non-artificial areas (such as agricultural, forest and seminatural areas, wetlands and water bodies) to artificial areas (such as urban, industrial, construction sites) between 2012 and 2018. This indicator has to be viewed alongside population development in particular.

- **Source/method of retrieval**: The indicator is retrieved via processing of raster data from CORINE Land cover. The raster information is crossed with Local Administrative Units (LAU) to calculate a change in %.
- **Temporal coverage**: 2012-2018
- **Unit**: Change in %

Please refer to the technical annex for more information.

Figure 2.3 shows how settlement areas changed at a municipal level between 2012 and 2018. Overall, similar patterns of change in settlement areas are evident on all sides of the Sweden-Finland-Norway (Aurora) programme area. Changes are particularly evident around the urban centres of Tromsø, Trondheim, Lillehammer, Hamar, Rovaniemi, Oulu, Joensuu, Vaasa, Kiruna, Umeå, Luleå, Falun and

[6] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

Östersund. However, the changes are not mainly centred around the cities, but spread across large parts of the programme area. Härnösand, Arjeplog and Bodø are exceptions, with no significant changes observed during the time period in question. Along both sides of all borders, the settlement area increases in close proximity to the national borders, with some exceptions. The map also reflects the topographical characteristics of the Swedish-Norwegian border region, where there are hardly any visible changes in settlement areas in steep, high-altitude mountainous areas.

Figure 2.3: Settlement area dynamics[7]

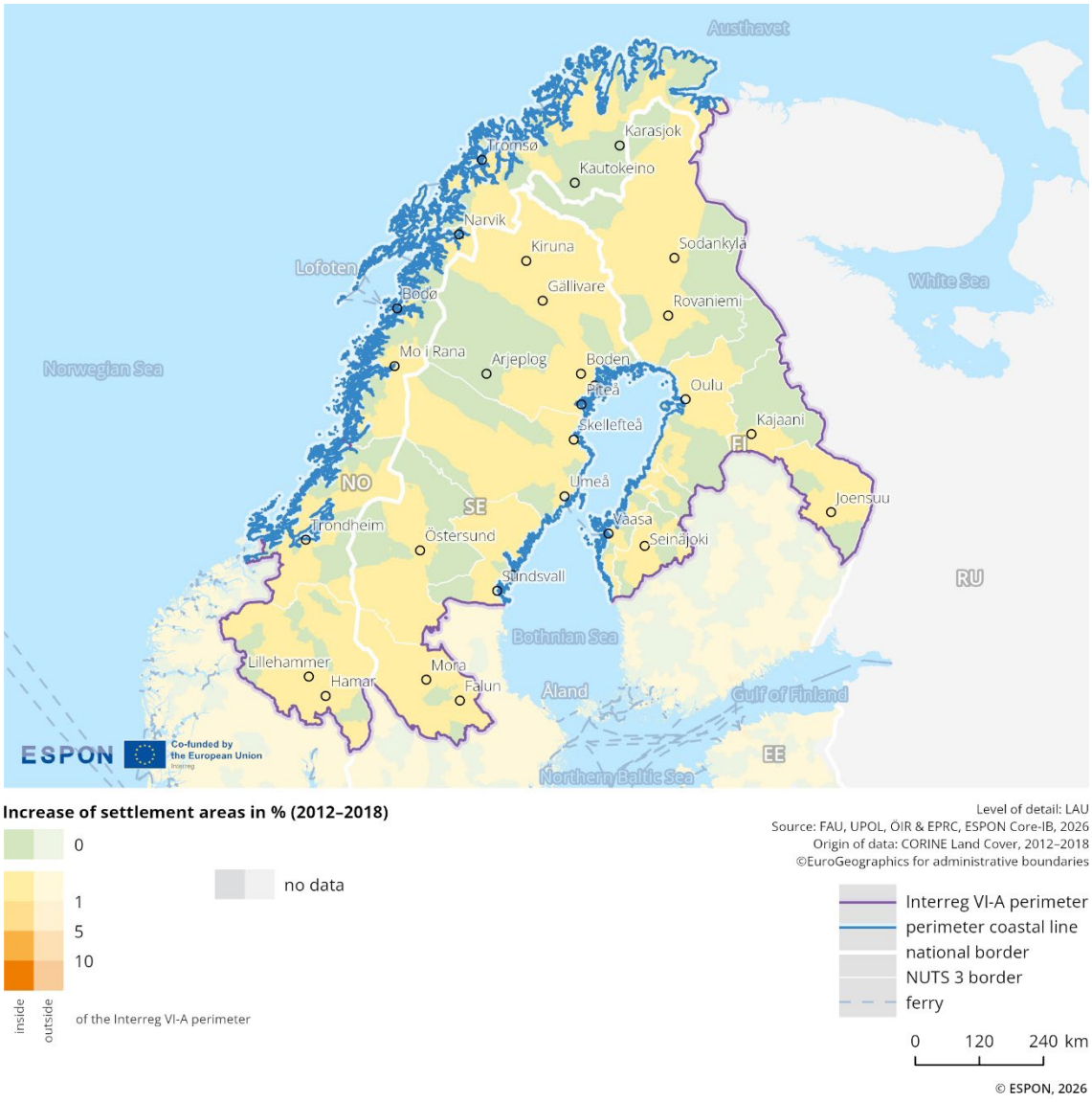
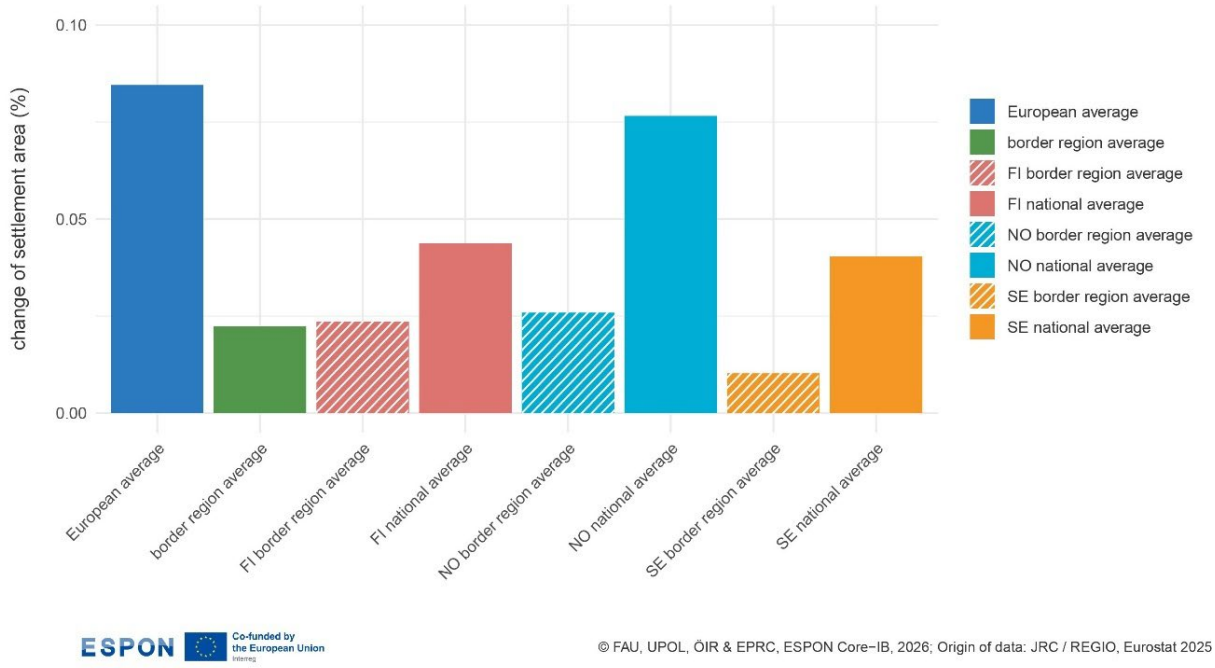


Figure 2.4 shows the change in settlement areas in a comparative context. The average for the Sweden-Finland-Norway (Aurora) programme area is lower than the overall European average, which includes both EU member states and the EFTA countries of Switzerland, Liechtenstein, and Norway. The Norwegian national value is the highest, followed by the Finnish national value, and the Swedish national value. The Norwegian border-regional average lies above the Finnish and Swedish border-regional averages. The Norwegian, Finnish and Swedish border-regional averages are all lower than their respective national averages.

[7] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

In general, the programme area exhibits a dynamic settlement development. The need for an integrated approach to spatial development is clear. Spatial development must balance the various land use demands (e.g., residential, commercial, tourism, transport, agriculture, indigenous Sápmi communities, and nature conservation), which requires ongoing coordination and exchange, including across borders.

Figure 2.4: Change in settlement areas (2012-2018) (comparison)[8]



[8] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.1.2 Accessibility of the border area

This sub-dimension illustrates the functional travel connections that already exist in the border region. It examines average cross-border travel times for different modes of transport and cross-border catchment areas based on mobility flows. It also considers travel times to and from border crossings. The analysis shows whether mobility flows are integrated between border regions or if the border hampers mobility.

2.1.2.1 Comparative quality of selected cross-border connections

Indicator description

The indicator presents a comparative perspective for different modes of transport (public and private) and their average travel speed (so-called space-time-lines). As such it helps to understand and interpret accessibility patterns along the border and highlights the comparative quality of selected cross-border connections.

- **Source/method of retrieval**: Average number and speed of rail connections/ferries, average speed of car connections between selected cities and towns in border regions using Rail Travel Sites, Google Maps, luftlinie.org, Direct Ferries, local ferry companies
- **Temporal coverage**: 2025 (first quarter)
- **Unit**: km/h

Please refer to the technical annex for more information.

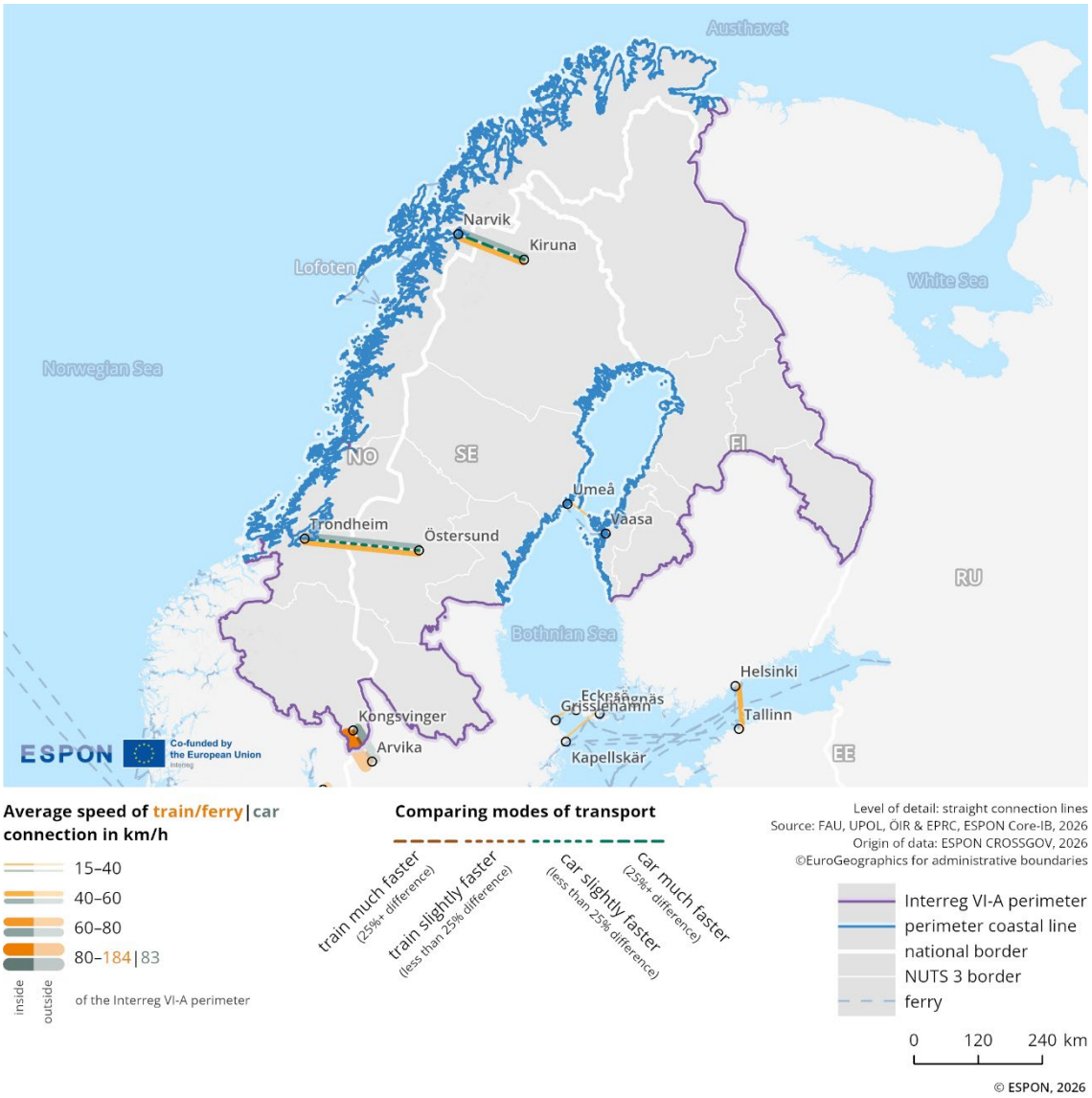
Cross-border accessibility shapes cross-border interactions. Figure 2.5 illustrates this using a "space-time-line" map, which shows parts of a European overview of car, train and ferry travel times in the Sweden-Finland-Norway (Aurora) region. This visualisation enables an assessment of transport quality by highlighting differences between public (train, ferry) and private (car) transport modes.

The selection of cities and connections covered is based on a set of criteria applied throughout Europe within the ESPON CROSSGOV project.[9] These criteria include the presence of a railway station, population size, distance to the border, node hub and functionality. The thickness of the lines (orange for trains and ferries, grey for cars) indicates the average speed of connections in km/h, with thicker lines representing faster connections. Dotted lines in-between reflect the indexed ratio between train and car speeds. A brown colour scale (values below 100) shows that trains are faster than cars along the specific route, while a green scale (values above 100) indicates the opposite.

The selected connections within the programme area include Narvik–Kiruna, Trondheim–Östersund, and the ferry Umeå–Vaasa. For the Narvik–Kiruna and Trondheim–Östersund routes, car travel outperforms train connections in terms of speed. Notably, both connections offer also relatively fast train options. In contrast, the Umeå–Vaasa ferry is characterised by somewhat slow travel times.

[9] ESPON CROSSGOV Atlas, see Storymap on 'Space-time-lines': https://gis-portal.espon.eu/arcgis/apps/storymaps/collections/345c978adf784adfac30c16b90219d35?item=4

Figure 2.5: Comparative quality of selected cross-border connections[10]



[10] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.1.2.2 Cross-border catchment area based on mobility flows

Indicator description

This indicator measures the movement of people across borders. The density of cross-border movements by Twitter/X users is displayed on a grid cell covering an area of 20x20 km. The indicator does not differentiate between reasons for movement.

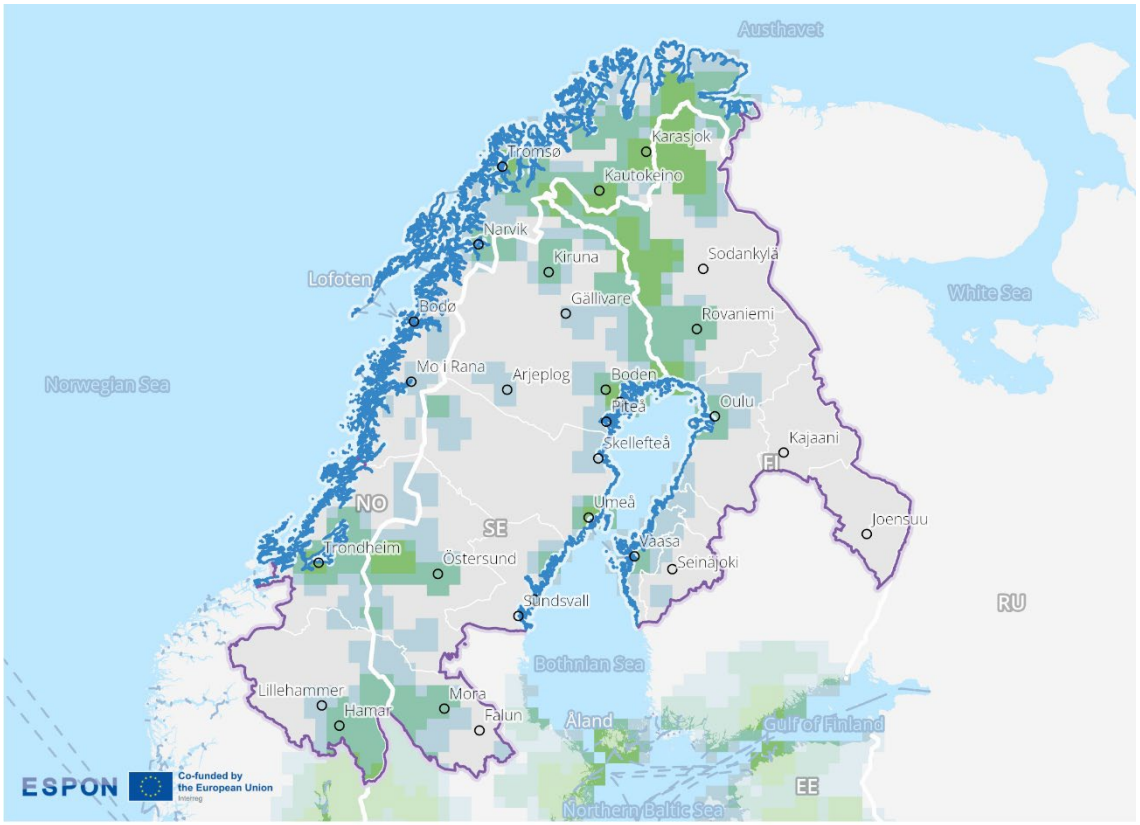
- **Source/method of retrieval**: The indicator is calculated based on Twitter (currently X) data. The digital footprint of individual users provides information about physical mobility flows and is used to calculate cross-border catchment areas of different intensity.
- **Temporal coverage**: 2013-2023
- **Unit**: n/a

Please refer to the technical annex for more information.

Figure 2.6 shows the cross-border catchment area in the programme area based on mobility flows from 2013 to 2023, highlighting estimated cross-border mobility intensity across 3 different quartiles. The first quartile represents the 25% highest mobility intensity shown in dark green, the second quartile represents 25-50% coloured in green-blue, and the third quartile represents 50-75% in light blue.

The intensity of cross-border mobility of people within this programme area is highly variable. High levels of mobility intensity are observed near the border area between Finland, Norway, and Sweden in the northern part of the programme area, and in the east of the city of Trondheim. Moderate intensity is recorded around the cities of Hamar, Umeå, Vaasa, Oulu, Rovaniemi, Östersund, and Kiruna. Low mobility intensity follows the border between Sweden and Norway. However, in most parts of the programme area, no mobility intensity is recorded.

Figure 2.6: Cross-border mobility intensity[11]



Estimated cross-border mobility intensity (2013-2023)

high
moderate
low

inside / outside of the Interreg VI-A perimeter

Level of detail: 20km aggregated grid
Source: FAU, UPOL, ÖIR & EPRC, ESPON Core-IB, 2026
Origin of data: ESPON CROSSGOV, 2026
©EuroGeographics for administrative boundaries

Interreg VI-A perimeter
perimeter coastal line
national border
NUTS 3 border
ferry

0 120 240 km

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[11] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.1.2.3 Cross-border travel-time accessibility

Indicator description

The indicator shows the time it takes to travel from any location within a region to the next border crossing, using grid data and subsequent categorisations into accessibility groups of 30, 60 and 90 minutes. It reflects the accessibility in cross-border areas, considering road transport. The indicator can describe the quality and speed of road connections and thus spatial reach of the cross-border services.

- **Source/method of retrieval**: Based on the OpenStreetMap road network, the travel time to the border is calculated for a grid of the border are. Based on this, areas are calculated within which border crossings can be reached below thresholds of 30, 60 and 90 minutes. As additional visual element, key services pharmacies, doctors, hospitals and shops (retrieved from the ESPON PROFECY project) are displayed and categorised into the accessibility groups.
- **Temporal coverage**: 2025 (first quarter, for accessibility data), 2021 (for service facility data)
- **Unit**: Minutes

Please refer to the technical annex for more information.

Figure 2.7 illustrates cross-border travel time accessibility in the Interreg area, showing the time distance from the national border in 2025. The legend indicates 3 travel time categories in minutes (30, 60, 90) represented by different shades of blue. In addition, it marks the location of services, including hospitals, doctors (general practitioners), pharmacies, and shops (supermarkets and conventient stores), with distinct coloured symbols.

The map shows that there is a significant difference in travel time accessibility between the southern and middle parts of the border between Sweden and Norway. The Norwegian side has better transport accessibility to the border than the Swedish side. On the Norwegian side, the first 2 categories of accessibility are within 30 and 60 minutes. On the Swedish side, accessibility is mostly over 90 minutes. The southernmost part is an exception, where the times are more comparable. The northern part of the border between Finland and Sweden, and between Norway and Finland, has significantly better accessibility. The northern areas are primarily located within a 30- to 60-minute travel time to the border.

Services such as shops, hospitals, doctors, and pharmacies are more densely located in the southern parts of the programme area rather than in the northern parts. The services are primarily located in larger cities, such as Trondheim, Hamar, Luleå, or Rovaniemi, with distances within a 90-minute travel time category.

Figure 2.7: Travel-time accessibility from border crossings[12]

2.1.3 Key messages on the territorial dimension

The Sweden-Finland-Norway (Aurora) programme covers the area between northern Sweden, northern Finland, and northern Norway, and includes large parts of Sápmi.

The programme area is mostly flat or gently hilly, except for a mountain ridge in the west that forms a prominent highland area. Much of the landscape, especially on the Finnish and Swedish sides, is covered by extensive boreal forests, wetlands, mires and tundra. The programme area is traversed by several major rivers and contains numerous lakes.

The programme area includes large areas that are extremely sparsely populated, giving it one of the lowest population densities in the EU at 6 inhabitants/km². At the same time, the programme area includes several dispersed urban centres that function as key hubs for population, businesses, industry and essential services. While the most visible changes in settlement areas occur in these urban centres,

[12] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

shifts are also evident also elsewhere (e.g., in close proximity to the national borders except for the steep, high-altitude mountainous areas). Overall, the programme area is characterised by dynamic settlement development, highlighting the need for integrated spatial planning that balances diverse land-use demands, such as residential and commercial development, tourism, transport, agriculture, the needs of Indigenous Sápmi communities, and nature conservation. This, in turn, requires continuous coordination and dialogue, including across borders.

A period of some population growth in the area, especially in the Norwegian regions, and associated growth around urban centres (Tromsø, Trondheim, Lillehammer, Hamar, Rovaniemi, Oulu, Joensuu, Vaasa, Kiruna, Umeå, Luleå, Falun and Östersund) underline the ongoing growth potential in the programme area, albeit from low existing population levels. In addition, although not explicitly covered by the data, some of the areas have also seen an inflow of external migrants (including refugees from Ukraine).

However, demographic ageing and the long-term retention of a skilled, working age population in the area are important challenges, with different implications for urban centres and rural areas. This is highlighted by the decrease in the working age population and substantial increase in the population aged 65 and over. These demographic developments (including the retention of population) provide another key cooperation issue for the programme area.

Extreme distances and challenging physical geographies mean that road connections are the main forms of land connection across the programme area. Settlement patterns, and the distances involved, also mean that the intensity of cross-border mobility of people within this cross-border programme area is highly variable. Higher levels of mobility intensity are observed near the border area between Finland, Norway, and Sweden in the northern part of the cross-border programme area (facilitated by shorter travel time accessibility in relation to the rest of the programme area), and east of the city of Trondheim. Moderate intensity is recorded around the cities of Hamar, Umeå, Vaasa, Oulu, Rovaniemi, Östersund, and Kiruna.

These characteristics, combined with extreme climate conditions, shape and inform development opportunities in the area especially in relation to accessibility, infrastructure and spatial development.

2.2 Economic dimension

The economic dimension includes analyses of gross domestic product, labour market conditions, competitiveness, and key infrastructure and housing indicators. The aim is to illustrate the impact of the border on economic performance, whether it acts as a barrier or a bridge, and the extent to which integration is supported by labour mobility, remote working, and infrastructure connectivity.

2.2.1 Gross Domestic Product

This sub-dimension illustrates the economic situation of the cross-border region by analysing gross domestic product (GDP). It shows economic development within the border region and how this has changed over time. Comparisons with the respective countries and the EU average provide important context for understanding the cross-border region's dynamics.

2.2.1.1 Gross domestic product per capita at current market prices

Indicator description

The indicator shows the regional GDP/capita in current prices and its development over the past years. It highlights structural differences and similarities between the border region and the respective national figures as well as the European average. Furthermore, it highlights patterns within the border region, although has to be interpreted with care in the case of a strong presence of commuters.

- **Source**: Eurostat, Annual Regional Database of the European Commission (ARDECO)
- **Temporal coverage**: 2010-2023
- **Unit**: Euro per capita

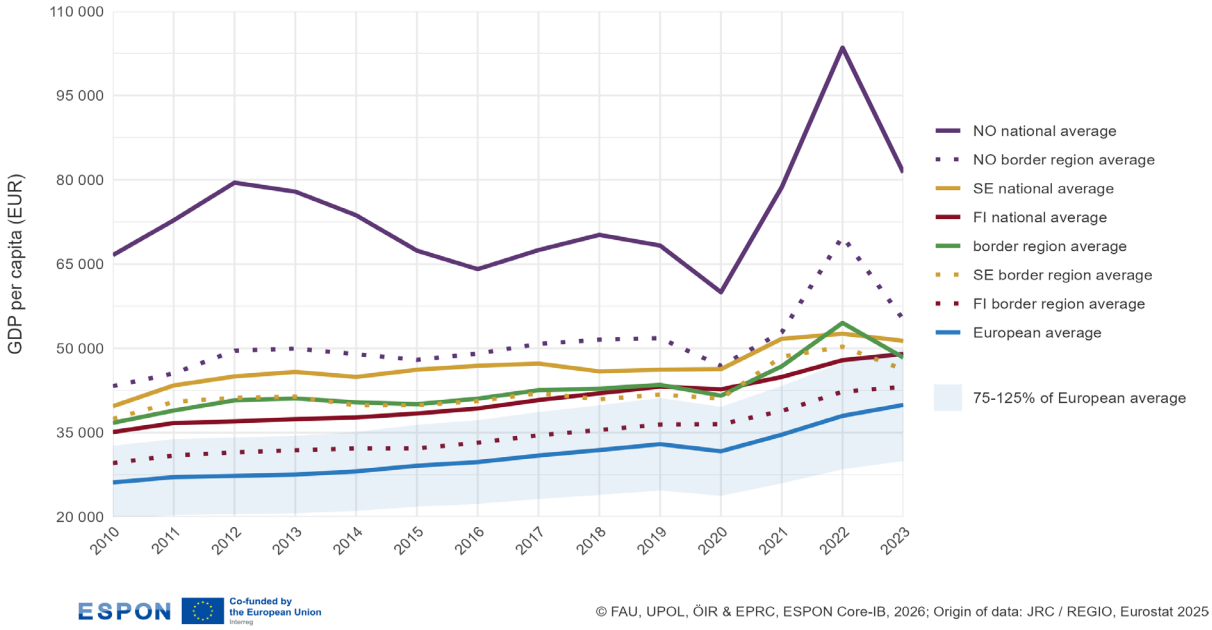
Please refer to the technical annex for more information.

In 2022, the Sweden-Finland-Norway (Aurora) cross-border programme's GDP/capita value was 141.5% of the EU average and 143.7% of that of other European border regions. Between 2014 and 2022, the cross-border programme area saw a 34.9% increase in GDP per capita.[13]

This corresponds to a 0.8 percentage points lower increase in GDP per capita in the Aurora programme area compared to the EU average. Furthermore, this corresponds to 0.3 percentage points lower increase in GDP per capita in the programme area compared to the average of European border regions. While all countries and their respective border regions have a higher GDP per capita than the EU average, all border regions show values lower than their respective national averages. Between 2014 and 2022, growth rates in the Norwegian and Finnish border regions were similar to the EU average, while growth in the Swedish border region was moderate.

[13] Percentage changes are calculated using Eurostat data to ensure harmonised statistics from official sources. The latest year for which full coverage of all European regions is available on Eurostat is 2022. For visualisation purposes, ARDECO data has been used to enable longer time series to be visualised by filling the official dataset's existing gaps with model-based estimates. Therefore, slight deviations between the calculation and visualisation are possible.

Figure 2.8: Gross domestic product at current market prices (per capita)[14]



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[14] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.2.2 Labour market and commuting

This sub-dimension highlights the existing and potential functional links within the labour market of the border region. It examines the employment situation and commuting patterns, as well as the role of telework agreements, and considers developments over time based on analysed indicators. The analysis identifies factors that facilitate or hamper cross-border labour market integration.[15]

2.2.2.1 Share of employment

Indicator description

This indicator shows the share of employees in the population aged 15 to 64. Although it does not fully capture entrepreneurs, marginal employees, or civil servants, this is an important statistic for understanding general labour market patterns. It covers 2 aspects: first, high values can result from a high proportion of the resident population being employed. Second, high values can result from a high number of incoming commuters (from other NUTS3 regions within the country or from neighbouring countries). The same arguments apply to low values: they may indicate low levels of employment, or they may result from high shares of outgoing commuters. Values of more than 100% are possible, since the number of incoming commuters can exceed the number of inhabitants aged 15 to 64 (including both domestic and cross-border commuters).

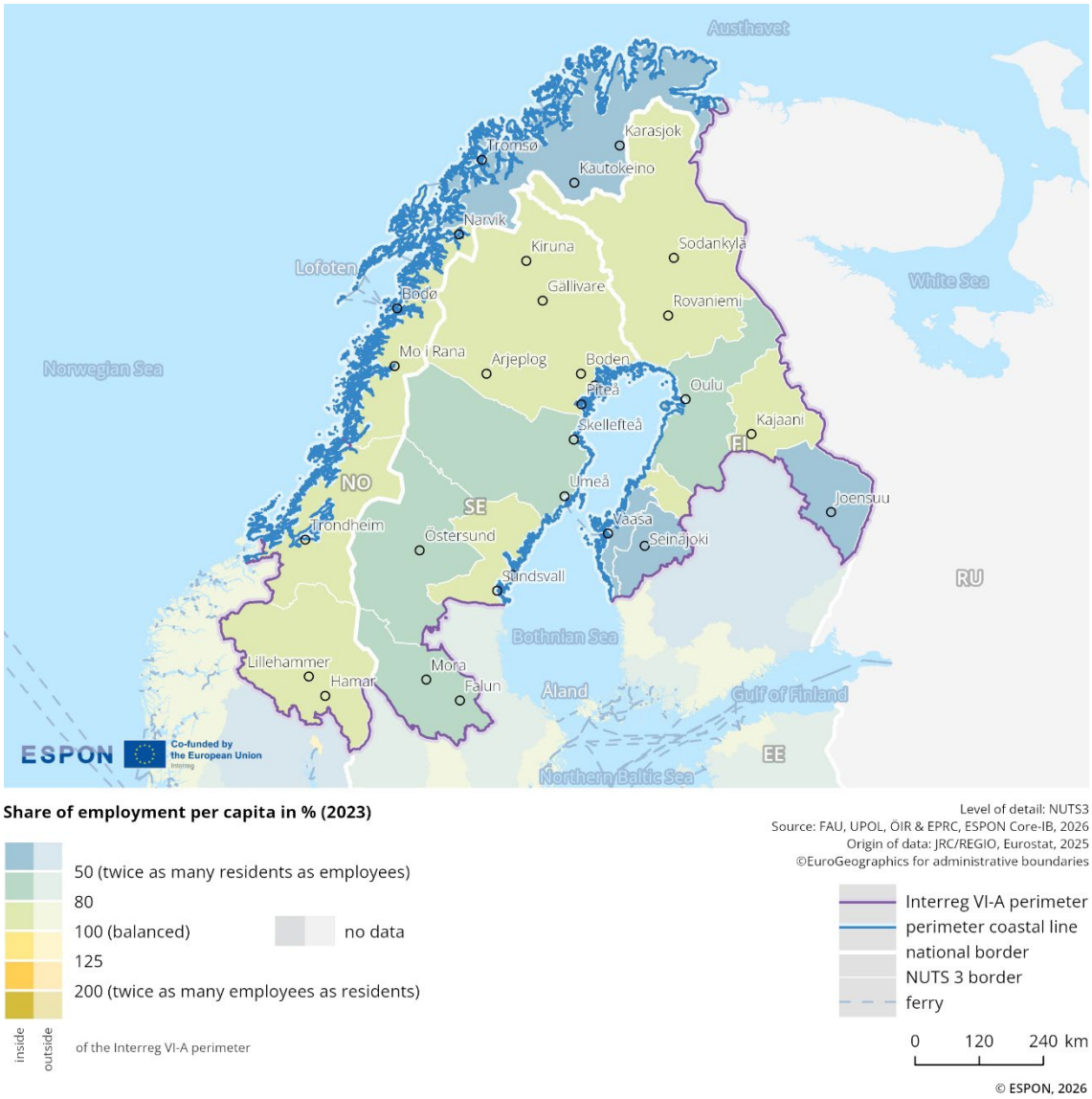
- **Source**: Eurostat, Annual Regional Database of the European Commission (ARDECO)
- **Temporal coverage**: 2014-2023
- **Unit**: Share in %

Please refer to the technical annex for more information.

Figure 2.9 illustrates the share of employment per capita in the population aged 15 to 64 in 2023. The data are categorised into ranges from below 50% (twice as many residents aged 15 to 64 as employees) to above 200% (twice as many employees as residents aged 15 to 64), with 100% representing a balanced ratio. Blue or green-coloured regions indicate more residents aged 15 to 64 than employees, while yellow regions indicate more employees than residents aged 15 to 64.

[15] See also: European Commission 2024: Cross-Border Regional Labour Market Analysis, https://op.europa.eu/s/AazM

Figure 2.9: Employment share[16]



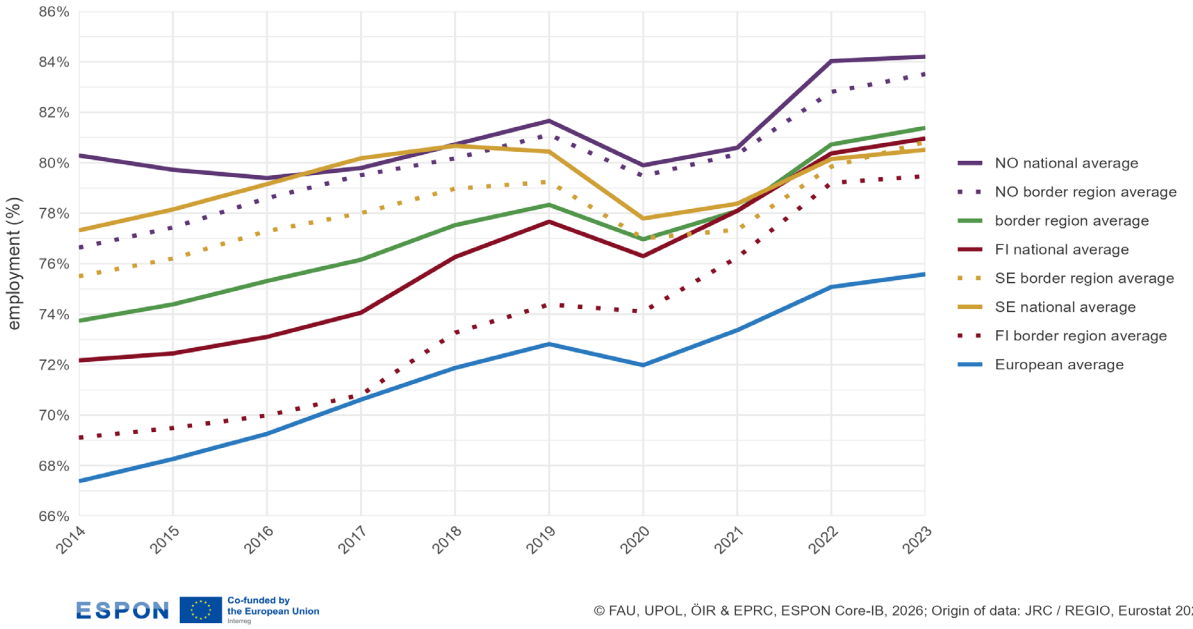
The share of employment in this programme area is variable, with the regional average reaching 81.2% in 2023, representing an increase of 7.5 percentage points since 2014. Share of employment values range from 80% to 100% in the southern part of the Norwegian section, in the northern parts of the Swedish and Finnish sections, in the 2 areas in the central Finnish section, and around the city of Härnösand in Sweden. Low values below 50% are found in the northern part of the Norwegian section and the southern part of the Finnish section, while the remaining areas of the Swedish section show values between 50% and 80%. When comparing the share of employment in this programme area with different averages, the following can be observed (see Figure 2.10):

- Compared to the European average, values in the programme area are 5.7 percentage points higher; in 2014, the difference was 6.4 percentage points.
- Compared to Sweden, values in the programme area are 0.7 percentage points lower; in 2014, they were 3.5 percentage points higher.
- Compared to Norway, values in the programme area are 3 percentage points lower; in 2014, they were 6.5 percentage points lower.

[16] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1. Note: In this map, 'residents' refers to the population aged 15 to 64.

- Compared to Finland, values in the programme area are 0.3 percentage points higher; in 2014, they were 1.6 percentage points higher.
- The Swedish border area records values 0.3 percentage points above the Swedish national average. The Finnish border area records values 2.4 percentage points below the Finnish national average. The Norwegian border area records values 0.9 percentage points below the Norwegian national average.
- Compared to the average of all cross-border regions, values in this cross-border programme area are 5.9 percentage points higher; in 2014, the difference was 7.5 percentage points.

Figure 2.10: Employment share over time (comparison)[17]



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[17] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.2.2.2 Share of working-age population

Indicator description

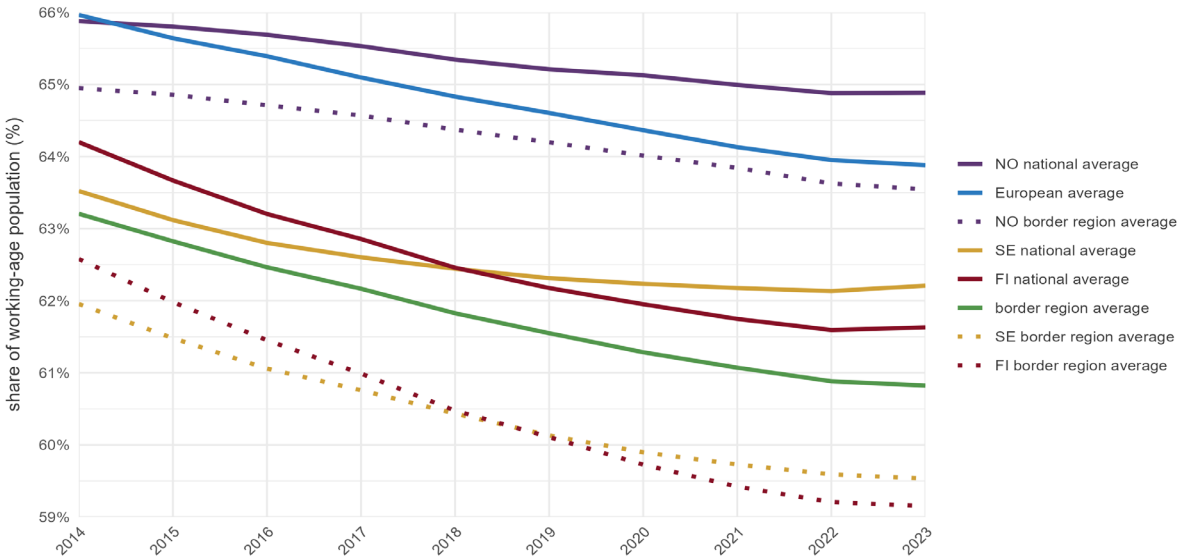
This indicator shows the share of people aged 15 to 64 in the total population, reflecting the potential working-age population. The population counted includes all residents who live in the country permanently, excluding foreign students and military personnel. Using the 15–64 age range is a standard European statistical proxy, since differences in retirement age or labour participation across countries cannot be captured systematically. It allows for regional differentiation of potential workforce throughout the border region.

- **Source**: Eurostat, Annual Regional Database of the European Commission (ARDECO)
- **Temporal coverage**: 2014-2023
- **Unit**: Share in %

Please refer to the technical annex for more information.

Figure 2.11 illustrates the evolution of the share of the working-age population in the Sweden–Finland–Norway (Aurora) cross-border programme area between 2014 and 2023. In 2023, the programme area showed an average working-age population share of 60.8%, compared to the European average of 63.9% and 63.7% for the average of all cross-border regions.

Figure 2.11: Share of working-age population over time (comparison)[18]



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The share of the working-age population in the entire programme area is moderately higher than the Swedish border average (59.5%) and the Finnish border average (59.2%) but is moderately lower than the Norwegian border average (63.6%). Compared to national levels, it is moderately lower than the Swedish national average (62.2%), the Finnish national average (61.6%), and the Norwegian national average (64.9%).

[18] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

The programme area experienced a moderate -2.4 percentage point decrease in the share of the working-age population between 2014 (63.2%) and 2023 (60.8%). This decline is similar to the European average, which fell by 2.1 percentage points over the same period. Declines were observed in areas of the programme area, with the Finnish and Swedish parts experiencing the most significant reductions (-3.4 and -2.5 percentage points respectively), while the Norwegian side exhibited a slight decrease (-1.4 percentage points).

The Sweden–Finland–Norway (Aurora) cross-border programme area experienced a moderate overall decline in the share of the working-age population between 2014 and 2023. In 2023, the cross-border programme area remained below both the EU and cross-border averages, with more favourable demographic trends on the Norwegian side.

2.2.2.3 Employment by sector

Indicator description

The indicator differentiates the number of jobs in a region by sector. This indicator focuses on workplace-based employment, providing insight into the employment landscape of a region. The dataset can be disaggregated according to "10-sector" NACE (Nomenclature statistique des activités économiques dans la Communauté européenne) classifications, allowing for detailed analysis of employment distribution across various industries.

- **Source**: Eurostat, Annual Regional Database of the European Commission (ARDECO)
- **Temporal coverage**: 2014-2023
- **Unit**: Share in %

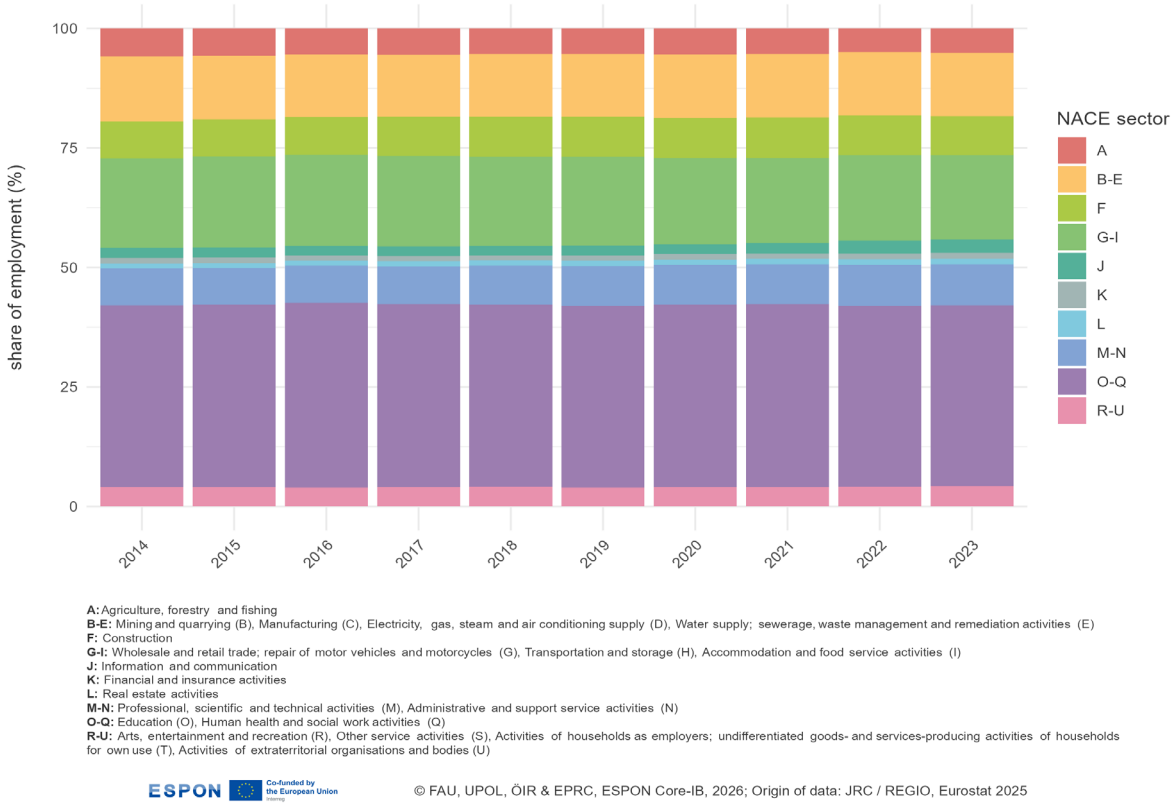
Please refer to the technical annex for more information.

Figure 2.12 illustrates the relative number of jobs in the border area differentiated by sectors. It shows where jobs are located (not where employed persons live). This workplace-based indicator offers insight into the employment structure of a region.

The dataset uses a '10-sector' classification based on NACE categories. The sectoral breakdown is as follows:

- A: Agriculture, forestry and fishing
- B-E: Mining and quarrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D), Water supply; sewerage, waste management and remediation activities (E)
- F: Construction
- G-I: Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Transportation and storage (H), Accommodation and food service activities (I)
- J: Information and communication
- K: Financial and insurance activities
- L: Real estate activities
- M-N: Professional, scientific and technical activities (M), Administrative and support service activities (N)
- O-Q: Education (O), Human health and social work activities (Q)
- R-U: Arts, entertainment and recreation R), Other service activities (S), Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use (T), Activities of extraterritorial organisations and bodies (U)

Figure 2.12: Employment by sector (comparison)[19]



A: Agriculture, forestry and fishing
B-E: Mining and quarrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D), Water supply; sewerage, waste management and remediation activities (E)
F: Construction
G-I: Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Transportation and storage (H), Accommodation and food service activities (I)
J: Information and communication
K: Financial and insurance activities
L: Real estate activities
M-N: Professional, scientific and technical activities (M), Administrative and support service activities (N)
O-Q: Education (O), Human health and social work activities (Q)
R-U: Arts, entertainment and recreation (R), Other service activities (S), Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use (T), Activities of extraterritorial organisations and bodies (U)

Between 2014 and 2023, the relative number of jobs in the different sectors remained fairly stable. There was a slight decline in the share of employment in agriculture, forestry and fishing (A), Education (O) and Human health and social work activities (Q). Conversely, there was a modest increase in the number of jobs in Professional, scientific and technical activities (M) and Administrative and support service activities (N).

Throughout the entire period, the sectors with the highest share of jobs were 'B-E' (mining, quarrying, manufacturing, electricity, gas, steam and air conditioning supply, water supply; sewerage, waste management and remediation activities, 'G-I' (wholesale and retail trade; repair of motor vehicles and motorcycles, transportation and storage, accommodation and food service activities) and 'O-Q' (education, human health and social work activities).

[19] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.2.2.4 Outgoing cross-border commuters

Indicator description

The indicator shows outgoing cross-border commuting dynamics at NUTS3 level. Even though no origin-destination information can be provided, it is assumed that commuters primarily travel across the nearest border. Spatial, economic and population arguments are combined to calculate the number of outgoing cross-border commuters.

- **Source/method of retrieval**: Eurostat/LFS data on outgoing commuters currently available on NUTS2 level has been regionalised for NUTS3 by means of weighting by border length, NUTS3 population-weighted centroid distance to border, population per NUTS3 region (15–64 years old) and real compensation per employee
- **Temporal coverage**: 2015-2023
- **Unit**: Share in %

Please refer to the technical annex for more information.

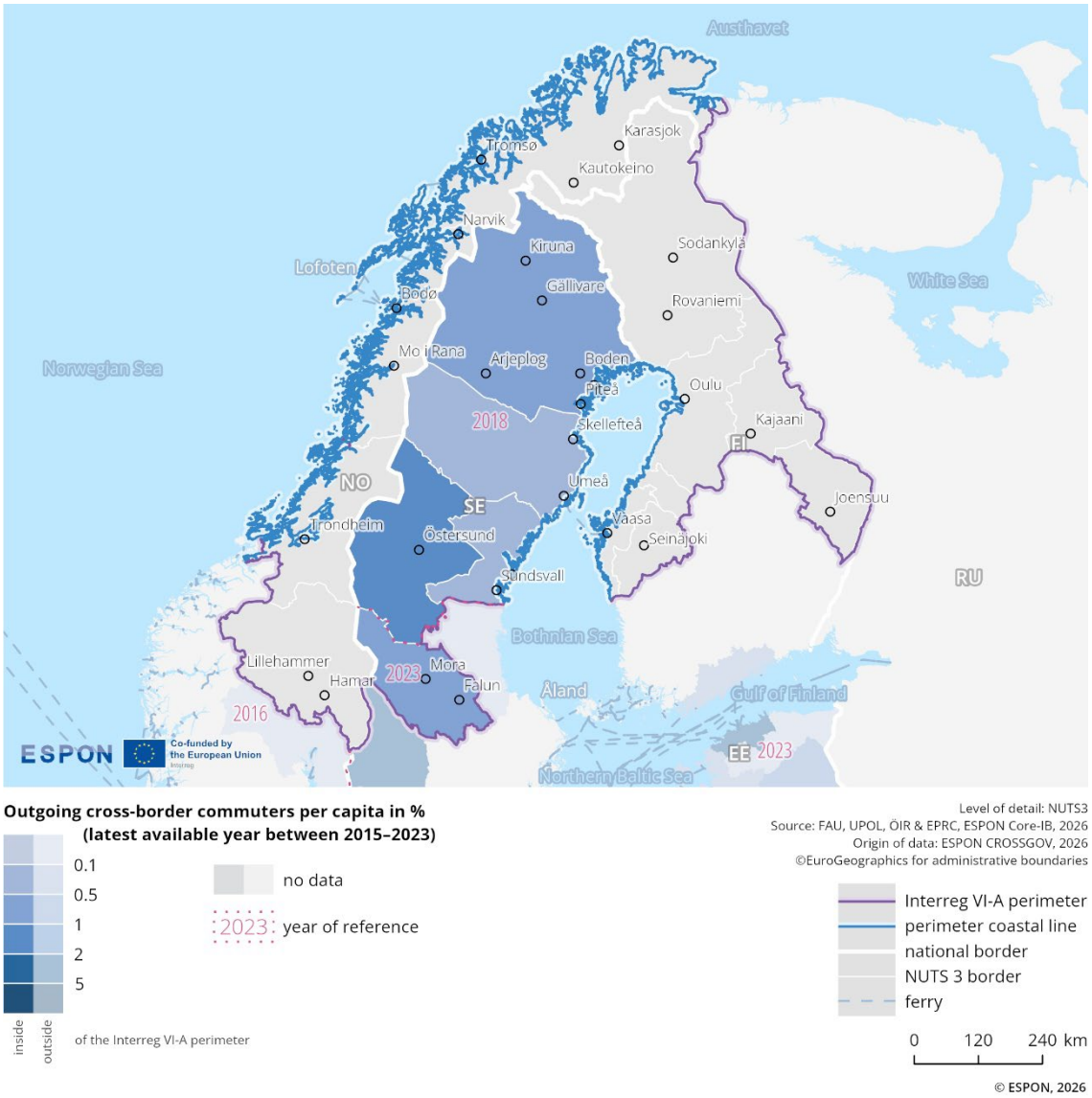
Commuting is one of the most relevant cross-border flows to identify functional linkages. Figure 2.13 illustrates the share of outgoing commuters per capita for each NUTS3 region (more concretely speaking the share of outgoing commuters among the residential population of the age group 15-64 years old, resembling the potential labour force). Origin-destination information cannot be provided, but the share of outgoing commuters in regions close to the border indicates the relevance of commuting. It highlights functional relations in the labour market within the cross-border region.

Figure 2.13 illustrates the share of cross-border commuters, based on the most recent available year of data. It shows relatively high levels of cross-border commuting activity in Sweden. No data is available for Norway and Finland.

Moderately high levels of outgoing activity near the borders are evident in the Swedish counties of Dalarnas, Norrbotten, and Jämtland.[20]

[20] See Eurostat Statistical Atlas for NUTS3 (2021) regions: https://ec.europa.eu/statistical-atlas/viewer/?config=typologies.json&ch=NUTS&mids=BKGCNT,NUTS2021L3,CNTOVL&o=1,1,0.7&center=49.69576,14.3332,4&Icis=NUTS2021L3&

Figure 2.13: Outgoing cross-border commuting patterns[21]



[21] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.2.2.5 Cross-border telework agreements

Indicator description

The indicator shows what kind of legal framework for cross-border telework is enacted.

- **Source/method of retrieval**: The indicator is based on information about the legal framework for social security regarding cross-border teleworking, categorised by border pair.
- **Temporal coverage**: Status as of March 2025
- **Unit**: n/a

Please refer to the technical annex for more information.

All 3 countries are signatories of the 2023 Framework Agreement on Cross-Border Telework. Under this agreement, cross-border workers can telework from their country of residence for up to 50% of their total working time without affecting their social security affiliation.

2.2.3 Competitiveness

This sub-dimension illustrates the competitiveness of the border region by analysing the main industry sectors that contribute to its economic development. It assesses gross value added (GVA) at basic prices by sector, as well as nominal compensation per hour worked, in order to understand productivity levels and sectoral strengths.

2.2.3.1 Gross value added at basic prices by sector

Indicator description

The indicator shows the gross value added (GVA), which is a measure of the contribution of a country or region to the economy. Regional GVA represents the value generated by all units involved in the production of goods and services within a specific area. This indicator can be disaggregated by industry and service sector, allowing for a detailed analysis of economic contributions across different fields. Additionally, the sum of GVA across all industries or sectors, combined with taxes on products and minus subsidies on products, yields the gross domestic product (GDP) of the region. The dataset is available in “10-sector” NACE classifications, facilitating comprehensive evaluations of the regional economy.

- **Source**: Annual Regional Database of the European Commission (ARDECO)
- **Temporal coverage**: 2014-2023
- **Unit**: Million purchasing power standards (PPS)

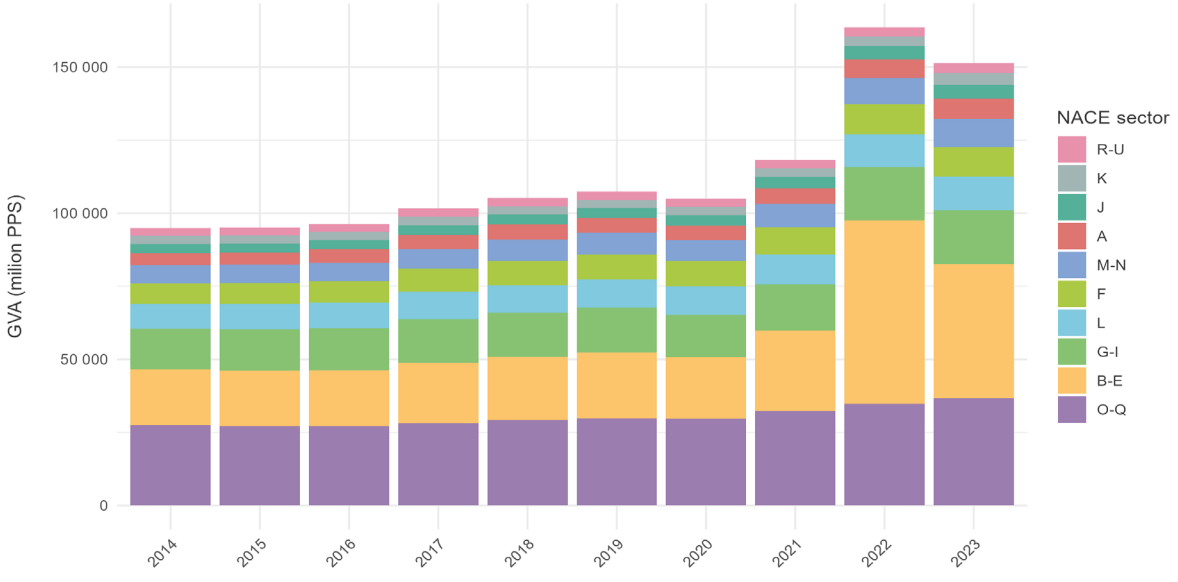
Please refer to the technical annex for more information.

Figure 2.14 visualises gross value added (GVA), which is an important indicator of economic activity. GVA measures the value created by all economic activities involved in producing goods and services in a specific area. It is differentiated by sectors to provide detailed insights into the economic contributions of different fields.

The dataset uses a '10-sector' classification based on NACE categories. The sectoral breakdown is as follows:

- A: Agriculture, forestry and fishing
- B-E: Mining and quarrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D), Water supply; sewerage, waste management and remediation activities (E)
- F: Construction
- G-I: Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Transportation and storage (H), Accommodation and food service activities (I)
- J: Information and communication
- K: Financial and insurance activities
- L: Real estate activities
- M-N: Professional, scientific and technical activities (M), Administrative and support service activities (N)
- O-Q: Education (O), Human health and social work activities (Q)
- R-U: Arts, entertainment and recreation R), Other service activities (S), Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use (T), Activities of extraterritorial organisations and bodies (U)

Figure 2.14: Gross value added at basic prices by sector (comparison)[22]



A: Agriculture, forestry and fishing
B-E: Mining and quarrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning supply (D), Water supply; sewerage, waste management and remediation activities (E)
F: Construction
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R-U: Arts, entertainment and recreation (R), Other service activities (S), Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use (T), Activities of extraterritorial organisations and bodies (U)

Between 2014 and 2023, the GVA in the cross-border programme area increased from 94,969 million purchasing power standards (PPS) to 151,296 million PPS — a growth of 59%. Sector groups B–E (mining, manufacturing, electricity, water supply) and O–Q (education, human health and social work) together make up over half of the total GVA, highlighting their significant contribution to the regional economy within the border area. Sector groups B–E (mining, manufacturing, electricity, water supply) contributed the largest share, totalling 37,831 million PPS in 2023. This underlines the significance of sectors such as Mining and quarrying (B), Manufacturing (C), Electricity, gas, steam and air conditioning

[22] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

supply (D), Water supply; sewerage, waste management and remediation activities (E) in the Sweden-Finland-Norway (Aurora) cross-border programme area.

2.2.3.2 Nominal compensation per hour worked

Indicator description

The indicator shows the average income paid for each hour worked, known as compensation per hour worked. This measure is calculated by dividing the "compensation of employees at current prices" by the total number of "hours worked (employees)." Employees, in this context, are defined as individuals engaged by contract in productive activities for a resident unit, receiving remuneration irrespective of their place of residence. The total hours worked is considered the most appropriate measure of labour input, representing the aggregate number of hours actually worked by employees. This indicator provides valuable insights into labour productivity and wage dynamics within the economy.

- **Source**: Annual Regional Database of the European Commission (ARDECO)
- **Temporal coverage**: 2023 (missing data from 2023 in Switzerland were supplemented by values from 2022)
- **Unit**: Euro

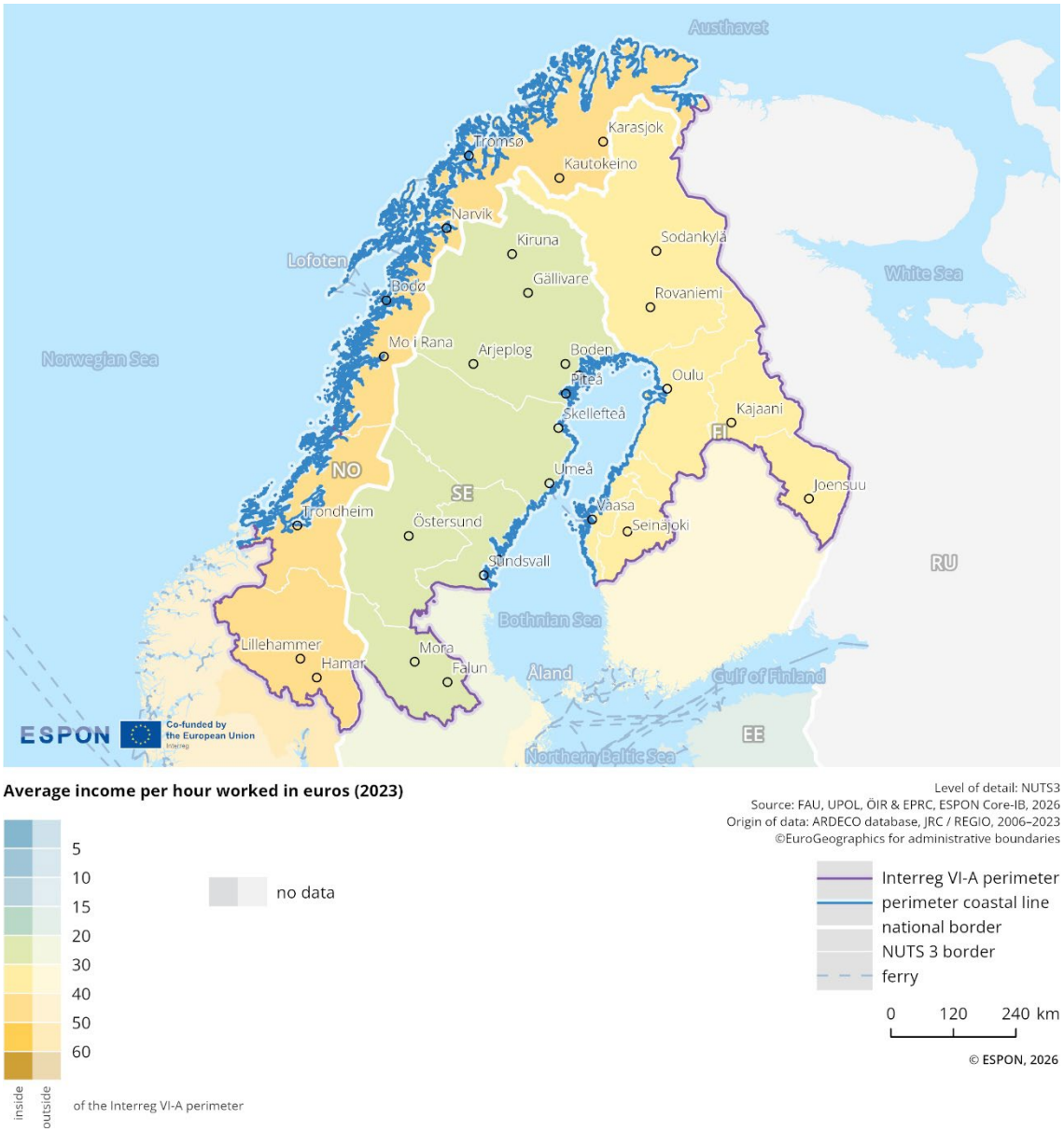
Please refer to the technical annex for more information.

Figure 2.15 shows the average values for the 'compensation per hour worked'. This indicator is calculated by dividing the total compensation of employees (at current prices) by the total number of hours worked by those employees. In this context, 'employees' are defined as individuals engaged by contract in productive activities. The data is available for the place of work, regardless of the place of residence. Total hours worked represent the actual number of hours worked by employees and are considered the most accurate measure of labour input.

In 2023, nominal compensation per hour worked in the Sweden-Finland Norway (Aurora) cross-border programme area appears to be somewhat unevenly distributed. In the Norwegian areas, the average hourly income ranges from €40 to €50, with no region reporting values significantly above this general range. This is in line with the Norwegian national average of €45.70 per hour worked (data for 2023). In the Swedish areas, the average hourly income ranges from €20 to €30, with no region reporting values above this general range. This is consistent with the Swedish national average of €31.20 per hour worked (data for 2023). In the Finnish regions, the average hourly income ranges between €30 and €40, with no region reporting values above this range. This is also consistent with the Finnish national average of €32.50 per hour worked (data for 2023).

Differences in wages across borders can encourage labour migration from lower-wage areas to more economically prosperous neighbouring regions. This creates both opportunities and challenges for local labour markets and social systems.

Figure 2.15: Average income per hour[23]



[23] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.2.4 Infrastructure and housing

This sub-dimension shows the impact of the border on infrastructure and housing in the region. It assesses housing prices and average internet speed in order to identify cross-border effects, including potential price spillovers and disparities. The analysis reveals whether infrastructure and housing markets facilitate integration or expose structural challenges that are specific to the border area.

2.2.4.1 Advertised sales prices

Indicator description

The indicator shows the advertised sales price per square meter for houses/appartements as retrieved from commercial real estate websites at national level. In the cross-border region, local differences between average sales prices are highlighted and the "cutting" effect of the border and its influence on price levels is visualised.

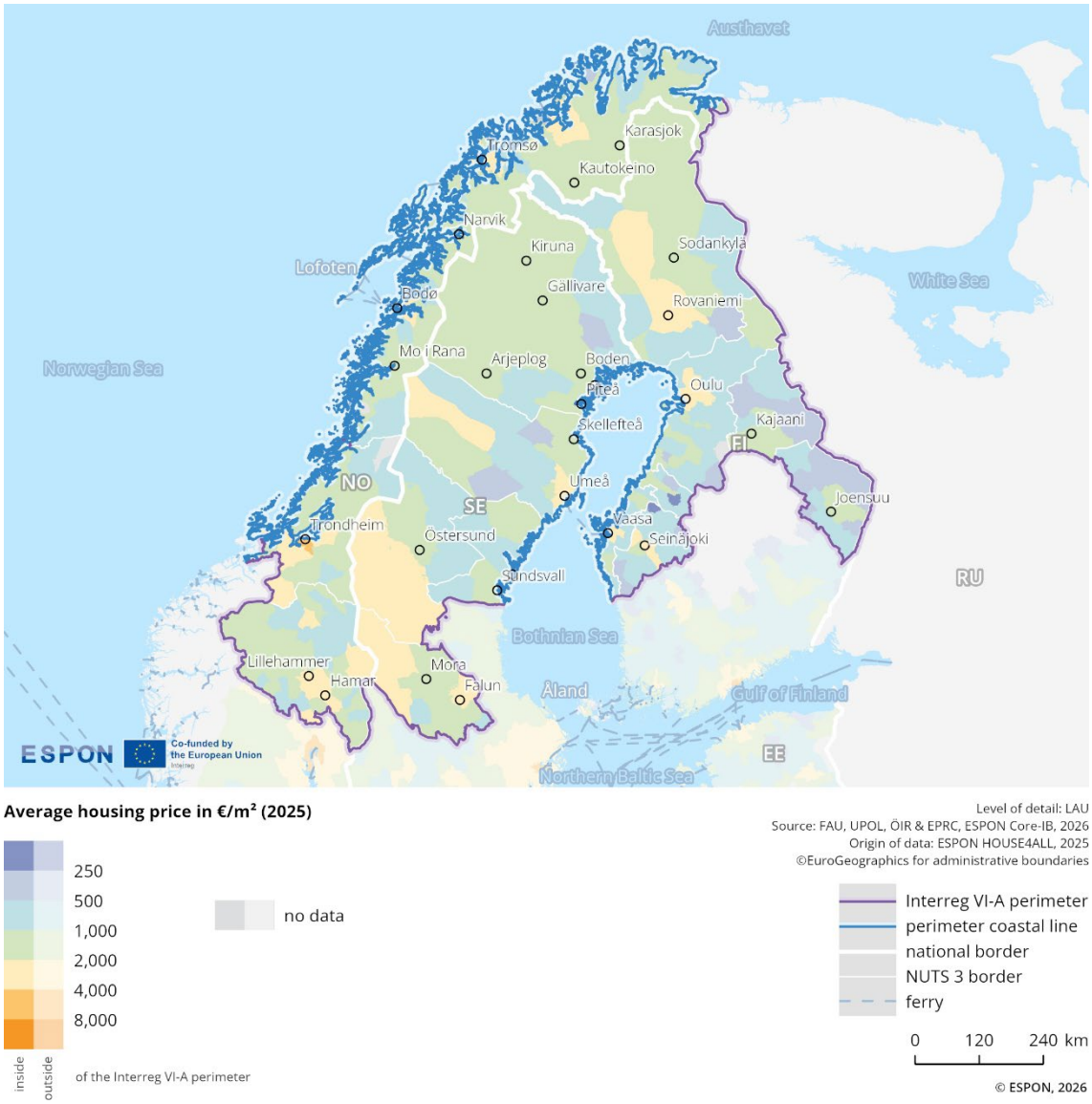
- **Source/method of retrieval**: Processed ESPON House4all data. The original data is collected via web-scraping of national listing websites over a one-year period.
- **Temporal coverage**: 2024/2025
- **Unit**: Average price per square meter (€/m^2)

Please refer to the technical annex for more information.

Figure 2.16 illustrates the advertised sales price of housing in 2025 across the cross-border programme area. The data are categorised into ranges of average housing price per square metre, from below 250 €/m² up to more than 8,000 €/m², shown in colours ranging from purple and blue to green, yellow and orange.

As shown on the map, Finland, Sweden, and Norway all have a similar variation of 3 price categories, ranging from €250 to €4,000/m². In the north, the category up to €2,000/m² is most common. Most cities have land prices ranging from €2,000 to €4,000/m². Examples of these cities are Hamar, Lillehammer, Bodø, and Tromsø in Norway. The exception is Trondheim in Norway, which has the highest prices, up to €4,000/m². In Sweden, the cities of Falun and Umeå fall into the category of up to €4,000/m², as do the Finnish cities of Rovaniemi and Oulu. There are also some areas in Finland where the price is below €250/m².

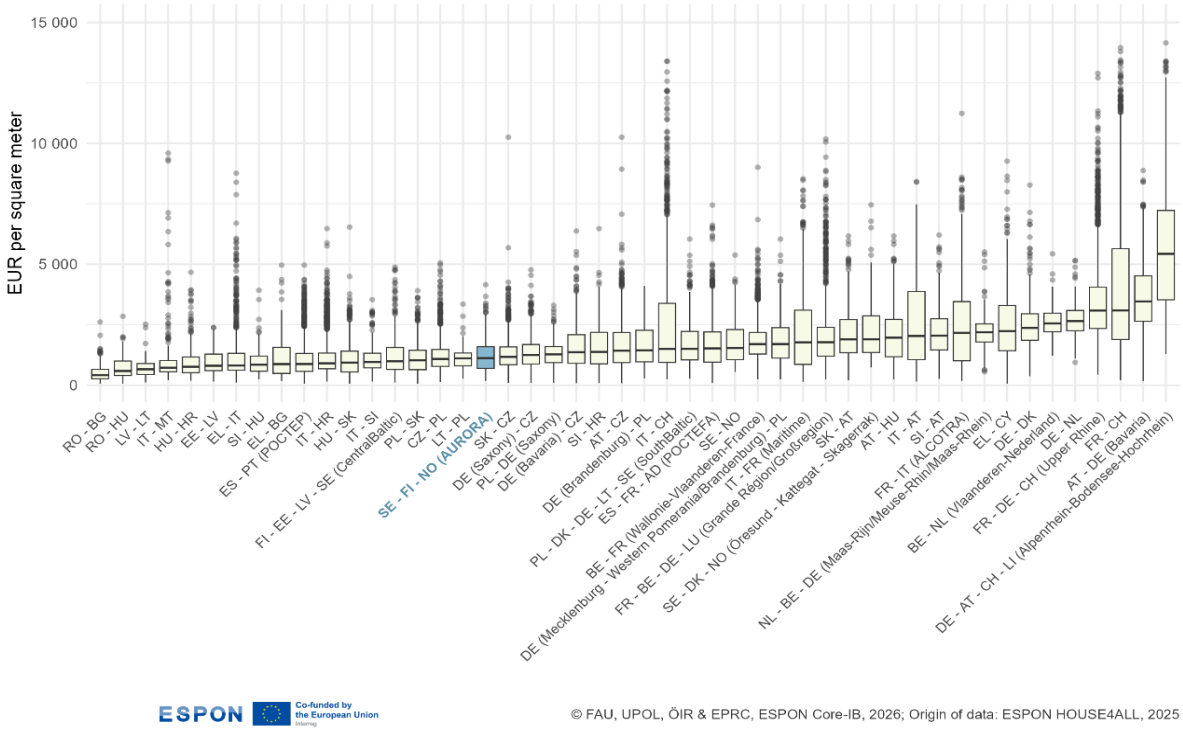
Figure 2.16: Advertised housing prices[24]



The Finnish part of the programme area records an average advertised residential sales price of approximately €985 per square metre, while higher average prices are observed in the Norwegian and Swedish parts, at about €1,480 and €1,302 per square metre, respectively. Overall, the average advertised sales price across the entire cross-border programme area amounts to €1,300 per square metre. This figure is below the average for all EU-evaluated border regions (€1,900 per square metre) and remains well below the European average of approximately €5,600 per square metre.

[24] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

Figure 2.17: Advertised housing prices (comparison)[25]



2.2.4.2 Average internet speed

Indicator description

The indicator shows the population weighted average internet speed available at municipal level. It highlights differences in the "digital preparedness". In border regions, this indicator is particularly relevant for identifying digital infrastructure gaps that may hamper balanced development and cross-border integration.

- **Source/method of retrieval**: Processing of data provided by Speedtest by Ookla Global Fixed and Mobile Network Performance Maps, based on Ookla's analysis of Speedtest Intelligence data.
- **Temporal coverage**: 2022
- **Unit**: Download speed in Mbps

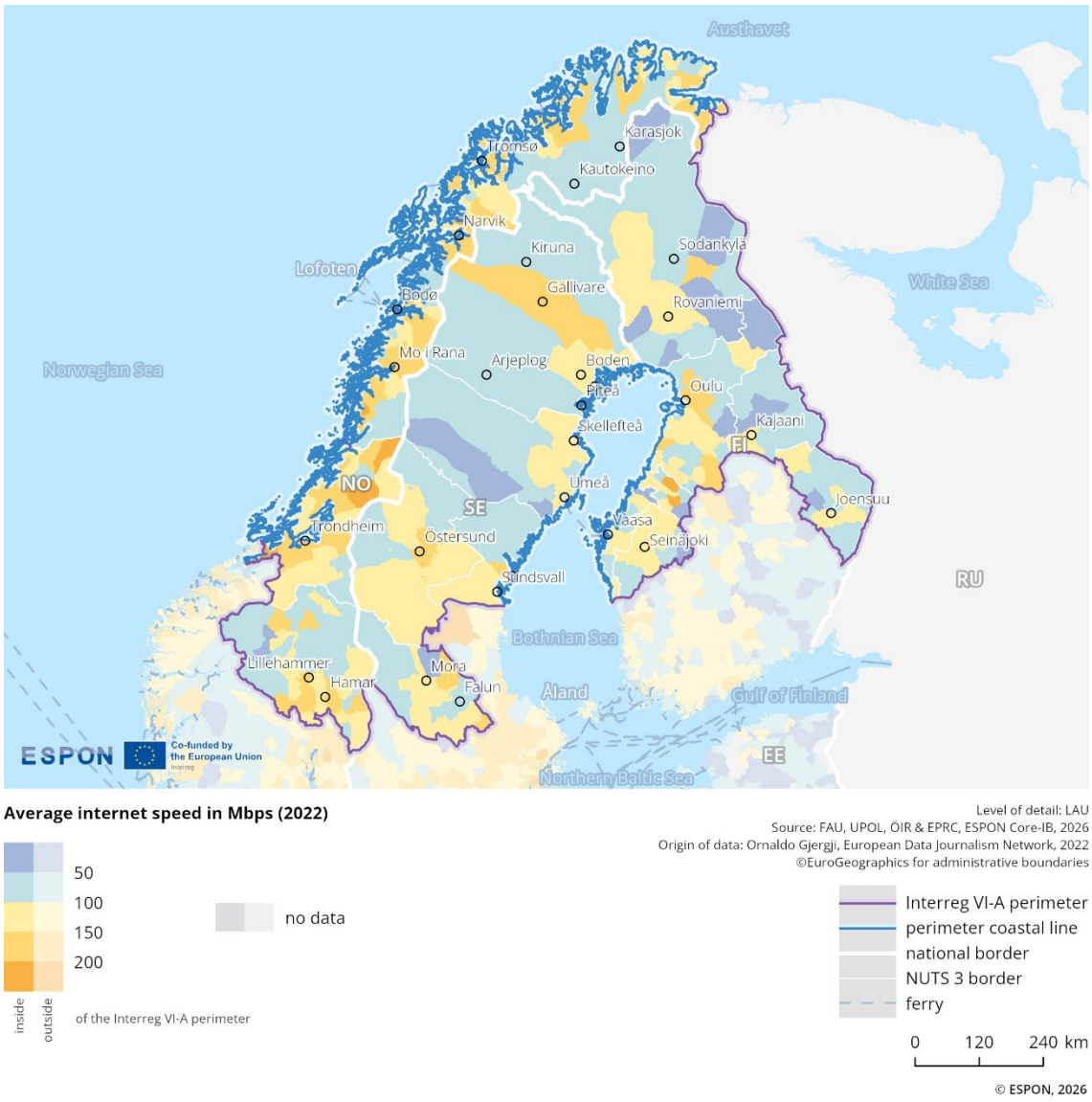
Please refer to the technical annex for more information.

Digitalisation is a highly relevant issue in European border regions, with the overarching objective of ensuring appropriate digital access. It is widely recognised as a key precondition for successful regional and economic development. A major challenge in this process is preventing 'digital divides'— i.e., avoiding significant disparities in economic, social, and spatial terms.

[25] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

Average internet speed is a telling indicator of such disparities, highlighting differences in 'digital preparedness' at the local level. Figure 2.18 shows the average download speed at the municipality level. The colour scheme ranges from dark blue (very slow speeds) to orange (very fast speeds). The data, prepared by OBC Transeuropa for EDJNet, is based on Speedtest Intelligence data from Speedtest/Ookla's Global Fixed and Mobile Network Performance Maps for the first quarter of 2022. The average download speeds are expressed in megabits per second (Mbps), not to be confused with megabytes per second (MBps).

Figure 2.18: Average internet download speed[26]



The Figure 2.18 reveals significant differences between urban and rural areas. Values range from under 50 Mbps to over 200 Mbps. Cities such as Östersund, Härnösand, Umeå, Luleå, Rovaniemi, Oulu, Vaasa, Joensuu, Hamar, Lillehammer, Trondheim, Bodø, and Tromsø report relatively high average speeds, whereas the surrounding areas tend to have significantly lower values. This may be due to the greater return on investment typically associated with digital infrastructure projects in urban areas rather than in rural ones. However, not all urban areas in this cross-border programme area have high download

[26] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

speeds; for example, Falun, Arjeplog, and Kiruna are not particularly notable in this regard. The mountainous terrain in Norway and Sweden, as well as the slightly mountainous terrain in Finland, obviously presents challenges when it comes to providing high-speed internet.

2.2.5 Key messages on the economic dimension

All the countries of the Aurora cross-border programme area have a higher GDP per capita than the average in the EU and other European cross-border regions. However, all cross-border regions have values lower than their respective national averages.

The areas share similar industrial profile, with the highest shares of jobs in sectors including B–E (e.g., mining, manufacturing, electricity, water supply); G-I (e.g., wholesale and retail); and, O-Q (e.g., education, human health and social work activities). The sector groups B-E and O-Q make up over half of the total GVA, with the former contributing the largest share. There is a strong focus on resource-based economy in the area, which reflects the natural resources and geography of the area and underlines the ongoing importance of balancing economic development, resource management and climate/environmental protection, and the Sápmi livelihoods, especially in fragile northern environments experiencing major change as result of climate change. The location of universities provides joint research, development and innovation opportunities across the cross-border programme area.

The share of employment across the programme area varies considerably, with the lowest levels (below 50%) in northern Norway and southern Finland, and the highest levels (between 80% and 100%) in southern Norway, northern Sweden and Finland, and around Härnösand in Sweden. In 2023, the cross-border programme area showed an average working-age population share of 60.8%, compared to the European average of 63.9%. The cross-border programme area experienced a moderate overall decline in the share of the working-age population, with the decline being most pronounced in the Finnish and Swedish areas. This underlines challenges such as ensuring (balanced) supply of labour with relevant skills (especially related to the dominating sectors such as mining and manufacturing as well as education and health and social service provision) and jobs across the cross-border programme area.

Wage levels vary, with higher levels found in Norway. With regards to house prices, these are also somewhat higher in Norwegian areas and across the larger cities of the programme area. The distances to travel across a border in large parts of the programme area limits the potential for regular cross-border commuting. However, improvements in internet accessibility and speeds offer opportunities on provision of shared services and in economic development, with tailored solutions to areas in the far north and remote areas.

2.3 Green dimension

The green dimension highlights the environmental characteristics, vulnerabilities and sustainability-related interactions within the border region. The analysis provides insight into the environmental interdependence of border regions. Additionally, the spatial distribution of renewable and conventional energy infrastructure, alongside indicators of resources and the circular economy, reveals whether the border facilitates collaborative transitions towards sustainability.

2.3.1 Nature protection and pollution

This sub-dimension investigates cross-border functional links in protected areas and areas affected by air and water pollution. It analyses the presence of protected areas in order to identify cross-border ecological links and conservation efforts. It also highlights the extent to which air and water pollution affects people living in border regions.

2.3.1.1 Protected areas

Indicator description

The indicator shows the presence and territorial coverage of protected areas based on the combination of 3 data sources, i.e., Nationally designated areas, Natura 2000 Network and Emerald Network.

- **Source/method of retrieval**: The indicator represents a combination of nationally designated areas, Natura 2000 and Emerald network provided by EEA (European Environment Agency) Geospatial data catalogue.
- **Temporal coverage**: 2024
- **Unit**: n/a

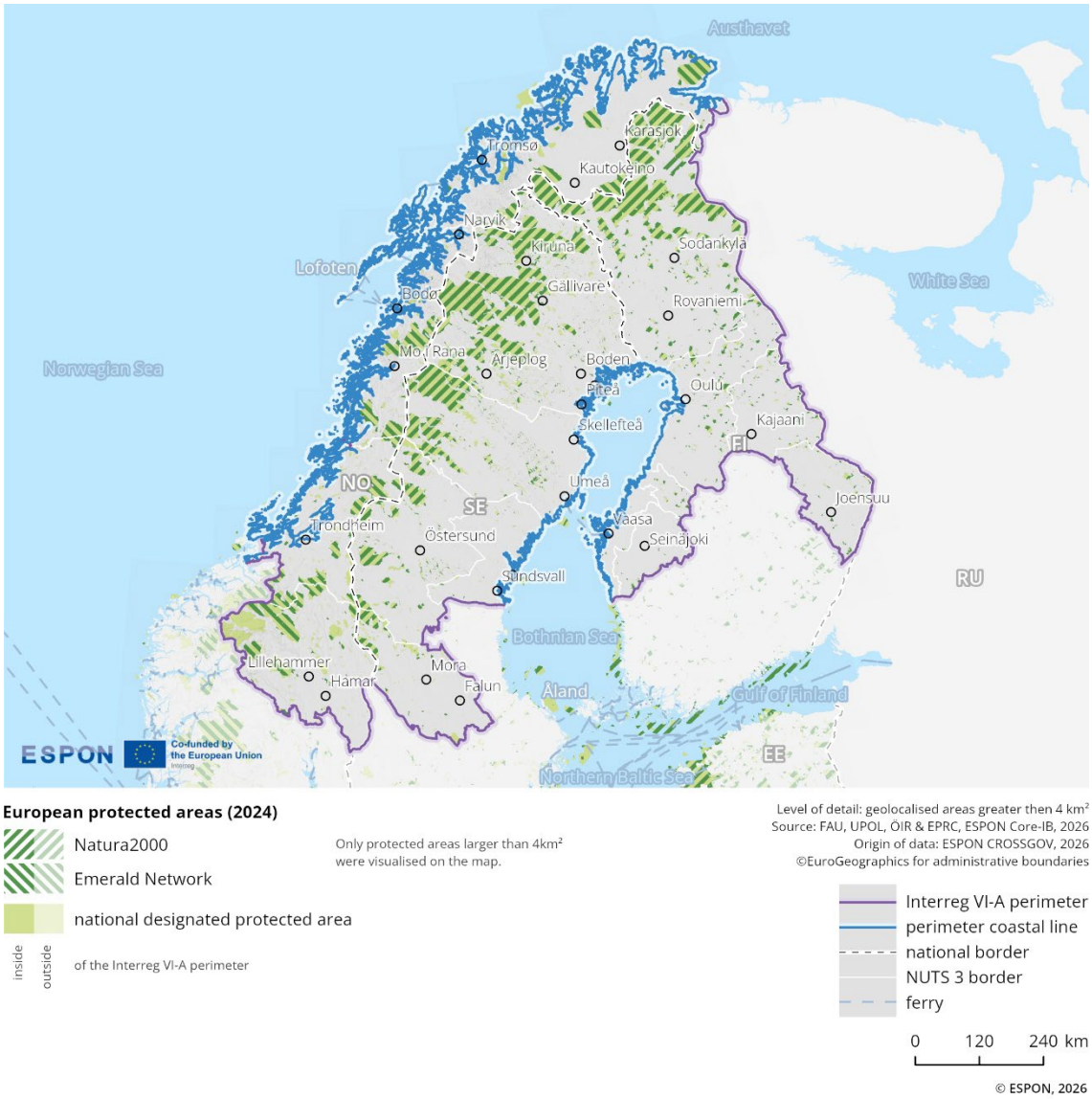
Please refer to the technical annex for more information.

Figure 2.19 illustrates the distribution of protected areas in 2024 across the border region. The data differentiate between Natura 2000 sites, the Emerald Network, and nationally designated protected areas, with only protected areas larger than 4 km² displayed.

Protected areas within the cross-border programme area are concentrated in the north and centre, particularly near Arjeplog and Kiruna, where extensive Natura 2000/Emerald Network and national designations dominate. Large contiguous zones stretch across the mountainous (border) areas, whereas southern sections around Umeå, Vaasa, and Östersund have more fragmented and sparse protected areas.

Many protected areas form cross-border counterparts, particularly between Norway and Sweden, creating continuous corridors. It is also notable that the protected areas in the north of Finland cover a large proportion of the area, but these rarely have counterparts in Norway. Coastal and lowland regions are more fragmented, with fewer visible cross-border links.

Figure 2.19: Nature protected areas[27]



[27] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.3.1.2 Air pollution

Indicator description

The indicator shows the air pollution from fine particulates (PM2.5) at NUTS3 level. The data shows the population-weighted average air pollution level (µg/m³), providing an indication of the extent to which the regional population is affected by air pollution.

- **Source/method of retrieval**: Processing and analysis of European Environment Agency data
- **Temporal coverage**: 2022
- **Unit**: Population weighted average of µg/m^3

Please refer to the technical annex for more information.

The Figure 2.20 illustrates PM2.5 concentrations (in µg/m³) across the NUTS3 regions in the Sweden-Finland Norway (Aurora) cross-border programme area. Each small dot represents an individual measurement, while the black crosses indicate the average PM2.5 concentration for each NUTS3 region[28].The regions are aligned along the x-axis, with Finish regions on the left (in red), Norwegian regions in the centre (in blue) and Swedish regions on the right (in orange).

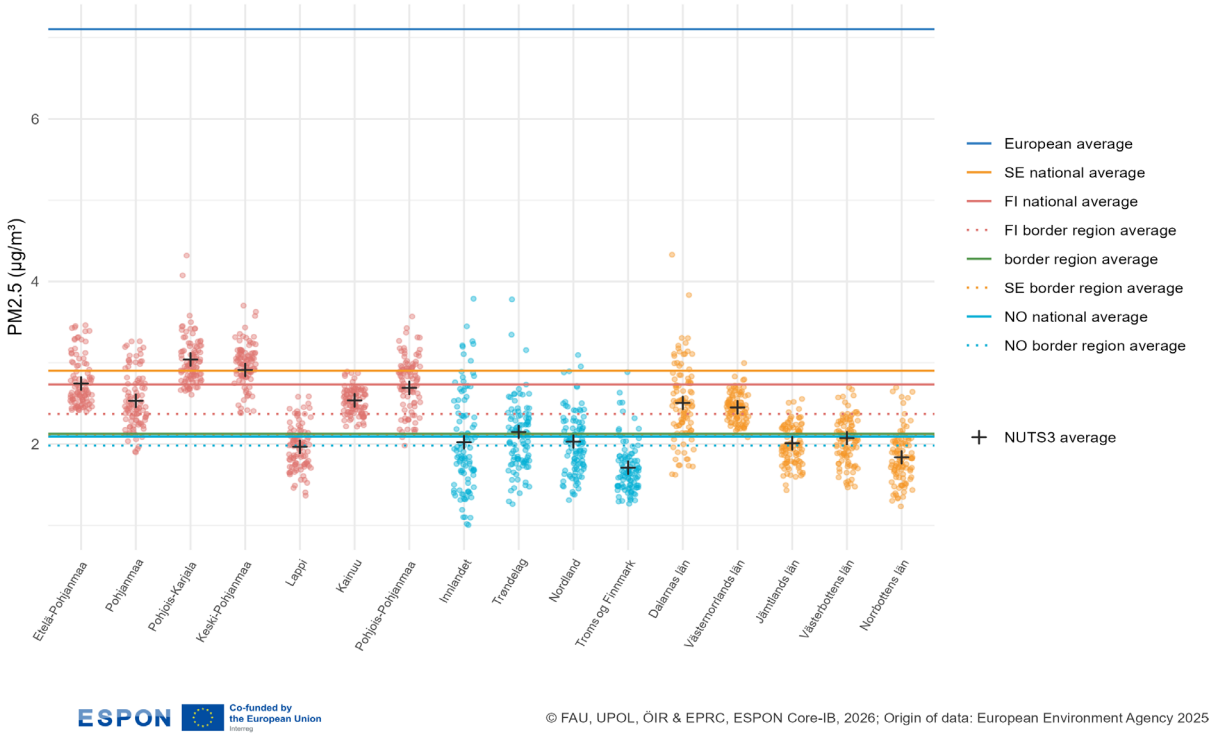
PM2.5 measurements in the Finnish, Swedish and Norwegian regions are relatively tightly clustered, with most values falling within the range of 1 to 4 µg/m³. At the national level, however, Sweden records a higher average PM2.5 level than Norway and Finland.

All 3 national averages exceed their respective border region averages, although the difference between the Norwegian national and the border region average is less pronounced.

The European average is considerably higher than both the national and border region averages in Finland, Sweden, and Norway. The cross-border average is also clearly lower than the European average, aligning closely with the Norwegian national average. It is positioned between the slightly lower Norwegian and Swedish border region averages and the higher Finnish border region average.

[28] See Eurostat Statistical Atlas for NUTS3 (2021) regions: https://ec.europa.eu/statistical-atlas/viewer/?config=typologies.json&ch=NUTS&mids=BKGCNT,NUTS2021L3,CNTOVL&o=1,1,0.7&center=49.69576,14.3332,4&lcis=NUTS2021L3&

Figure 2.20: Air pollution[29]



2.3.1.3 Water pollution

Indicator description

The indicator shows the ecological status or potential for coastal and river water bodies. It is based on an assessment of biological, hydro-morphological, chemical and physico-chemical quality elements.

- **Source/method of retrieval**: Processing and analysis of European Environment Agency data
- **Temporal coverage**: 2022 (supplemented by 2016 data)
- **Unit**: n/a

Please refer to the technical annex for more information.

Figure 2.21 illustrates water pollution levels in the Sweden–Finland–Norway (Aurora) cross-border programme area in 2022. Water quality is represented using 6 colour-coded categories, ranging from "bad" to "high", including an "unknown" category.[30]

In the Norwegian part of the cross-border programme area, the rivers along the coast from Tromsø southwards to Bodø and on to Trondheim are predominantly rated as “high” or “good”. Only a few smaller stretches of river further inland are classified as “moderate” or “poor”.

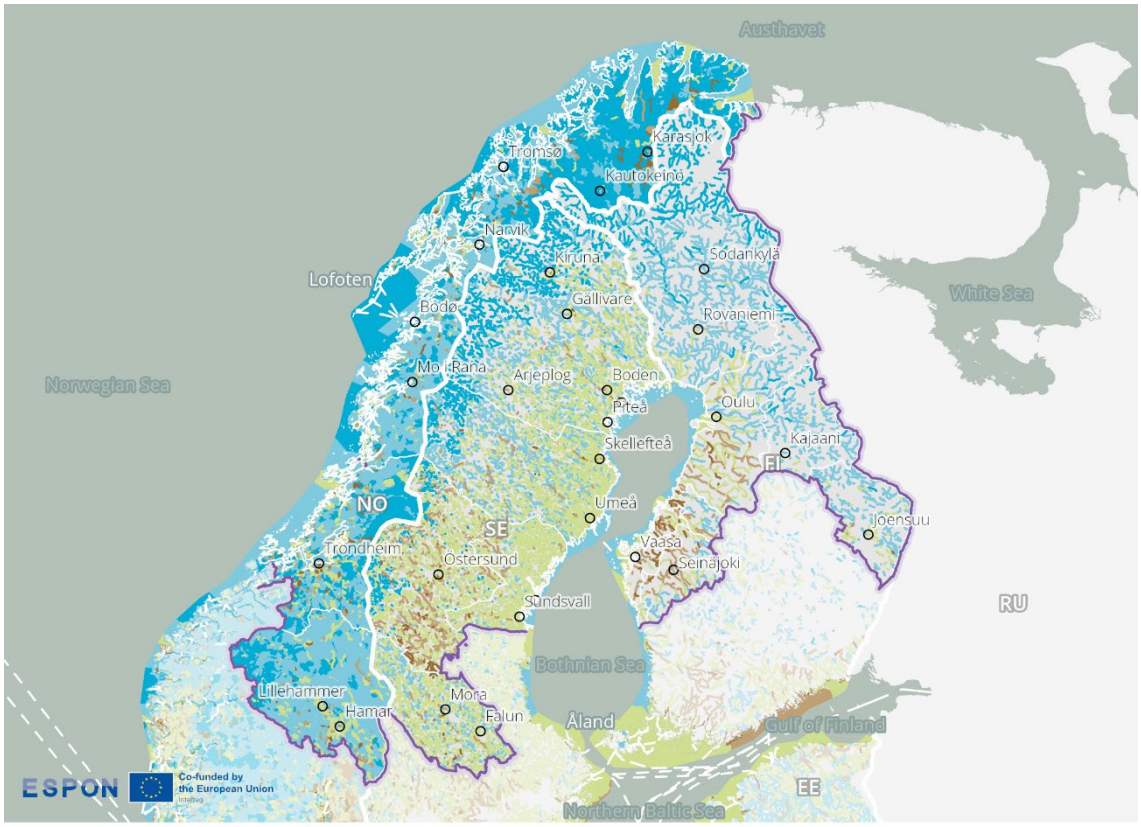
[29] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

[30] For more information see the Water Framework Directive Reporting Guidance (2022): https://cdr.eionet.europa.eu/help/WFD/WFD_715_2022

In the Swedish part of the cross-border programme area, the water quality of the rivers towards the western border is rated as “good” or “high”. To the east, the water quality is predominantly rated as” moderate”. In the inland areas, more rivers are rated as “moderate” or “poor”.

In the Finnish part of the cross-border programme area, the rivers are classified as "unknown", which limits the reliability of the data due to missing information.

Figure 2.21: Water quality patterns[31]



[31] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.3.2 Climate risks and resilience

This sub-dimension examines cross-border functional links relating to climate risks and resilience. It analyses exposure to natural hazards such as landslides, earthquakes, droughts and floods in order to identify vulnerabilities and risks.

2.3.2.1 Natural hazard risks

Indicator description

The indicator shows the risk the border region is facing in relation to natural hazards (floods, droughts, landslides and earthquakes). The map highlights potential cross-border affectedness and allows to judge the relative relevance of each risk for the cross-border region.

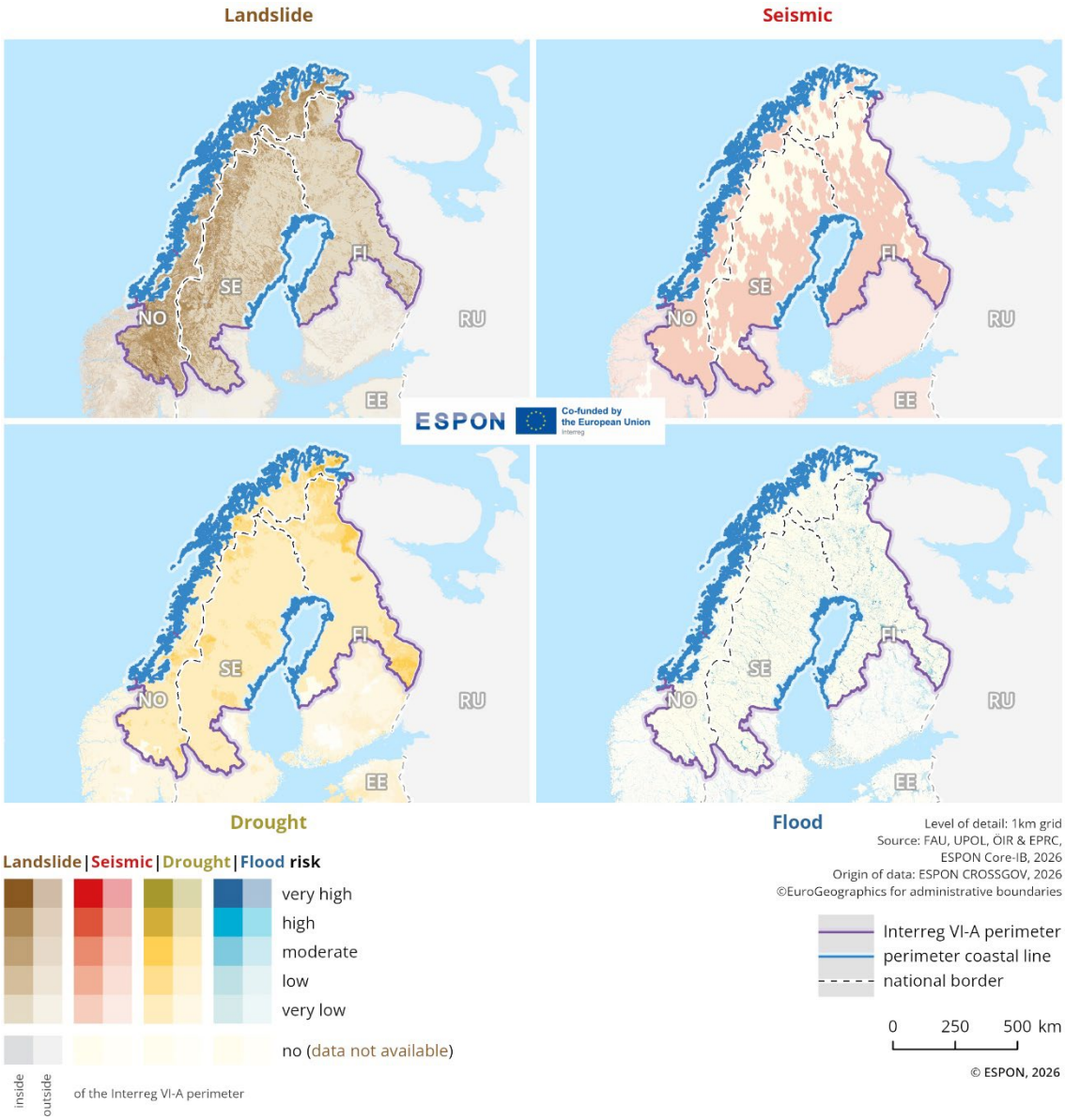
- **Source/method of retrieval**: The indicator is based on geodata from the Disaster Management Risk Knowledge Centre/JRC. It provides the likelihood of specific natural hazard events at grid level.
- **Temporal coverage**: 2024
- **Unit**: n/a

Please refer to the technical annex for more information.

Figure 2.22 illustrate the spatial distribution of natural hazards in the Sweden-Finland Norway (Aurora) cross-border programme area, highlighting areas where risks are shared across national boundaries and where risks are not necessarily cross-border relevant.

The cross-border programme area has a very low risk of floodings, earthquakes and droughts, which is shared by all countries in the area. There is a moderate risk of landslides along the Norwegian-Swedish border, where the Scandinavian Mountains are located.

Figure 2.22: Natural hazard risks[32]



[32] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.3.3 (Renewable) Energy and energy infrastructure

This sub-dimension assesses cross-border functional links in energy supply and infrastructure, focusing on existing connections and missing links. The distribution of power lines, energy infrastructure and power stations is analysed to identify supply patterns and potential integration gaps. The analysis reveals whether the border facilitates energy cooperation and connectivity, or if infrastructural differences create barriers.[33]

2.3.3.1 Power lines and energy infrastructure

Indicator description

The indicator shows the distribution of power lines and energy infrastructures in the cross-border region. The geodata highlights the existing links and gaps in the cross-border interconnections of the energy transmission network.

- **Source/method of retrieval**: Geodata on high-voltage energy infrastructure (100 kV and above) has been collected and processed from OpenStreetMap.
- **Temporal coverage**: 2025
- **Unit**: kV

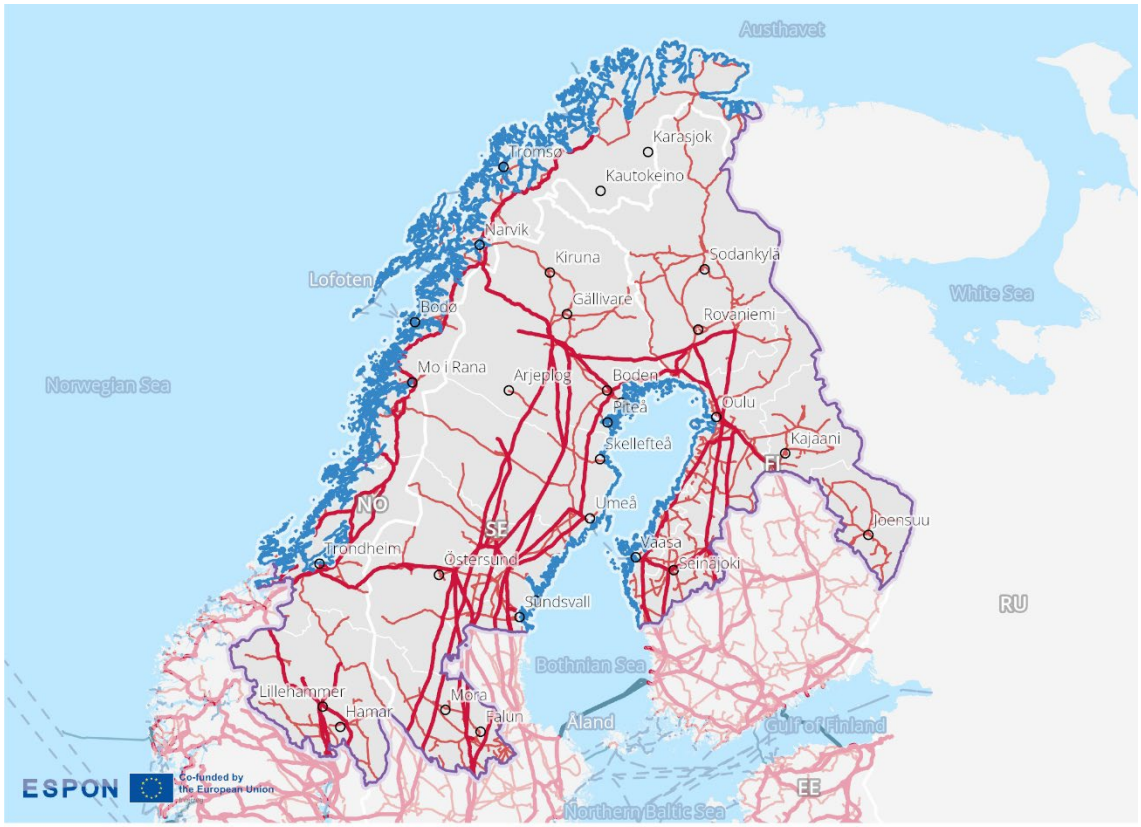
Please refer to the technical annex for more information.

Figure 2.23 illustrates the distribution of power lines and cables in 2025 across the border region. The data distinguish between overhead and underground power lines, further classified into high-voltage (100-230 kV), extra high-voltage (230-1,000 kV), and ultra-high voltage (above 1,000 kV).

The Sweden-Finland-Norway (Aurora) cross-border programme area has extensive high- and extra-high-voltage transmission infrastructure, except in the northernmost regions. In Norway, the extra high-voltage backbone network runs along the coast from Trondheim in the south, and via Bodø to Tromsø in the north. In Sweden, this type of power voltage also runs north-south in several parallel lines, connecting the cities of Falun and Östersund in the south with Kiruna in the north. In Finland, the extra-high-voltage power grid has a star-like structure, with the highest density around Oulu. The individual countries are directly connected at several points along their shared borders: Norway and Sweden are connected 3 times, Norway and Finland connect once in the north, and Sweden and Finland connect twice in the south of their land border.

[33] See also: European Commission 2025: Handbook on Cross-border Energy Communities, https://ec.europa.eu/regional_policy/sources/studies/2025/Handbook_on_Cross-border_Energy_Communities.pdf

Figure 2.23: High-voltage transmission infrastructure[34]



Overhead power lines (2025)

- High Voltage (100–230 kV)
- Extra High Voltage (230–1.000 kV)
- Ultra High Voltage (1.000 kV+)

Underground power cables (2025)

- High Voltage (100–230 kV)
- Extra High Voltage (230–1.000 kV)
- Ultra High Voltage (1.000 kV+)

inside / outside of the Interreg VI-A perimeter

ANSI Standard C84.1 was used for classification of power lines.

Level of detail: geolocated lines
Source: FAU, UPOL, ÖIR & EPRC, ESPON Core-IB, 2026
Origin of data: ESPON CROSSGOV, 2026
©EuroGeographics for administrative boundaries

- Interreg VI-A perimeter
- perimeter coastal line
- national border
- NUTS 3 border
- ferry

0 120 240 km

© ESPON, 2026

[34] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.3.3.2 Power stations

Indicator description

The indicator shows the location of power stations by type and energy production levels (coal, gas and oil, nuclear, hydro). It can indicate differences and complementarities in the national energy supply systems as well as highlight potential supply-demand links when viewed in conjunction with power lines infrastructure.

- **Source**: OpenStreetMap, Global Energy Monitor, JRC Hydro-power plants database
- **Temporal coverage**: 2025
- **Unit**: MW

Please refer to the technical annex for more information.

In the Sweden-Finland-Norway (Aurora) cross-border programme area, there are a total of 227 power stations, the vast majority of which are hydroelectric power stations (220 in total) (see Table 1).

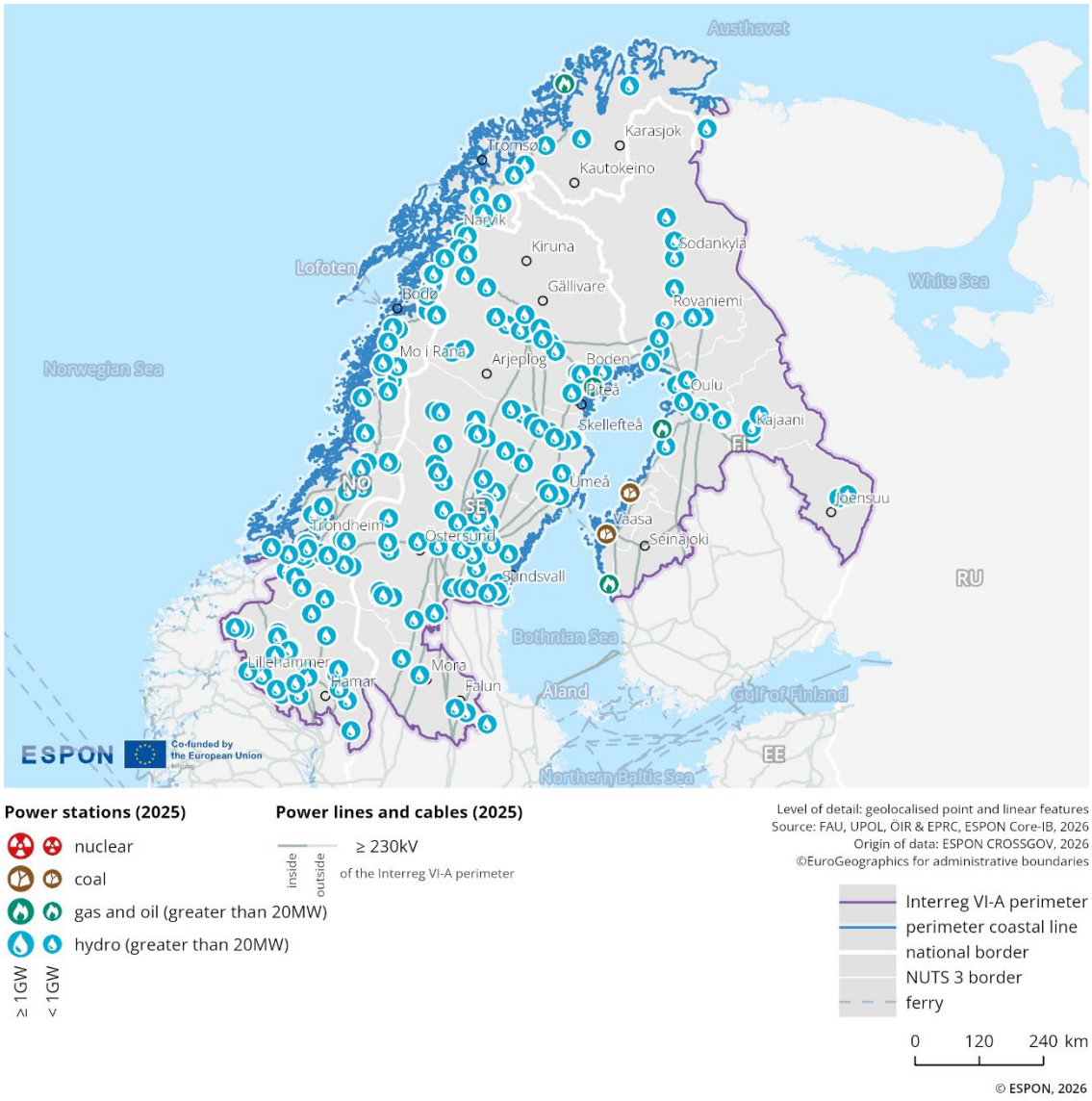
Table 1: Number and type of power stations[35]

Power stations/plants	Less than 1GW	1GW and up
Nuclear	/	/
Coal	2	/
Gas and oil	2	/
Hydro	220	/

Of these, 94 are located in Norway and are widespread throughout the Norwegian part of the cross-border programme area (see Figure 2.24). The other 29 stations are located in Finland, with the remaining 97 stations in Sweden, scattered throughout the Swedish territory. The large number of hydroelectric power stations is an inherent result of the geography of the territory. There are 5 unique gas and oil power stations in the whole cross-border programme area: 3 in Finland, and one station in Sweden and one in Norway. Remarkably, the Norwegian power station is the northernmost energy source in the cross-border regions studied. The 2 coal-fired power stations are located in Finland, on the coast in the south-eastern part of the Finnish region. There is no nuclear power plant in the cross-border programme area.

[35] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

Figure 2.24: Power stations infrastructure[36]



[36] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.3.4 Resources and circular economy

This sub-dimension focuses on resource use patterns in the border region and their implications for circular economy practices. It analyses resource productivity and waste generation in order to evaluate the efficiency and sustainability of resource utilisation across the border.

2.3.4.1 Resource productivity

Indicator description

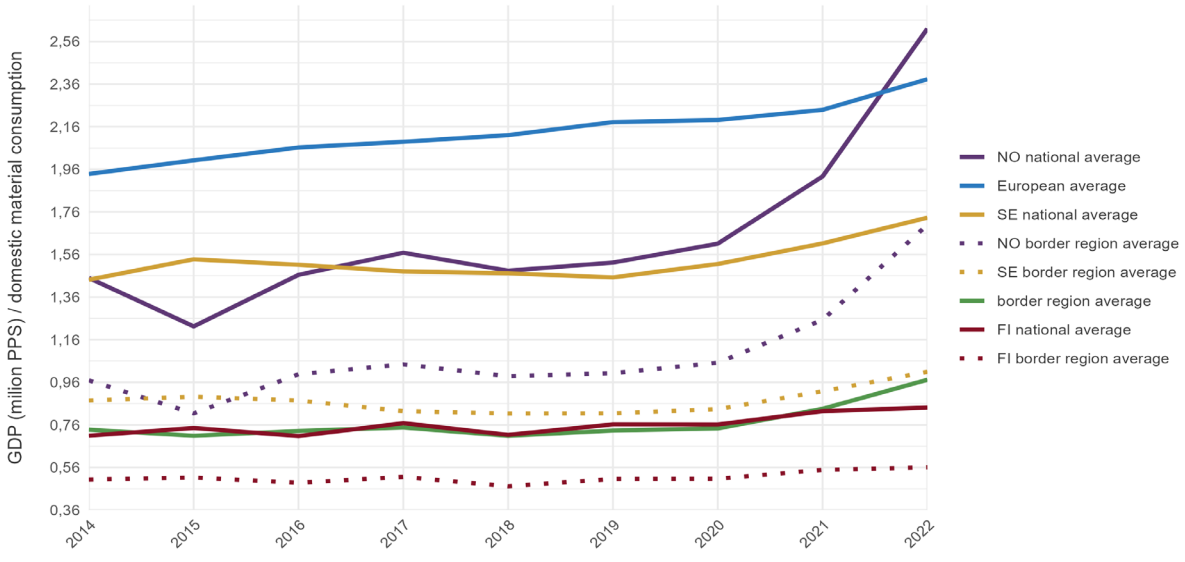
The indicator shows the economic value generated per unit of material consumed for each region within the cross-border area. Developments over time provide insights if the decoupling of productivity from resource use is progressing on regional level.

- **Source/method of retrieval**: Processing of Eurostat and ESPON CIRCTER (Circular Economy and Territorial Consequences) Update data
- **Temporal coverage**: 2014-2022
- **Unit**: PPS/tons

Please refer to the technical annex for more information.

Figure 2.25 illustrates the development of GDP per unit of domestic material consumption in million PPS/DMC (purchasing power standards per domestic material consumption) between 2014 and 2022. The data compare the national averages, the averages of their respective border regions, and the overall border regional average with the European average.

Figure 2.25: Resource productivity[37]



ESPON Co-funded by the European Union

[37] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

The Norwegian national average initially declined, but began to rise after 2015, particularly sharply after 2020. It reached around 2.6 million PPS/DMC in 2022. A similar pattern can be seen in the average for the Norwegian border region, although it is notably lower, standing at 2.28 million in 2022.

The Swedish national average showed a steady increase, reaching around 1.76 million PPS/DMC in 2022. The average for its border regions followed a similar pattern but remained lower, reaching around 1.04 million PPS/DMC in 2022.

The Finnish national average was the lowest of the 3 countries. It was almost aligned with the average for the cross-border programme area, reaching around 0.83 million PPS/DMC in 2022. The average for the Finnish border regions was slightly lower than the national average, making it the lowest line in the graph.

For most of the observed period, the European average lies significantly above the national averages of all 3 countries, but the Norwegian national average surpasses it in 2022 due to a sharp increase. The cross-border programme area average is s a combination of the higher Norwegian and Swedish values and the lower Finnish values, reaching approximately 1.03 million PPS/DMC in 2022.

2.3.4.2 Generation of waste per GDP

Indicator description

The indicator shows the regional distribution of waste creation in relation to the GDP development. Comparing waste generated to GDP reflects the waste intensity of the economy and provides a measure of "eco-efficiency". Observation of its change from year to year permits to assess whether the economy is able to produce more wealth while at same time generating less waste.

- **Source/method of retrieval**: Processing of Eurostat and ESPON CIRCTER Update data
- **Temporal coverage**: 2014-2022
- **Unit**: Tons/PPS

Please refer to the technical annex for more information.

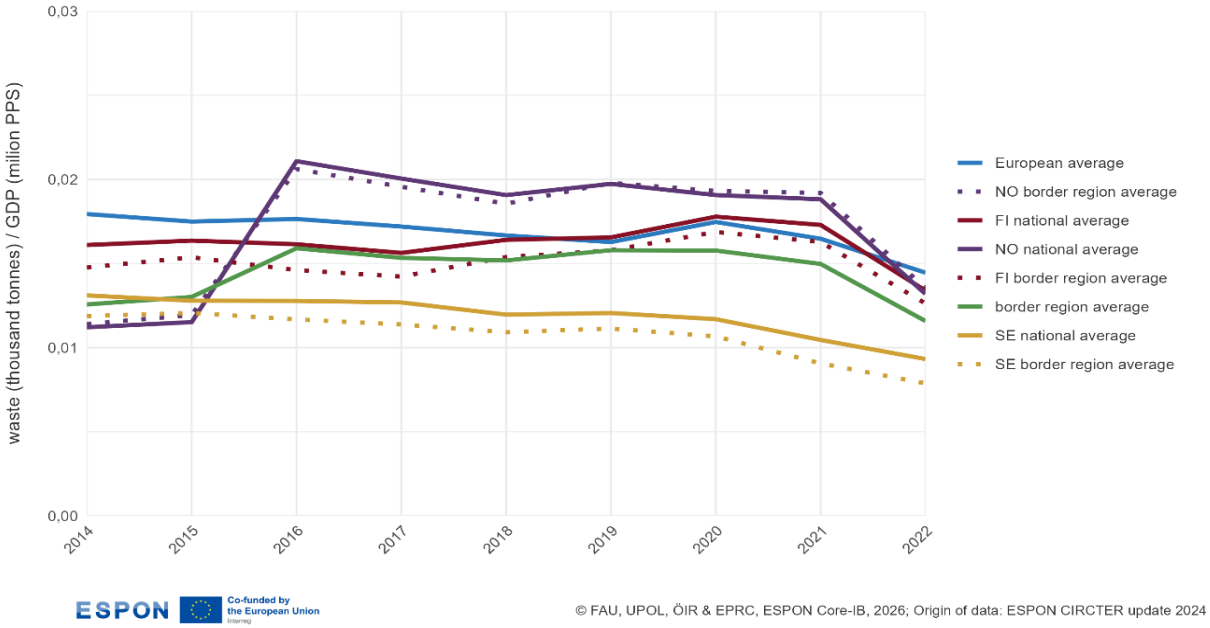
Figure 2.26 illustrates the trend in waste generation relative to economic output, measured in tonnes of waste per million PPS (Purchasing Power Standard) of GDP from 2014 to 2022 in the Sweden-Finland Norway (Aurora) cross-border programme area.

Sweden's national average has shown a slow but steady decline over the observed period. A similar trend is evident in the Swedish border region, where the average remains slightly below the national figure. In 2022, the national average for Sweden was approximately 0.010 tonnes of waste per million PPS. Norwegian values exhibit some fluctuations, with a sharp increase between 2015 and 2016. Subsequently, values showed a slight downward trend, remaining relatively stable at around 0.020 tonnes per million PPS, before dropping significantly to approximately 0.014 tonnes in 2022. Finnish values show a slight increase until 2020, with the average for the Finnish border region being slightly lower than the national average. Since 2018, Finnish values have been almost identical to the European average. In 2021, both averages declined sharply, reaching approximately 0.016 tonnes of waste per million PPS by 2022.

The European average gradually declined from around 0.018 tonnes per million PPS in 2014 to approximately 0.015 tonnes in 2022. Throughout this period, the European average remained higher than the Swedish value and in line with the Finnish value. However, due to the sharp rise in Norwegian values in 2015/2016, the European average falls below the Norwegian level thereafter.

The average for the cross-border programme area remains below the European average, lying between the higher values of Norway's border region and the lower values of Sweden's. In 2022, the cross-border programme area average reached approximately 0.016 tonnes of waste per million PPS.

Figure 2.26: Waste generation per GDP[38]



ESPON Co-funded by the European Union

2.3.5 Key messages on the green dimension

Protected areas within the Sweden-Finland-Norway (Aurora) cross-border programme area are concentrated in the northern and central parts, particularly near Arjeplog and Kiruna. There are large continuous zones across the mountainous (border) area, and more fragmented and sparse protected areas in the south, around Umeå, Vaasa, and Östersund. These protected areas are a clear strength to the programme area in terms of its natural assets but underline also their vulnerability (and the vulnerability of the people living in these areas, especially the Sápmi communities) to the effects of climate change. This highlights the importance of continued research and activities on the effects of climate change and the needs to adapt.

In terms of air pollution, the average values at the national, at the individual border regions, and at the entire programme area levels are all below the European average. Data is more limited, especially for water quality in rivers, but overall, the rivers in the Norwegian and in the western part of the Swedish areas of the programme territory are rated as high or good, with more moderate or poor levels noted in the inland areas. In terms of natural hazards, the cross-border programme area has a very low risk of flooding, earthquakes and droughts, but a moderate risk of landslides exists along the Norwegian-Swedish border, where the Scandinavian Mountains are located. Managing risks across borders, responses to the wider impact of climate change in northern areas, and the importance of developing tailored solutions for more remote and northernly areas are clearly widely shared issues across the programme area.

The cross-border programme area shows extensive high- and extra-high-voltage transmission infrastructure; except for the northern, remote parts of the countries. The cross-border programme area has a total of 227 power stations, of which 220 are hydroelectric, highlighting a strong commitment to

[38] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

renewable energy and cooperation on energy issues more generally in terms of promoting self-sufficiency in the area.

Resource productivity in PPS has increased although the European average generally lies above the national and border area averages of all 3 countries. In terms of waste production, the cross-border programme area average remains below the European average and lies between the higher values of Norway's border region and the lower values of Sweden's border region.

Green transition offers opportunities for the programme area. However, there are important considerations including the protection of the Sápmi culture and livelihoods (reindeer husbandry in particular) and safeguarding the Sápmi land rights.

2.4 Socio-economic dimension

The socio-economic dimension examines patterns of social integration, tourism, and access to public services in the border region. It identifies how socio-cultural links, visitor flows and essential services influence development in the cross-border area. By examining interpersonal interactions via social media, language similarities, tourism intensity, and the accessibility of facilities such as secondary schools, grocery shops, hospitals, doctors, pharmacies and cinemas this dimension highlights both functional integration and potential socio-spatial differences.

2.4.1 Social integration

This sub-dimension evaluates the level of social integration in the border region by identifying areas with low or high cross-border interactions. It analyses cross-border connectivity in social media and language similarities across and along national borders to evaluate the potential for cultural and social integration.

2.4.1.1 Cross-border connectivity in social media

Indicator description

The indicator refers to the existing connections between users of META social media (in particular Facebook) across the border. It aims at giving an overview of the degree of personal connectivity between inhabitants of the border area. Even though not all these internet connections will relate to real communication exchanges but sometimes just "following" content from other users, they give an overview of interpersonal and cultural knowledge of the social media landscape from across the border.

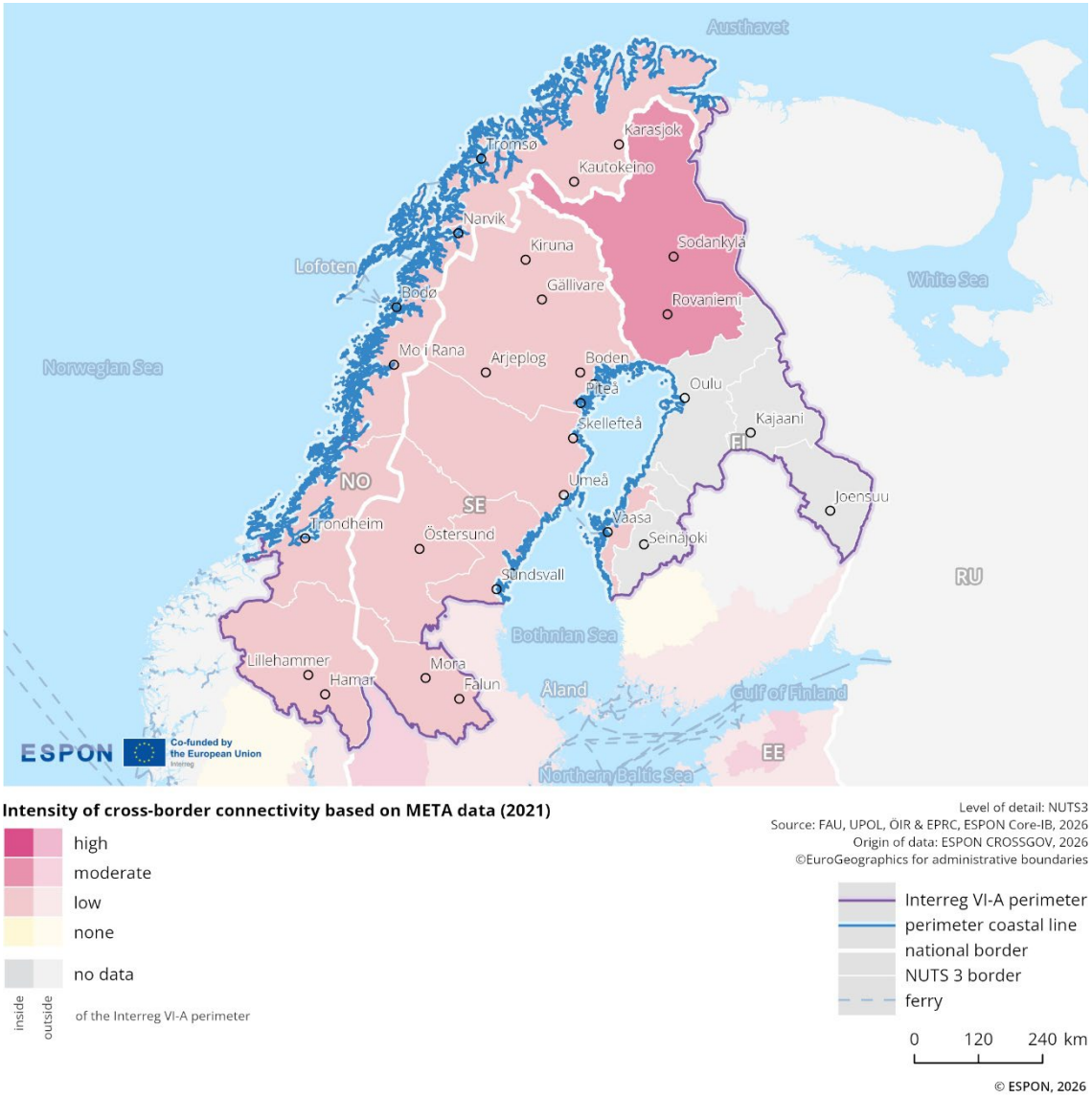
- **Source/method of retrieval**: Processing Facebook data on existing connections across the border (data for Good Meta)
- **Temporal coverage**: 2021
- **Unit**: n/a

Please refer to the technical annex for more information.

Figure 2.27 illustrates the spatial distribution of cross-border connectivity based on Facebook information in the border area. The different shades of pink indicate varying intensities of connectivity, ranging form low to high, with darker tones representing stronger intensity of cross-border connectivity in social media.

The intensity of cross-border connectivity among residents of this cross-border programme area is relatively uniform, and for example no cross-border differences are evident between Norway and Sweden. However, differences are apparent between Finland and Sweden, as well as between Finland and Norway. In all Norwegian and Swedish areas, cross-border connectivity intensity is low, including cities such as Hamar, Lillehammer, Falun, Östersund, Trondheim, Bodø, Tromsø, Kiruna, and Arjeplog. In the Finnish area along the borders with Sweden and Norway, cross-border connectivity intensity is moderate, including the city of Rovaniemi. Low cross-border connectivity intensity is recorded in the Finnish area around Vaasa, while in the remaining Finnish parts of the cross-border programme area (including Oulu and Joensuu) data are unavailable to assess cross-border connectivity intensity.

Figure 2.27: Cross-border connectivity in social media[39]



[39] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.4.1.2 Language similarities along national borders

Indicator description

The indicator specifies whether the language is the same across the border, whether the respective national languages have commonalities, whether while different, there are local linguistic commonalities, and whether the language is different.

- **Source/method of retrieval**: ESPON cross-border public services (CPS) 2.0 database along border segments
- **Temporal coverage**: 2022
- **Unit**: n/a

Please refer to the technical annex for more information.

2 of the languages spoken in the programme area, Swedish and Norwegian, have common roots and comparable linguistic structures. As such, they are categorised as 'languages with commonalities'. Although language barriers can still exist, they are relatively low, particularly with regard to the written language. Finnish and the Sápmi languages differ from Swedish and Norwegian. The programme area has populations of Sweden Finns (people with Finnish heritage living in Sweden) and Finland Swedes (people with Swedish heritage living in Finland), meaning that there is a level of reciprocal language knowledge at a regional level. The cross-border programme area is also a home to a significant Sápmi population (75,000–100,000), around 20,000 of whom speak Northern Sápmi, the largest of the Sápmi languages. However, although the Sápmi languages share a distant Uralic ancestry with Finnish, they are not mutually intelligible.

2.4.2 Tourism

This sub-dimension identifies key tourism hotspots in the border region to highlight tourism dynamics. It analyses the number of nights spent in tourist accommodation establishments in order to evaluate the attractiveness of, and developments in, the tourism sector. Comparisons with the respective countries and the EU average provide context for understanding the region's dynamics.

2.4.2.1 Nights spent at tourist accommodation establishments

Indicator description

The indicator shows the number of nights a guest or tourist actually spends in a tourist accommodation establishment or non-rented accommodation (overnight stays). This may reveal the tourism attractiveness of a region and shed light on the role of tourism in the local economy, i.e., tourists/guests staying overnight may spend more in the region than one-day visitors.

- **Source**: Eurostat
- **Temporal coverage**: 2020-2023
- **Unit**: Nights per capita

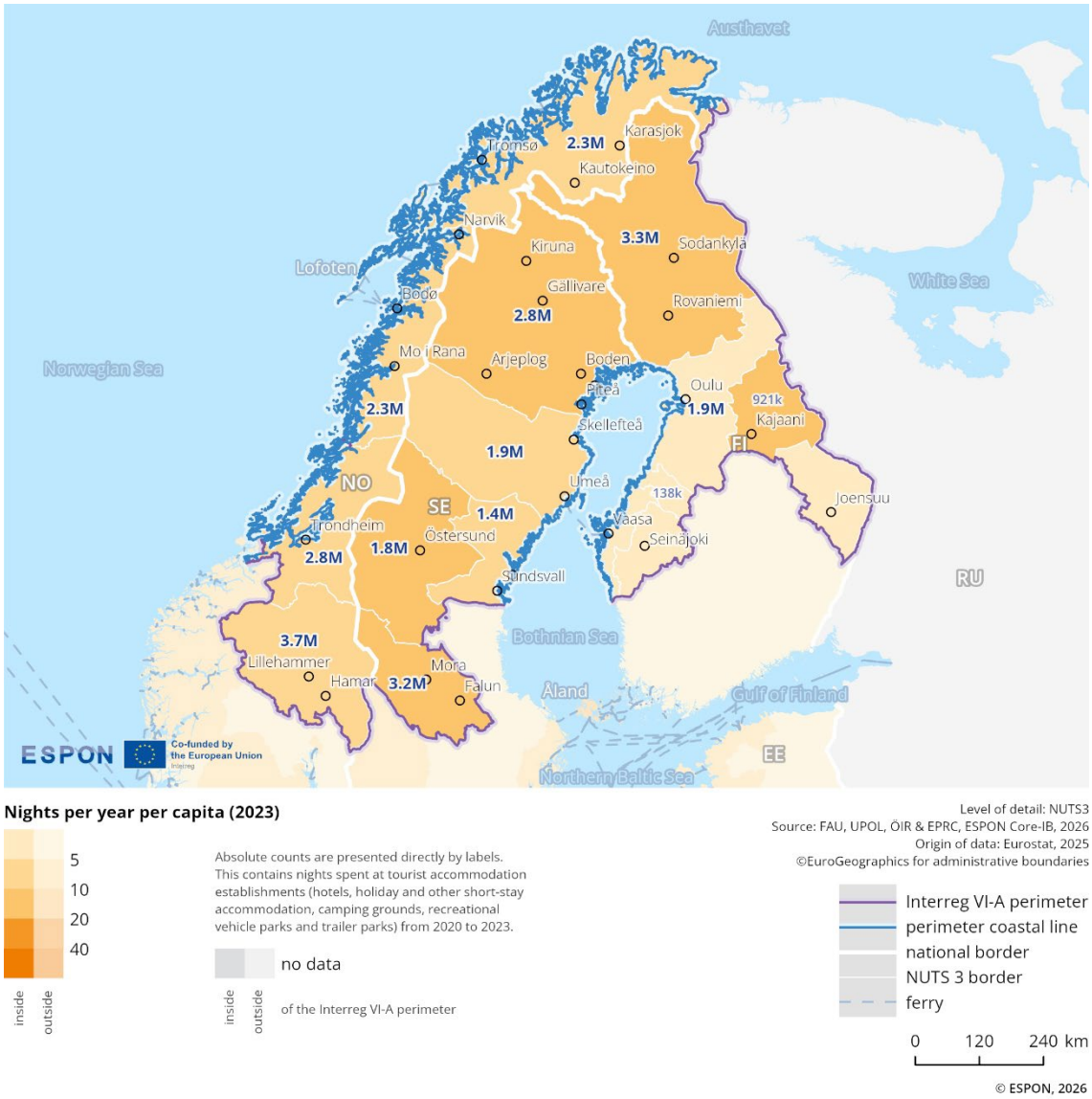
Please refer to the technical annex for more information.

The spatial distribution of overnight stays highlights the importance of key tourist destinations in border areas. Tourism contributes significantly to the regional income, infrastructure development and

employment, and thereby supports regional prosperity. At the same time, it affects environmental and living conditions, which may reduce local acceptance despite the economic benefits. This is in particular the case in places of overtourism, and seasonal pressures.

Figure 2.28 shows the number of overnight stays per capita at tourist accommodation establishments in 2023. It includes hotels, holiday and other short-stay accommodation, as well as campsites, caravan and trailer parks. The map uses a colour gradient, with darker shades indicating a higher number of nights spent per capita in 2023. It also shows the cumulative number of overnight stays from 2020 to 2023.

Figure 2.28: Overnight stays in tourism[40]



In 2023, several Swedish and Finnish NUTS3 regions had an average of 10 to 20 nights per capita, including Dalarna, Jämtland, Norrbotten, Lappi and Kainuu[41]. In Norway, the figures are somewhat lower, ranging from 5-10 nights per capita. The leading tourism regions in terms of total overnight stays over

[40] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

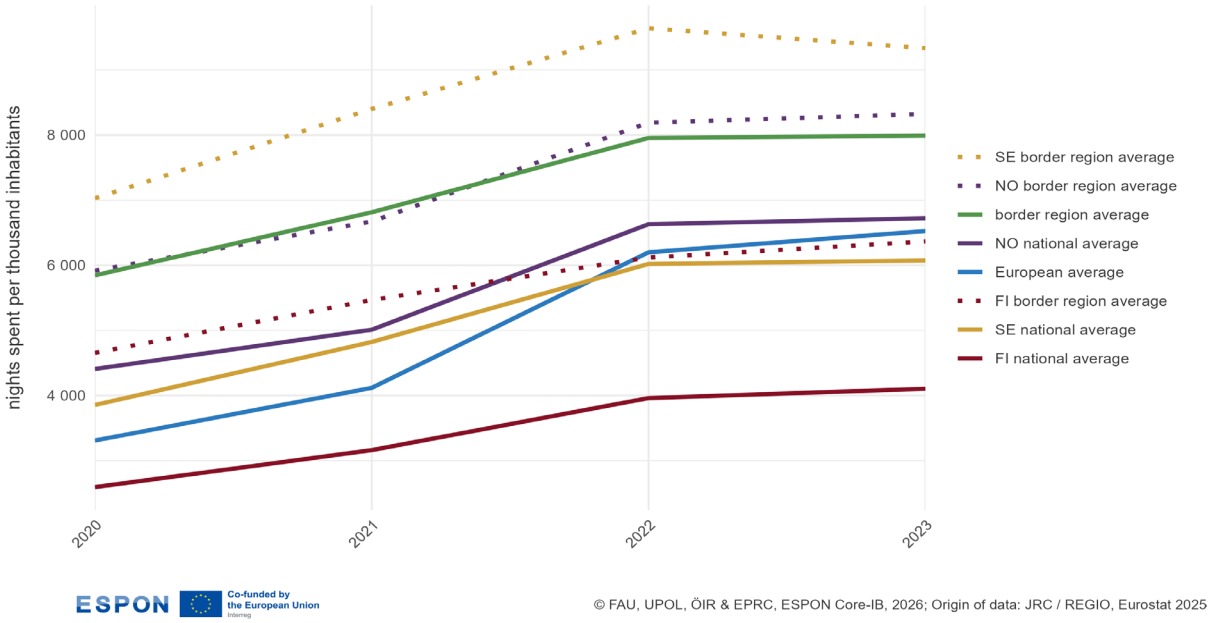
[41] See Eurostat Statistical Atlas for NUTS3 (2021) regions: https://ec.europa.eu/statistical-atlas/viewer/?config=typologies.json&ch=NUTS&mids=BKGCNT,NUTS2021L3,CNTOVL&o=1,1,0.7&center=49.69576,14.3332,4&lcis=NUTS2021L3&

the 3-year period are: Innlandet (approx. 3.7 million), Lappi (approx. 3.3 million), Dalarna (approx. 3.2 million), Norrbotten (approx. 2.8 million) and Trøndelag/Tröndelage (approx. 2.8 million).

Figure 2.29 illustrates the development of nights spent at tourist establishments per thousand inhabitants from 2020 to 2023. Over the entire period, the average for the Aurora programme area is higher than the overall European average, which includes both EU member states and the EFTA countries of Iceland, Liechtenstein, Switzerland and Norway. In all the 4 years, the border regional averages for the 3 countries are higher than their respective national averages. Additionally, the regional average for the Swedish border area is higher than those for the Finnish and Norwegian areas throughout the given period.

Tourist patterns have a number of implications for spatial development on both sides of the border. Transport infrastructure must consider peak volumes and balance recreational activities with socio-cultural as well as environmental heritage and the needs of the Sápmi communities, which can be challenging.

Figure 2.29: Overnight stays in tourism (comparison)[42]



[42] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.4.3 Services of general interest

This sub-dimension looks at how accessible services of general interest (SGIs) are in the border region, identifying areas that are well-served and those that are more difficult to access. It analyses access to essential services such as secondary schools, grocery shops, hospitals, doctors, pharmacies and cinemas.

2.4.3.1 Accessibility to services of general interest

Indicator description

The indicator shows, for the below listed facilities and services, the average driving time to the nearest facility of a series of services of general interest.

- **Source/method of retrieval**: Processing and analysis of standardised travel-time accessibility to secondary schools, grocery shops, hospitals, doctors, pharmacies and cinemas available in the ESPON PROFECY Update (2022)
- **Temporal coverage**: 2021
- **Unit**: Minutes (in 2.5 x 2.5 km grid)

Please refer to the technical annex for more information.

Figures 2.30 to 2.35 visualise average car travel times to services of general interest within the programme area. The maps display accessibility to:

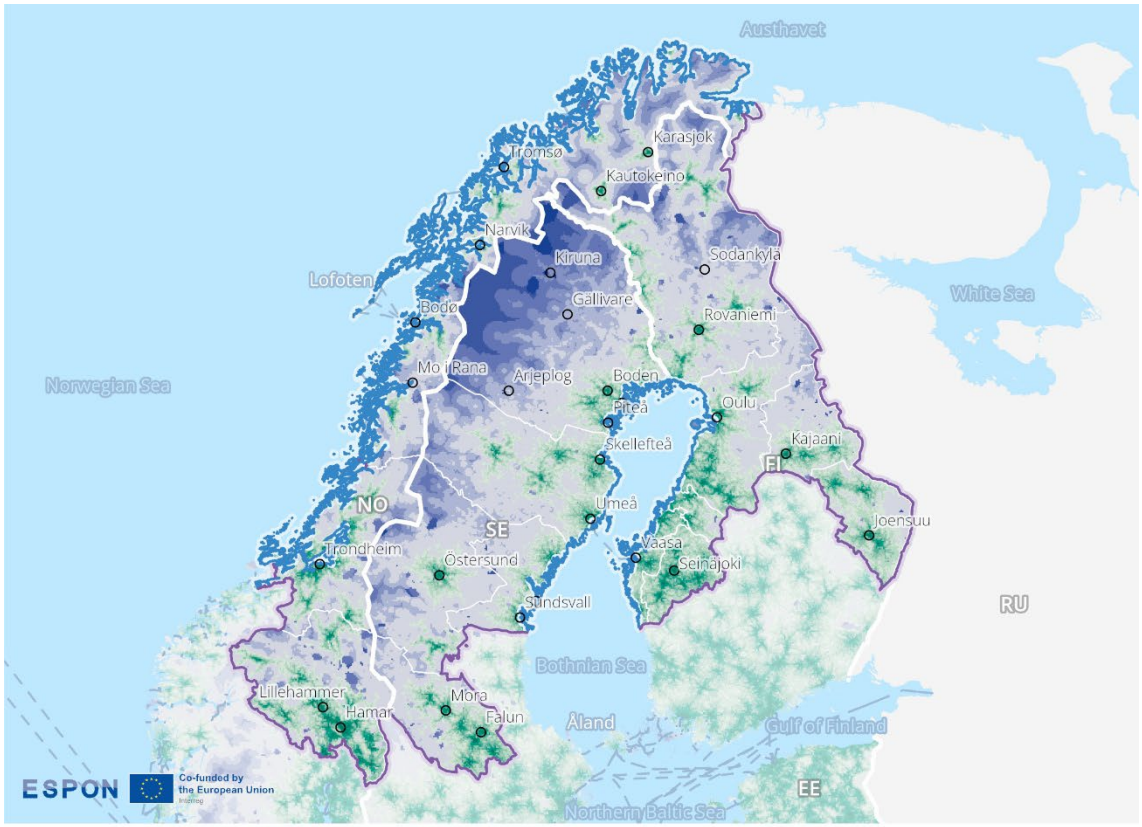
- Secondary schools (Figure 2.30)
- Grocery shops (Figure 2.31)
- Hospitals (Figure 2.32)
- Doctors (Figure 2.33)
- Pharmacies (Figure 2.34)
- Cinemas (Figure 2.35)

These indicators show how long, on average, it takes to reach the nearest facility by car. The data comes from the ESPON PROFECY Update project (2022) and is visualised based on a 2.5-kilometer grid.

In the Sweden–Finland–Norway (Aurora) cross-border programme area, essential services such as hospitals, doctors, pharmacies, schools, grocery shops, and cinemas are concentrated around cities and more densely populated areas, mostly in the southern parts of Norway, the eastern parts of Sweden, and the southwestern parts of Finland. This creates an urban–rural gradient, with shorter travel times in and near urban centres and longer travel times in rural or remote regions.

The mountainous terrain in the border area creates accessibility challenges. Some areas are harder to reach. Steep mountains make it difficult to build and maintain transport infrastructure. Consequently, travel times to essential services are often longer in these regions.

Figure 2.30: Travel time to secondary schools[43]



Car travel time to the nearest secondary school (2021)

5min
10min
15min
20min
30min
45min
1h
2h
3h
4h
6h
12h

inside outside of the Interreg VI-A perimeter

Level of detail: 2.5km grid
Source: FAU, UPOL, ÖIR & EPRC, ESPON Core-IB, 2026
Origin of data: ESPON PROFECY Update, 2022
©EuroGeographics for administrative boundaries

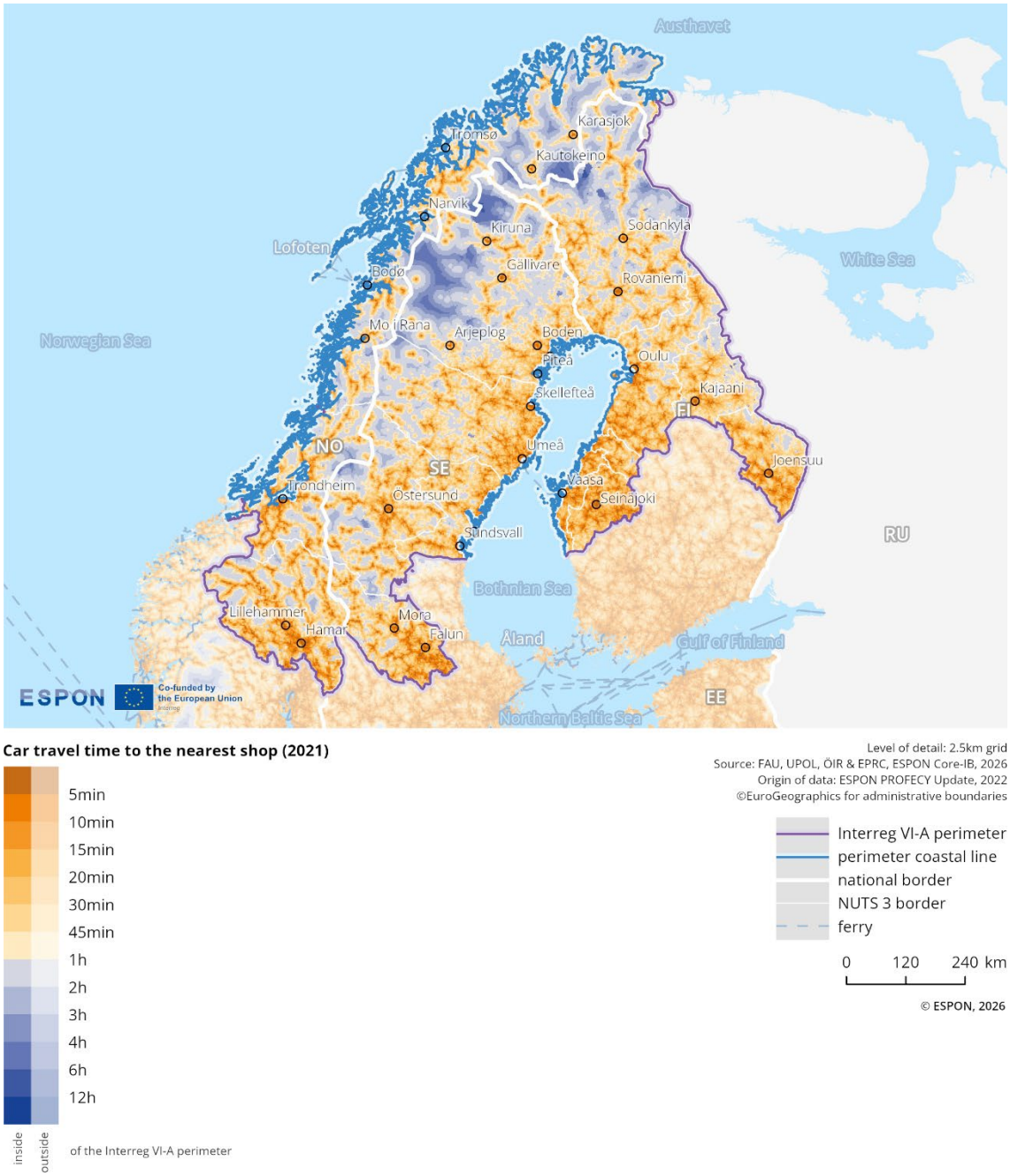
Interreg VI-A perimeter
perimeter coastal line
national border
NUTS 3 border
ferry

0 120 240 km

© ESPON, 2026

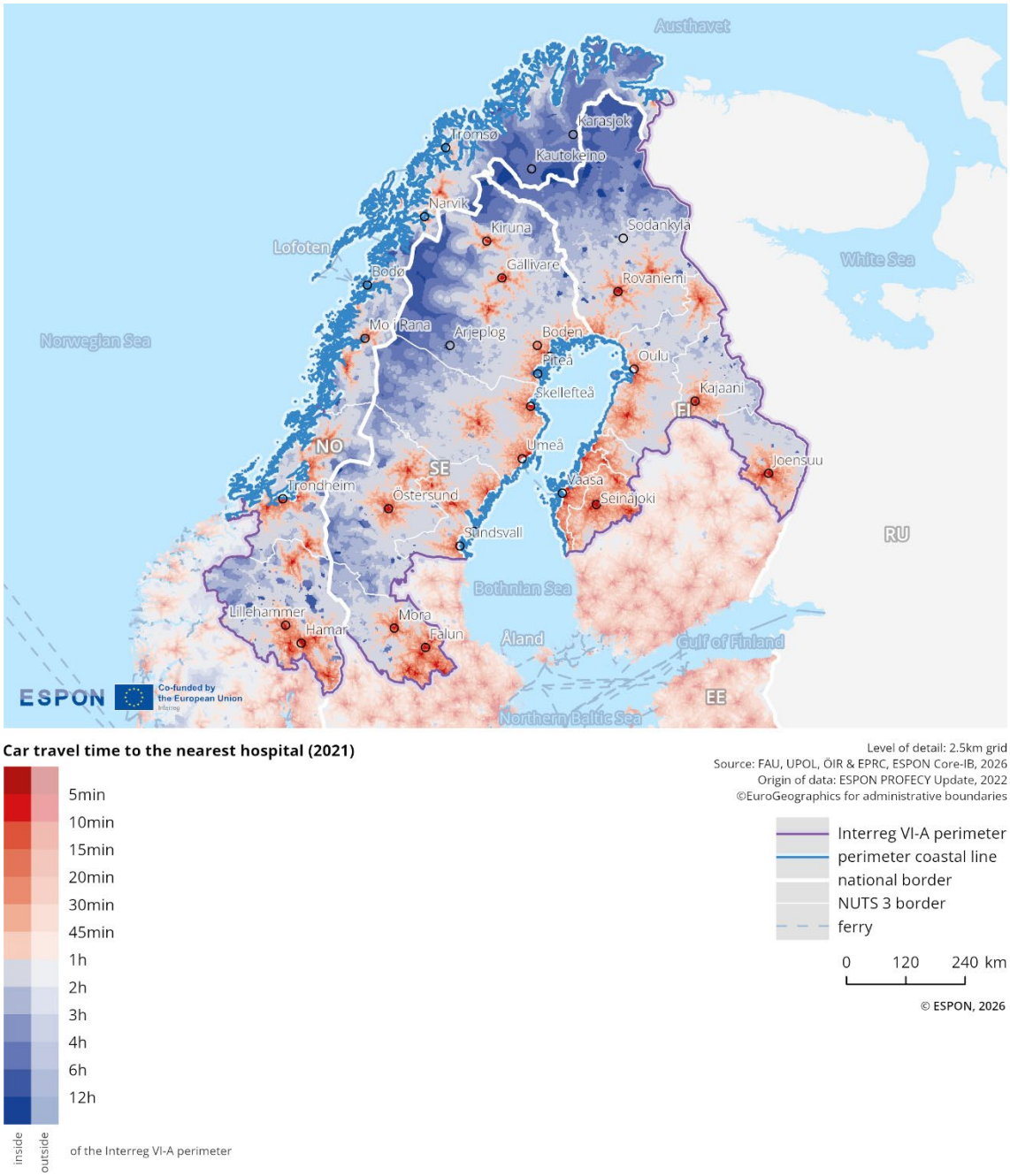
[43] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

Figure 2.31: Travel time to grocery shops[44]



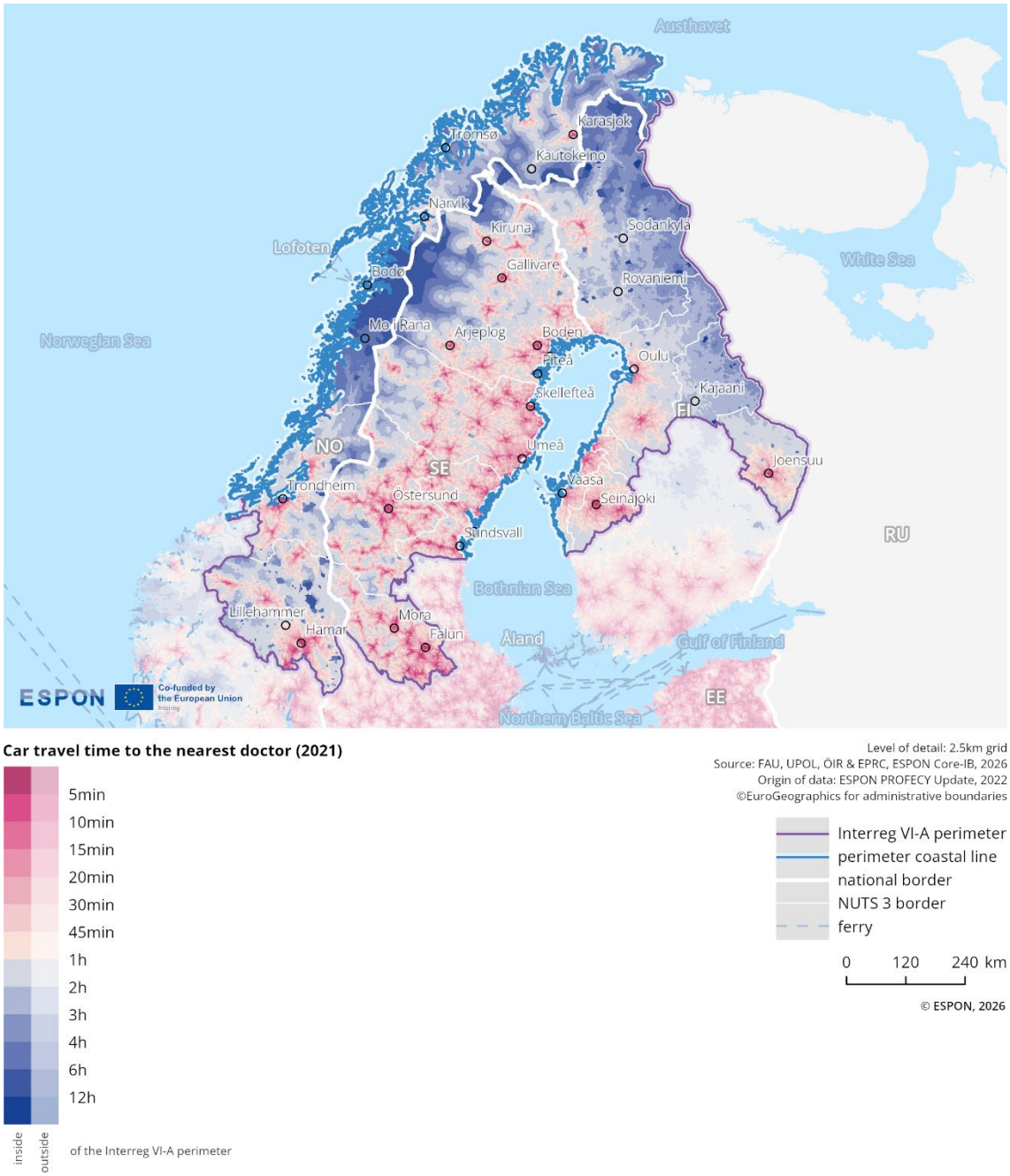
[44] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

Figure 2.32: Travel time to hospitals[45]



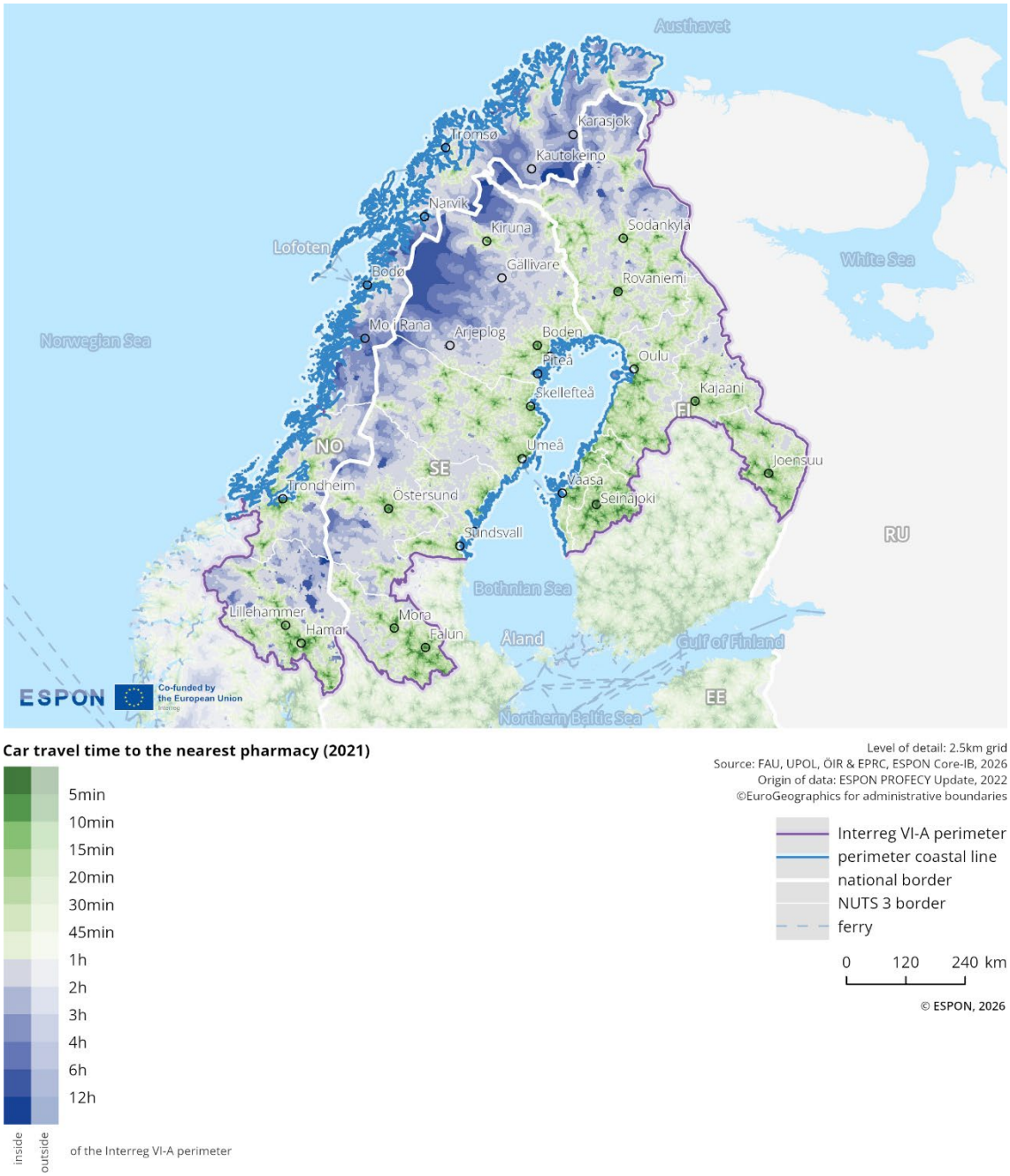
[45] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

Figure 2.33: Travel time to doctors[46]



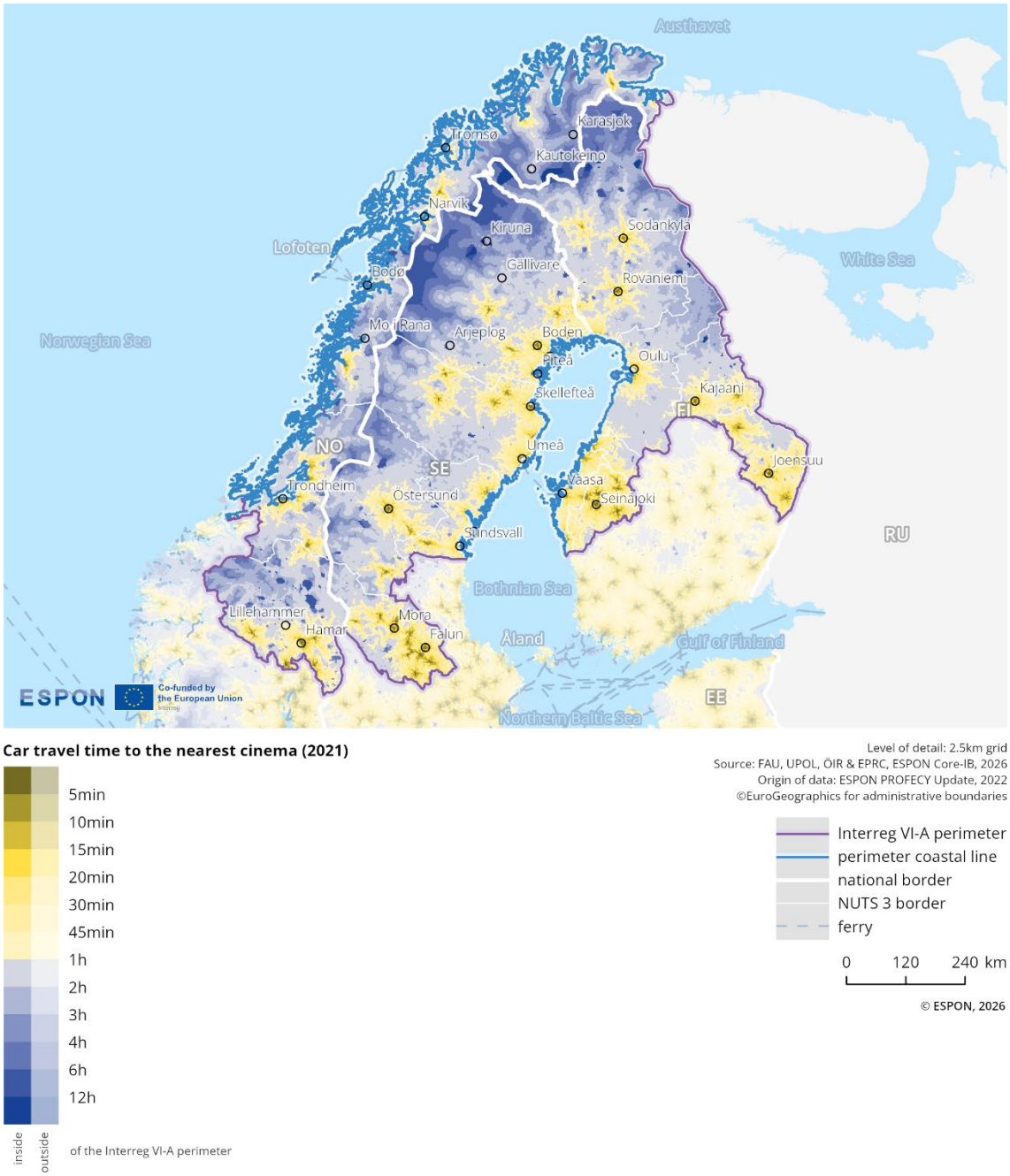
[46] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

Figure 2.34: Travel time to pharmacies[47]



[47] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

Figure 2.35: Travel time to cinemas[48]



2.4.4 Key messages on the socio-economic dimension

The cross-border programme area has deep rooted linguistic (Swedish and Norwegian) and cultural links between the territories and connections to the Sápmi people.

Based on available data, cross-border connectivity intensity is low across all Norwegian and Swedish parts of the programme area, while the Finnish areas bordering Sweden and Norway show moderate levels. However, because this indicator reflects connections between META social-media users, it is difficult to explain these differences based on the language commonalities and cultural connections.

[48] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

Tourism is an important sector in the programme area. In terms of total overnight stays, the leading tourism regions are located in Innlandet (approx. 3.7 million), Lappi (approx. 3.3 million), Dalarna (approx. 3.2 million), Norrbotten (approx. 2.8 million) and Trøndelag/Tröndelage (approx. 2.8 million). The border-regional averages of all 3 countries exceed their respective national averages, underlining tourism's central role in the area, particularly in supporting labour-market opportunities and maintaining essential services. Developing sustainable tourism will, however, require careful consideration of the area's environmental vulnerability and the needs and livelihoods of Sápmi communities.

Essential services, such as hospitals, doctors, pharmacies, schools, grocery shops and cinemas, are concentrated in the cities and main towns of the programme area, particularly in southern Norway, eastern Sweden and southwestern Finland. The mountainous terrain along the border creates significant accessibility challenges, which makes it difficult to build and maintain transport infrastructure, leading to longer travel times to essential services in rural and remote locations. This contributes to an urban–rural divide, with short travel times in and around urban centres and considerably longer journeys in sparsely populated areas. These accessibility constraints also exacerbate recruitment challenges for key services and businesses in remote and peripheral regions.

2.5 Border security and safety

This dimension shows the security and safety conditions in border regions. It analyses the number of days on which border control is temporarily reintroduced at internal borders, using this as an indicator of security concerns and restrictions on cross-border movement.

2.5.1 Temporary reintroduction of border controls at internal borders

Indicator description

The indicator shows the number of days of temporary reintroduction of border control at internal borders, including the official reasons behind. The reintroduction of border control at the internal borders must be applied as a last resort measure, in exceptional situations, and must respect the principle of proportionality. The scope and duration of reintroduced border control should be restricted to the bare minimum needed to respond to the threat in question.

- **Source/method of retrieval**: Processing and analysis data of European Commission information pursuant to Article 25 and 28 et seq. of the Schengen Borders Code
- **Temporal coverage**: 2006-2025 (cut-off: 08 May 2025, in order to allow data treatment before work package completion)
- **Unit**: Days per year

Please refer to the technical annex for more information.

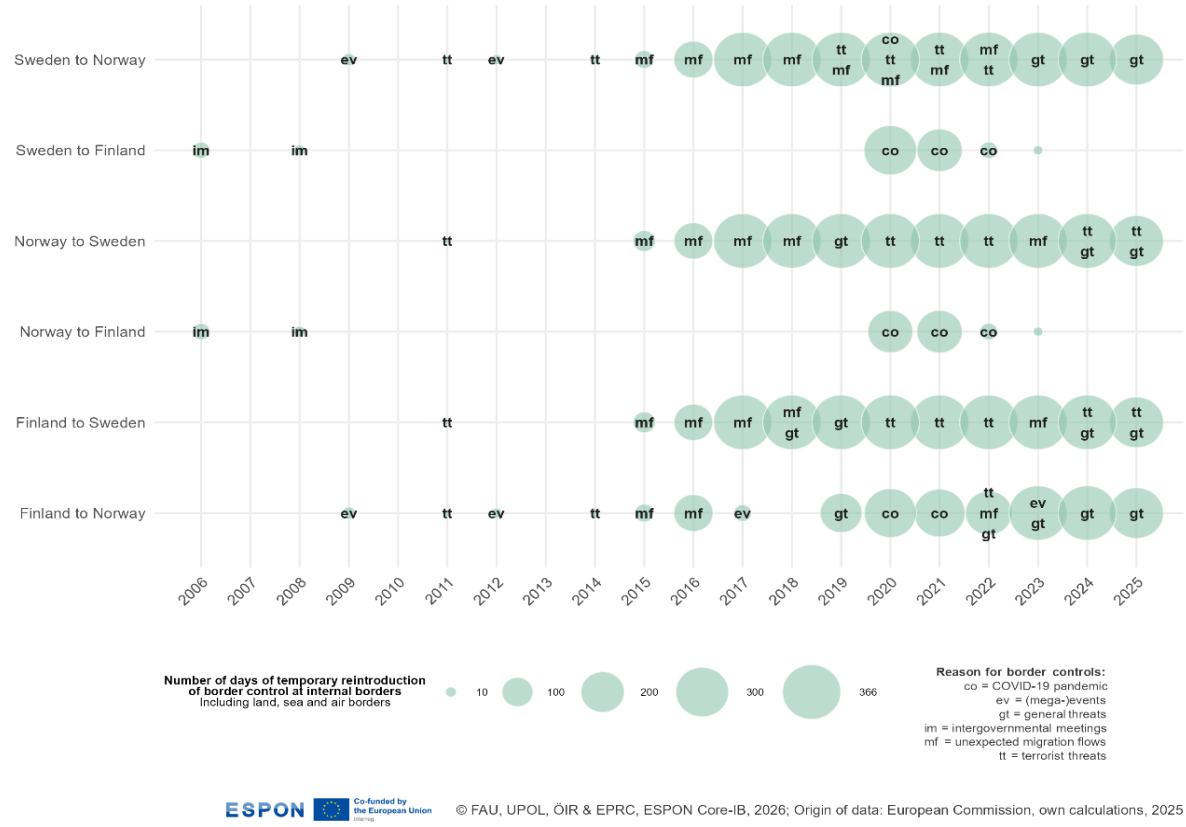
Figure 2.36 illustrates the number of days during which temporary border controls were reintroduced at internal borders within the Schengen Area. Each bubble represents a specific year with bubble sizes indicating the number of days the respective border was under control. The categories of reasons for reintroducing controls include:

- co – COVID-19 pandemic
- ev – (Mega-)events
- gt – General threats
- im – Intergovernmental meetings
- mf – Unexpected migration flows
- tt – Terrorist threats

The data spans from 2006 to 2025 (cut-off: 08 May 2025) and is based on notifications from the European Commission information pursuant to Article 25 and 28 et seq. of the Schengen Borders Code. In line with Schengen rules, the reintroduction of controls is to be used only as a last resort, for exceptional circumstances, and with strict adherence to the principle of proportionality—both in duration and scope.

Sweden, Finland and Norway were already part of the Schengen Area by 2006.

Figure 2.36: Temporary reintroduction of border controls



The Sweden-Finland Norway (Aurora) cross-border programme area is characterized by an asymmetric pattern:

- Crossing the border from Sweden to Norway: Temporary border control were in place for 15 out of 20 years, primarily due to Nobel Prize events (in 2009 and 2012) and terrorist threats (in 2011 and 2014). In addition, the border was permanently controlled between 2017 and 2024. The reasons for this are mainly linked to the migration situation in Norway as a result of the wider European migration crisis, combined with terrorist threats and infrastructural threats, e.g., those linked to the Russian war in Ukraine.
- Crossing the border from Sweden to Finland: Temporary border controls were in place for 6 out of 20 years, primarily due to the impact of the COVID-19 (2020-2022) and intergovernmental meetings, such as the meeting of the Ministers of the Organisation for Security and Cooperation in Europe, OSCE (2008).
- Crossing the border from Norway to Sweden: Temporary border controls occurred in 12 out of 20 years due to terrorist threats following the Oslo bomb explosion (2011) and unexpected migration flows (2015). Since 2016, there have been permanent border controls, mainly due to migration issues and terrorist threats (2016-2015).
- Crossing the border from Norway to Finland: Similar to the patterns of temporary border controls to those experienced when crossing from Sweden to Finland.

- Crossing the border from Finland to Sweden: Similar to the patterns of temporary border controls when crossing from Norway to Sweden.
- Crossing the border from Finland to Norway: Similar to the patterns of temporary border controls when crossing from Sweden to Norway, with fewer controls between 2017 and 2019 due to unexpected migration.

From a comparative perspective, Sweden and Norway controlled the border on a significantly greater number of days than Finland did, which indicates that the impact on cross-border movements was unequal.

Such controls tend to affect the smooth functioning of cross-border flows, particularly commuting and logistics, by introducing delays and unpredictability.

2.5.2 Key messages on the border security dimension

Sweden and Norway controlled the border on significantly more days than Finland, indicating an unequal impact on cross-border movements. These controls tend to have a tangible effect on the smooth functioning of cross-border flows, especially commuting and logistics, as they introduce delays and unpredictability.

More generally, the geopolitical situation and the area's location in/near Arctic and the border with Russia presents safety and security issues.

2.6 Governance dimension

The Nordic countries of Sweden, Finland and Norway have a long tradition of cooperation, free movement and cross-border exchange. They have a long history of cooperation at the national level, particularly since the establishment of the Nordic Council for inter-parliamentary collaboration in 1952 and the Nordic Councils of Ministers for inter-governmental, thematic collaboration in 1971. This includes the Freedom of Movement Council, which addresses border obstacles related to labour mobility. A Nordic passport union was introduced in 1952, and free movement within the Nordic countries has long been taken for granted. The area is also covered by the European Union Strategy for the Baltic Sea Region, which was the first European macro-regional strategy stemming from the long tradition of cross-border cooperation in the region. There are also various collaborative efforts among the countries of the programme area concerning e.g. civil protection (e.g. via the Nordred Framework Agreement involving Finland, Sweden, as well as Norway and Denmark and Iceland), public health (e.g. the Nordic public health preparedness agreement, Nordhel, which has been complementary to the existing EU and other Nordic legal frameworks), energy security and electricity supply (e.g. Nordic Contingency Planning and Crisis Management Forum and Nordic Preparedness Forum, NordBER), and emergency communication networks (e.g. between Finland, Sweden and Norway).[49]

2.6.1 Cross-border cooperation

This sub-dimension identifies the extent of cross-border cooperation in the border region. It illustrates areas of high cooperation intensity and identifies functional links in governance structures across borders. It also identifies areas with high awareness of obstacles and the willingness and support services to overcome them, as well as areas where Interreg cooperation intensity is already strong.

[49] European Commission (2024) Strengthening the Resilience of EU Border Regions, Mapping Risks & Crisis Management Tools and Identifying Gaps, March 2024

2.6.1.1 Cross-border governance structures

Indicator description

The indicator shows active institutionalised cooperation that act as cross-border entities. It includes cooperation formats such as Eurocities, Euroregions, EGTC, cross-border associations, cross-border councils, etc.

- **Source/method of retrieval**: Localisation and categorising of cross-border cooperation formats (Eurocities, Euroregions, EGTC, cross-border associations, cross-border councils, conferences, working communities), based on desktop research.
- **Temporal coverage**: Status as of October 2025
- **Unit**: n/a

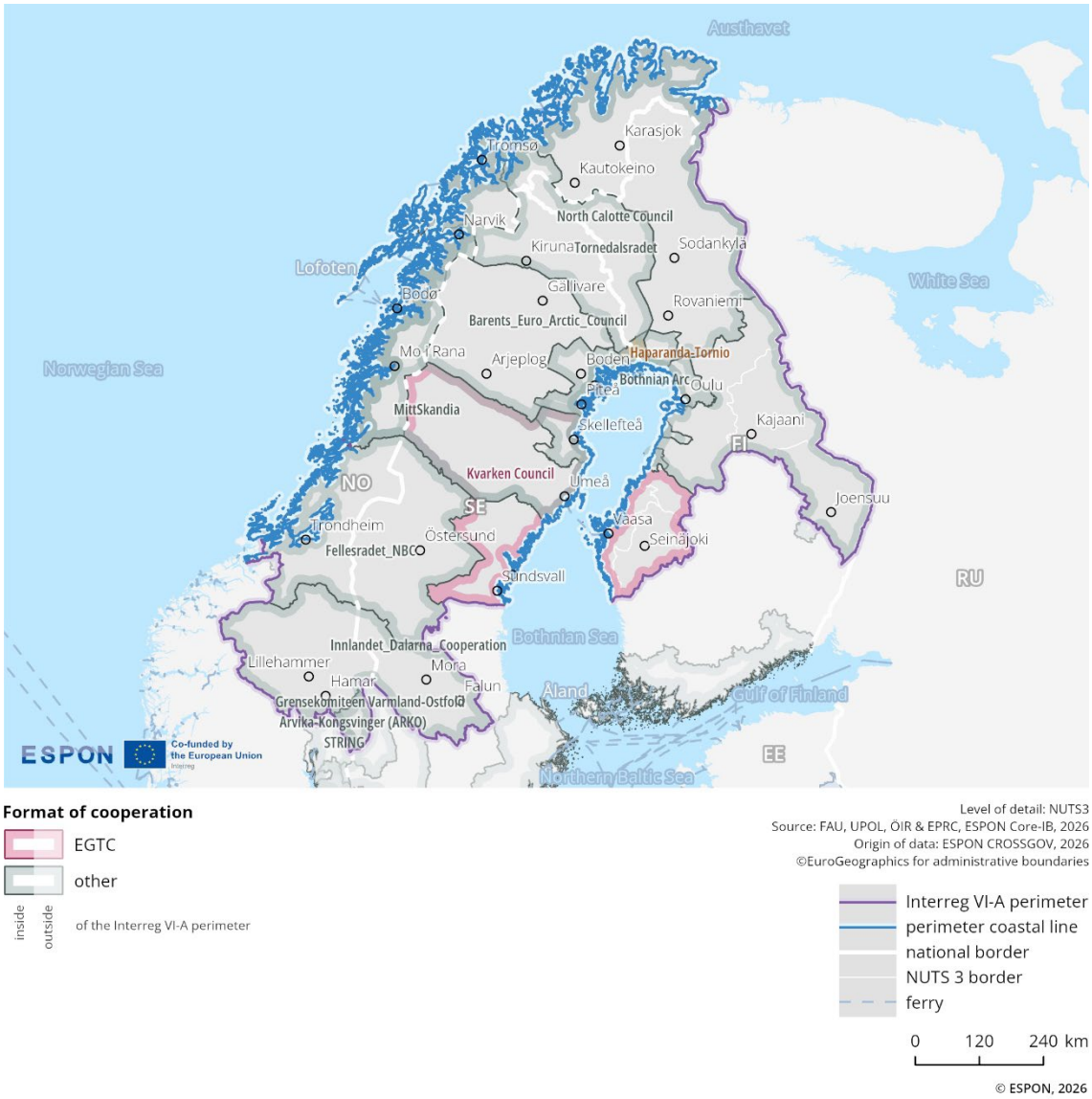
Please refer to the technical annex for more information.

Figure 2.37 shows the different types of institutionalised cooperation. These governance structures either function as cross-border entities or bring together stakeholders from the cross-border region around shared topics. The governance structures covered include Eurocities, Euroregions, European Groupings of Territorial Cooperation (EGTCs), cross-border associations and councils. Project-based cooperation is not included.

The coloured markings in the Figure 2.37 indicate different types of institutionalisations: EGTCs are shown in red, Eurocities in yellow, Euroregions/Euregios/Europaregions/Eurodistricts in blue, and other formats in grey.

The multi-level governance structure along the borders of this programme area shows broad spatial coverage. Overall, the cross-border programme area exhibits high levels of cooperation across national borders. The most prevalent formats are councils, committees and conferences.

Figure 2.37: Cross-border governance structures[50]



[50] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.6.1.2 Cross-border public services

Indicator description

The indicator shows different services specialised on cross-border challenges and development potential, including their domain of operation. As a specific form of services of general interest, cross-border public services (CPS) address joint problems or development potentials of border regions that are located on different sides of one or more national borders.

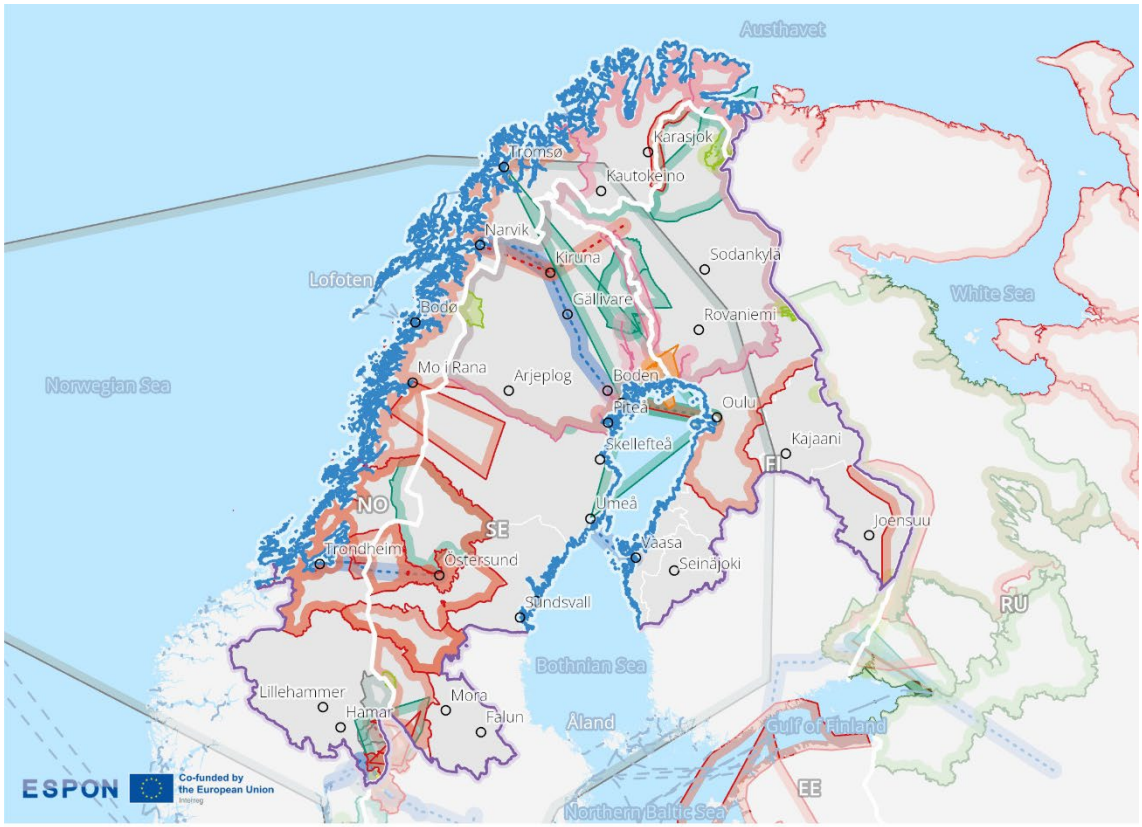
- **Source**: ESPON cross-border public services (CPS) 2.0 database
- **Temporal coverage**: 2022
- **Unit**: n/a

Please refer to the technical annex for more information.

Figure 2.38 depicts the geographical extent of cross-border public services in the border area in 2022. Different thematic areas are represented by distinct symbols and colours, indicating services such as disaster management, health care, transportation, education, environment, energy, job placement, and culture. The visualisation highlights where these services operate across the national boundary.

Cross-border public services in the Sweden-Finland-Norway (Aurora) cross-border programme area are widespread but tend to focus on specific themes. The dominant service area is disaster management, which is present across the entire cross-border programme area, particularly along the southern Norway and Sweden border. Education and research activities are concentrated around the area stretching from Tromsø to Luleå, Umeå and Oulu, although other notable hubs exist in other urban centres across the programme area. Heating and energy are concentrated at the southern end of the land border between Sweden and Finland. Small areas of environmental and water cooperation are found in the north, while healthcare services cover much of the northern part of the cross-border programme area. Key transport (railway) links include the route between the port of Narvik in Norway, via Kiruna to Luleå in Sweden, as well as the connection between Trondheim and Östersund. A further service hub is located in the far south, offering disaster management, environmental and water services, tourism and information, and “other” services.

Figure 2.38: Cross-border public services[51]



Geographical extent of cross-border public service themes (2022)

areal linear character of the service

- Disaster management
- Health care
- Transportation
- Tourism & information
- Education & research
- Environment & water
- Heating & energy
- Job placement
- Culture

inside outside inside outside of the Interreg VI-A perimeter

Cross-border public services covering more than one theme have been assigned only to one. Furthermore, some polygons have been excluded because they were only approximately and not accurately spatially defined.

Level of detail: geolocalised lines and areas
Source: FAU, UPOL, ÖIR & EPRC, ESPON Core-IB, 2026
Origin of data: ESPON CPS, 2022
©EuroGeographics for administrative boundaries

- Interreg VI-A perimeter
- perimeter coastal line
- national border
- NUTS 3 border
- ferry

0 120 240 km

[51] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

2.6.1.3 Perceived cross-border obstacles in b-solutions

Indicator description

The indicator shows cases of legal or administrative obstacles selected in the framework of the b-solutions initiative. This indicator lists the number, location and nature of suggested solution of cases in the b-solutions initiative, including the topic and parties involved.

- **Source/method of retrieval**: Processing and analysis of the b-solutions initiative data
- **Temporal coverage**: 2018-2025 (first quarter)
- **Unit**: n/a

Please refer to the technical annex for more information.

The b-solutions initiative is a European Union project that supports the resolution of legal, operational and administrative cross-border obstacles. It offers funding for pilot actions and legal expert advice in border regions. A high level of cross-border integration often reveals strong barriers of cross-border functioning. In order to exploit the cross-border potentials, these obstacles have to be overcome or at least addressed. Both the number of reported obstacles and the general interest in solutions serve as important indicators of cross-border interaction.

As part of the ESPON CROSSGOV project, all b-solutions initiatives were analysed to deepen the understanding of the thematic focus of the perceived cross-border obstacles across different border regions and the suggested solution. In the case of the Sweden-Finland-Norway (Aurora) programme area, no participation in b-solutions projects has been reported thus far.

2.6.1.4 Institutionalised advice centres for cross-border issues

Indicator description

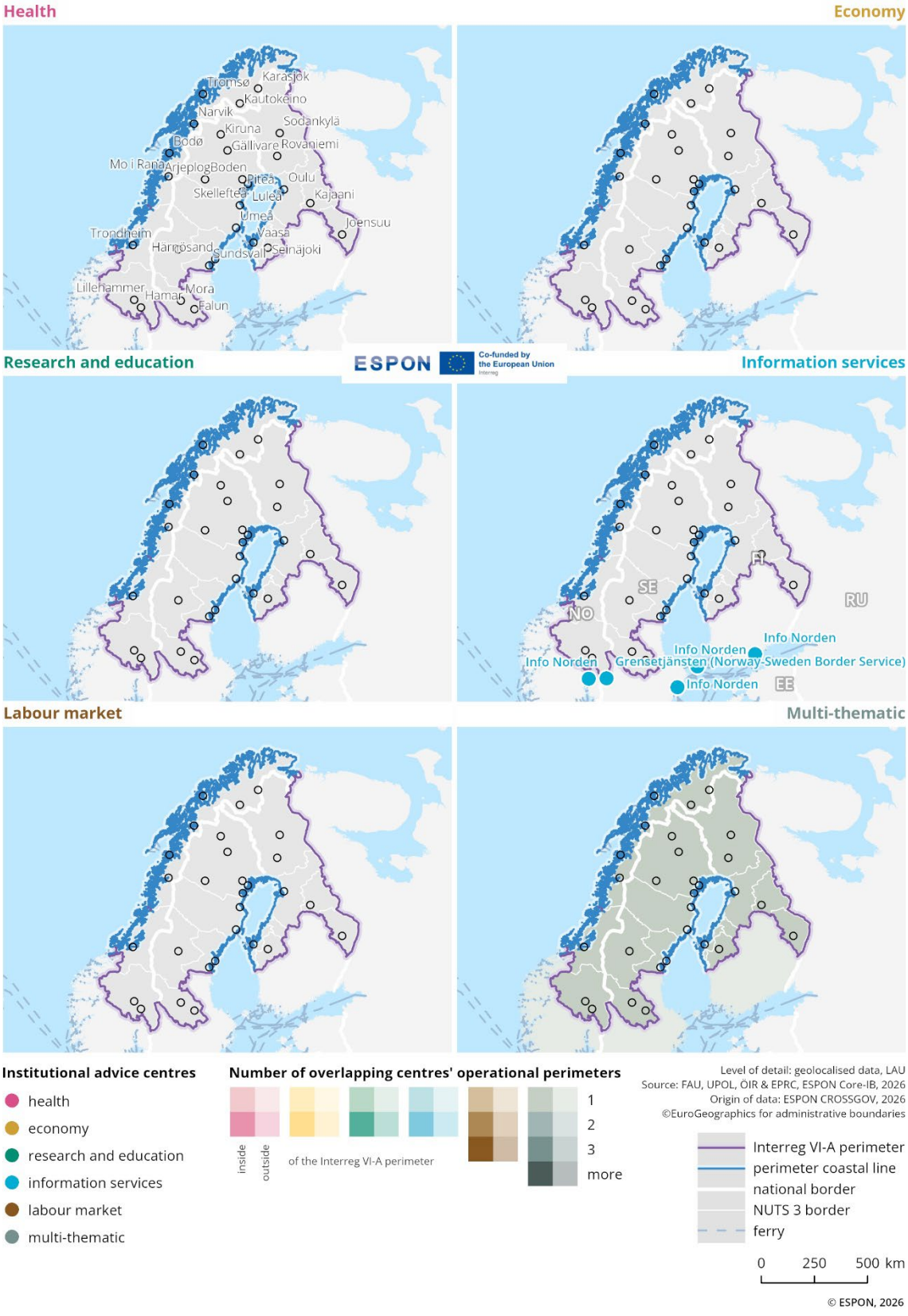
The indicator shows where institutionalised advice centres on cross-border issues are located, including their thematic focus and geographical perimeter.

- **Source/method of retrieval**: Localisation and thematic focus of advice centres for cross-border issues are identified via desktop research.
- **Temporal coverage**: Status as of February 2025
- **Unit**: n/a

Please refer to the technical annex for more information.

Figure 2.39 shows the locations and types of institutionalised advice centres, along with their operational domains, in the Sweden-Finland Norway (Aurora) cross-border programme area. These centres throughout Europe provide support in various fields such as health, economy, research & education, information services, the labour market, and multi-thematic issues. The operational domains of these centres are also indicated by coloured shading on the map. The more intense the colour, the stronger the influence of that specific domain in the corresponding area.

Figure 2.39: Institutionalised cross-border advice centres[52]



[52] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

As can be seen in Figure 2.39, there are no institutionalised advice centres within the cross-border programme area. However, there are several institutionalised advice centres related to information services located south of the programme area. All of these centres are affiliated with Info Norden (the information service of the Nordic Council of Ministers), except for one, which is part of Grensetjänsten (Norway–Sweden Border Service).

Additionally, there are some multi-thematic operational domains in all the countries.

2.6.2 Outline of Interreg activities

The following section outlines the key Interreg activities in the 2021-2027 programming period. The aspects included concern the development opportunities and challenges identified (see Table 2, the budget available and split of allocation (Figure 2.40), overlapping Interreg programmes and the key aspects drawn from the programme.

Table 2: Interreg VI (2021-2027): Opportunities and challenges

Topic	Key development opportunities and challenges identified for Interreg 2021-27
Territory	▪ Vast area which accommodates a mixture of some urban nodes and sparsely-populated areas ▪ Expansion of the programme area to include areas formerly involved in external border programmes ▪ Long distances to travel and impact on transport
Population	▪ Overall population decreases ▪ Sápmi indigenous population ▪ Aging population
Economic Development	▪ Impact of closed border with Russia ▪ Need to find new international partners and enhancing international cooperation ▪ Various R&D centres located across the programme area, with a high concentration in areas such as Oulu in North Ostrobothnia, but also in Troms og Finnmark, Västerbotten, and Nordland. ▪ Lack of critical mass ▪ Oil and gas related activities and blue economy are central to Norway's economic development, while bioeconomy and mining-related activities are notable in many parts of Finland and Sweden. Tourism plays a significant role across the programme area.

Total Budget: EUR 192,791,322.02

Figure 2.40: Split of Interreg allocation

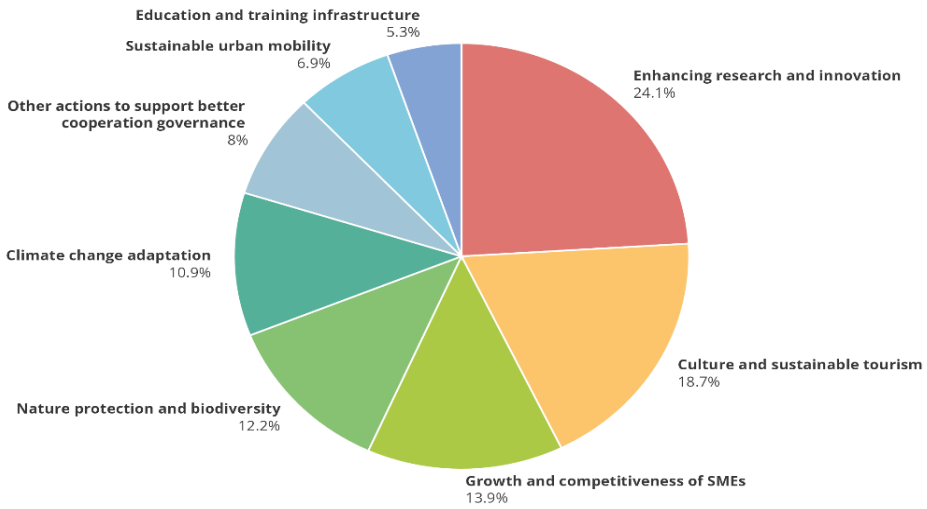


Table 3 shows the number of Interreg 2021-2027 cross-border and transnational programmes which share at least one NUTS3 region with the border area. Each programme has its own distinct rationale, value and territorial focus. However, for the purposes of, for example, planning and capitalisation activities it is potentially helpful for programmes and programme stakeholders to be aware of and connected to other Interreg programmes with which they share a direct territorial link.[53] The 4 Interreg C programmes Interreg ESPON, Interact, Interreg Europe and URBACT cover the whole EU territory and provide a range of joint services and initiatives.

Table 3: Shared geographies with other cross-border and transnational programmes

Interreg A (cross-border)	Interreg B (transnational)
1	3

Key aspects

- Cross-border cooperation in the northernmost parts of Europe and Sápmi.
- The programme is divided into 2 distinct, partly overlapping geographical sub-areas: Aurora and Sápmi.
- Promoting social inclusion, digitalisation, and a just green transition, supporting climate change adaptation, biodiversity protection, and sustainable mobility,
- Some territories within the programme area are also covered by the 2021-2027 Interreg A Sweden-Norway; and Interreg B Northern Periphery and Arctic, North Sea and Baltic Sea programmes.

[53] It is noted that synergies and links with a wide range of other territorial cooperation and sectoral programmes and initiatives are also valuable and this is reflected in the wider analyses presented in this border profile, but not specifically covered in this table.

2.6.2.1 Interreg cooperation

Indicator description

Based on the keep.eu database, this indicator illustrates the network density of Interreg V-A (2014–2020). It is derived from the geographical location of all partners within a project consortium and reflects the intensity of cooperation between them. For the analysis, project networks were visualised by drawing lines between the locations of partners within a consortium. These connections were subsequently aggregated and spatially abstracted by calculating line density using GIS software. Dark red areas indicate a high density of connections between project partners, while yellow areas represent a lower density of cooperation links.

An additional element in this section is the development of project partner numbers between Interreg IV-A (2007–2013) and Interreg V-A (2014–2020), based on data from the keep.eu database. The datasets were cleaned to remove duplicates, using the partner names as reported in keep.eu. For both programming periods, keep.eu indicates a high level of data completeness.[54]

Nevertheless, this development should be interpreted as indicative, as variations in partner name reporting and general limitations regarding the representativeness of the dataset affect the robustness of the results.

- **Source/method of retrieval**: Processing and analysis of the keep.eu database
- **Temporal coverage**: 2007-2013 (Interreg IV-A), 2014-2020 (Interreg V-A)
- **Unit**: n/a

Please refer to the technical annex for more information.

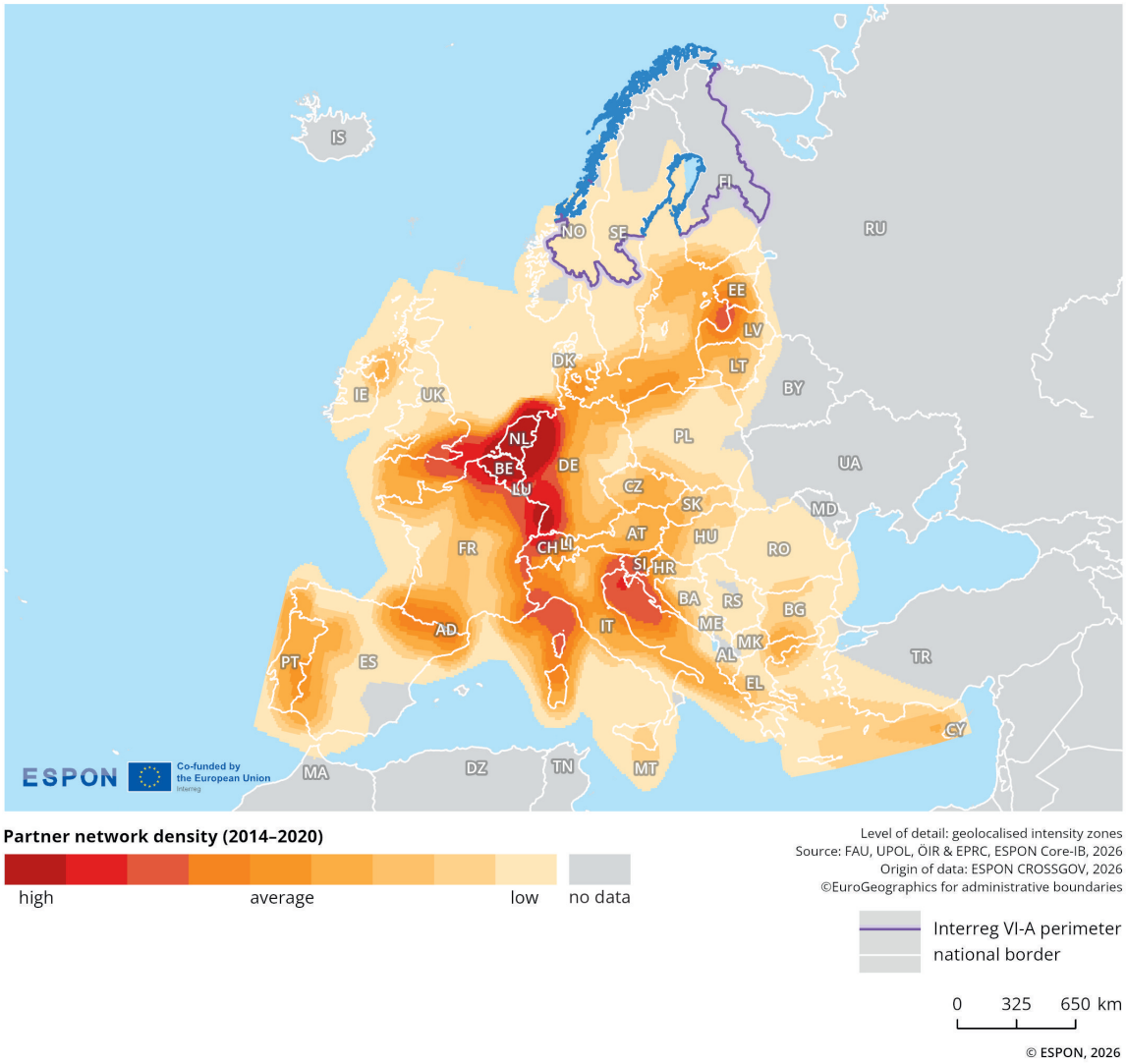
Cooperation activities and networks are among the most meaningful types of information for delineating cross-border functional areas. As such, the indicator on cooperation through Interreg can help to identify networks among cross-border actors and highlight the density of cooperation in specific border segments.

Figure 2.41 shows the density of Interreg V-A (2014–2020) partner networks. The indicator includes the location of, and links between, Interreg project partners within a project consortium. As the Sweden-Finland-Norway (Aurora) programme was newly created for the 2021-2027 programme period by merging the previous Interreg Nord and Botnia-Atlantica programmes, the available partnership data for the predecessor programmes in the keep.eu database is comparatively limited[55]. Accordingly, this figure cannot provide a fully accurate or comprehensive representation of Interreg V-A partner network density in the northern part of this programme area.

[54] see Keep.eu representativeness: Interreg, Interreg-IPA and ENI cross-border

[55] In the keep.eu database, only 22.26% of project partnerships for Sweden-Finland-Norway (Nord) and 36.32% for Sweden-Finland-Norway (Botnia Atlantica) are available, for Sweden-Finland-Norway (Nord) see here: https://keep.eu/programmes/39/2014-2020-Sweden-Finland-Norway/; for Sweden-Finland-Norway (Botnia Atlantica) see here: https://keep.eu/programmes/36/2014-2020-Sweden-Finland-Norway-Botnia/

Figure 2.41: Interreg V-A partner network density[56]



2.6.3 Key messages on the governance dimension

Despite the fact that the Sweden-Finland-Norway (Aurora) cross-border programme was created for the 2021-27 programme period as a result of the merger of the previous 2027 by merging the previous Interreg Nord and Botnia-Atlantic programmes, the area has a long tradition of cooperation, free movement and cross-border exchange. The multi-level governance structure along the borders of this programme area shows broad spatial coverage. The most prevalent formats are councils, committees and conferences.

Cross-border public services in the cross-border programme area are widespread but strongly thematic. The dominant service is disaster management, which is present across the entire cross-border region, particularly along the southern Norway and Sweden border. This suggests scope to reinforce strong existing thematic areas, such as disaster management.

There is no participation in the b-solutions initiative and no institutionalised advice centres within the programme area itself. However, several information-service-related advice centres are located to the

[56] Please consider the particular spatial reference in this border profile: The statistical analysis refers to the programme area as defined at EU level at the district level (NUTS3), cp. https://eur-lex.europa.eu/eli/dec_impl/2022/75/oj/eng. The municipal membership differs from this perimeter, as shown in Figure 1.1.

south of the programme area, most of them affiliated with Info Norden, with one belonging to Grensetjänsten (the Norway–Sweden Border Service).

Interreg cross-border cooperation in the northernmost parts of Europe and Sápmi has focussed on promoting social inclusion, digitalisation, and a just green transition, supporting climate change adaptation, biodiversity protection, and sustainable mobility. Some of the area also share geographies with the 2021-2027 Interreg A Sweden-Norway Programme and Interreg B Northern Periphery and Arctic, North Sea and Baltic Sea Programmes. The diverse cooperation landscape offers opportunities to build productive linkages and synergies, while underscoring the need for complementarity and coherence with existing cooperation frameworks.

3 Summary and key observations

To support the strategic dialogue on cross-border cooperation beyond 2027, this territorial analysis provides harmonised and comparable information. Its data-driven evidence helps to inform the future direction of cross-border cooperation by facilitating alignment with EU priorities and the evolving regulatory framework. The Core-IB border profiles adopt a harmonised methodology and provide programme areas with access to recent European data. As this approach comes along with limitations, member states may hold additional or more detailed data which can further enrich or contextualise the findings beyond the Core-IB project (see final report and technical annex of this project). These national sources are essential for refining and validating territorial evidence in policymaking processes, including: a) regional, fine-scale data and b) insights from political processes related to prioritisation and objective setting. The study's findings are analytical and are intended to support reflection and discussion. They do not create regulatory or policy obligations for Member States, the European Commission, or programme authorities.

Table 4 provides 2 types of information. Firstly, it summarises the key analytical findings for the border region, as discussed earlier in this profile. Secondly, it suggests policy options based on the analytical findings. These options are intended to provide a practical and informative basis for the strategic dialogue among programme bodies, managing authorities and the European Commission.

Generally speaking, the aim of cohesion policy is to promote harmonious territorial development (also) across borders. The objective is to mitigate the impact of borders and achieve 360° functionality, thereby enhancing the quality of life and fostering prosperous development on both sides of the border. The upcoming Interreg period offers an opportunity to address these objectives and potentials through targeted cooperation projects.

Table 4: Evidence-based conclusions

Territorial dimension	
Key analytical findings	• Large parts of the cross-border programme area are extremely sparsely populated, with most of the population, services and economic activity concentrated in the urban centres. The most notable changes in settlement patterns have also occurred in these urban areas, although the entire programme area is characterised by dynamic settlement development. This highlights the divide between urban and sparsely populated areas and reinforces the need for integrated spatial planning; • Demographic ageing and long-term retention of skilled, working age populations are important challenges. There is scope to cooperate on issues related to demographic developments, including the retention of migrants as valuable labour force in the programme area; • Extreme distances and challenging physical geographies mean that road connections are the main forms of transport link across the programme area. This places an emphasis on new, innovative/digital solutions to boost access to jobs and services; • These characteristics shape and inform development opportunities in the area, e.g., in relation to accessibility, infrastructure and spatial development.

Territorial dimension	
Policy options	**Population and settlement related aspect** • Territorial cooperation could support efforts to retain and integrate in-migrating populations, building on recent population increases while strengthening social and economic inclusion across the area. **Accessibility related aspect** • Cooperation efforts could focus on developing a long-term framework that balances the pressures of population concentration and service provision with the needs of sparsely-populated communities. **Cross-cutting aspects** • Cooperation projects could support long-term adaptation to demographic change, addressing shifting demands and expectations for services, housing and infrastructure; • Territorial cooperation also offers scope to develop and deploy technological solutions and social innovations to overcome distance-related challenges, improve access to employment and services, and support the planning and communication of new connections, ensuring meaningful engagement with local and Indigenous communities throughout.

Economic dimension	
Key analytical findings	• The cross-border programme area is generally prosperous, characterised by a high GDP per capita; • The areas share similar industrial structures, with dominance of sectors such mining, manufacturing, electricity and water supply. This underlines the types of skills needed in the cross-border programme area; • There is a strong focus on the resource-based economy in the area, which highlights the ongoing importance of balancing economic development, resource management, climate/environmental protection, and the Sápmi communities; • Employment levels vary considerably across the programme area, with the lowest rates, below 50%, found in the northern parts of Norway and the southern parts of Finland. These disparities point to challenges in job availability, skill mismatches, and uneven labour-market opportunities across the cross-border programme area; • House prices follow broadly similar patterns across the programme area, with lower prices in rural and northern areas and higher prices in selected urban centres, with highest prices in Trondheim; • Long travel distances, especially when crossing borders, limit the feasibility of regular cross-border commuting, increasing both travel time and financial costs. This affects mobility, labour-market integration and service access; • Improvements in internet connectivity and broadband speeds create new opportunities for shared service provision, remote work, and economic development. Tailored digital solutions remain particularly important for the far north and other remote communities.

Economic dimension	
Policy options	**Competitiveness related aspects** • Focus could be on strengthening cross-border labour mobility and skills development, focusing on sectors dominating the region (mining, manufacturing, energy, education, health and social work). Cooperation could support joint skills strategies, training, and mobility schemes to address shortages and raise employment levels in lagging areas; • Cooperation could also support innovation and diversification in resource-based sectors, which could include e.g., joint RDI projects and work on green technologies; • Advance digital transition to mitigate the impact of long distances, improve access to services, and expand remote work and business opportunities, particularly in sparsely populated and northern areas. **Cross-cutting aspects** • Joint strategy development could help address tensions between large-scale investments and the resource-based economy on one side, and climate protection, environmental sustainability and Indigenous Sápmi rights on the other. This is especially relevant in areas undergoing rapid economic transformation; • Enhance service provision models (including digital services) to improve accessibility for remote areas where travel distances and sparse settlement create structural disadvantages.

Green dimension	
Key analytical findings	• Protected areas within the cross-border programme area are concentrated in the northern and central parts. The presence of extensive protected areas is a clear strength for the cross-border programme area but underlines also the vulnerability of the area and the communities living in the area (e.g., Sápmi) to the effects of climate change; • The cross-border programme area has low levels of air pollution and waste production in comparison to the European average; • The cross-border programme area has a low risk for natural hazards, but a moderate risk of landslides exists along the mountain range of the Norwegian-Swedish border; • The cross-border programme area has extensive high- and extra high-voltage transmission infrastructure; except for remote parts. The area's 220 hydroelectric power stations highlight a strong commitment to renewable energy and the green transition. Cooperation on energy issues more generally is very relevant not least in terms of promoting self-sufficiency in the programme area; • Resource productivity in PPS has increased although is generally below the European average; • The growth and protection of the Sápmi traditional livelihoods is an important consideration in the context of green development.

Green dimension	
Policy options	**Climate risks and resilience related aspect** • Cooperation could focus on proactive climate adaptation in protected and sensitive northern environments, where large continuous protected zones and Sápmi communities are especially vulnerable to rapidly evolving climate impacts. Joint monitoring, research, and tailored adaptation strategies would support resilience across borders; • Maintaining the programme area's low exposure to natural hazards while addressing specific cross-border risks, such as landslides along the Norwegian–Swedish mountain border, could also form an area of cooperation. **Cross-cutting aspects** • Cooperation could help safeguard the programme area's high-quality environment and low levels of air pollution, while improving knowledge and management of water quality in areas where data is limited or river areas which show moderate or poor status; • A shared approach to balancing economic development with environmental protection and Sápmi rights remains essential; • The strong base of renewable energy infrastructure, particularly hydropower, creates opportunities to advance the green transition through coordinated innovation and planning; • Joint work on environmentally friendly technologies and circular-economy solutions could enhance resource productivity, which remains below the European average in all 3 countries' border regions; • Cooperation could help develop climate and energy solutions that respect and protect Sápmi culture, reindeer husbandry and land rights.

Socio-economic dimension	
Key analytical findings	• Social media connectivity is moderate between Finland and Sweden, and Finland and Norway, and low between Norway and Sweden; • The cross-border programme area has deep rooted linguistic (Swedish and Norwegian) and cultural links between the territories and connections to the Sápmi people; • Tourism is an important sector for the labour market and services, although must be balanced with the environmental vulnerability and consider the Sápmi culture and livelihoods; • Essential services are concentrated around cities and main towns, mostly in the southern parts of Norway, the eastern parts of Sweden, and the southwestern parts of Finland. This creates an urban–rural divide. It also raises issues around recruitment of staff for key industries and services.
Policy options	**Cross-cutting aspects** • Cooperation could support the protection and deepening of long-standing linguistic, cultural and Sápmi connections across the programme area. This is particularly important in a context of rapid economic, demographic and environmental change; • Cooperation projects could focus on developing sustainable tourism approaches tailored to the area's specific environmental characteristics, carrying capacity and cultural sensitivities. Close involvement of Sápmi communities is essential to ensure tourism development respects indigenous livelihoods and cultural values; • Territorial cooperation could help accelerate the digital transition to address accessibility challenges caused by long distances, mountainous terrain and dispersed settlement patterns; • Digital solutions and shared service models could reduce disparities between urban centres and remote or sparsely populated regions.

Border security and safety dimension	
Key analytical findings	• Safety and security are key considerations for the programme area, linked to general geopolitical concerns, but in particular position in/near the Arctic and long border with Russia in the east; • The impact of distance, transport connectivity, extreme climates and climate change also impact on issues around security of supply (including energy) and services access; • Sweden and Norway controlled the border on significantly more days than Finland, indicating an unequal impact on cross-border movements; • These controls tend to have a tangible effect on the smooth functioning of cross-border flows, especially commuting and logistics, as they introduce delays and unpredictability.
Policy options	**Cross-cutting aspects** • Positive cross-border linkages could be further reinforced through territorial cooperation, contributing to enhanced security and preparedness across the area; • The impacts of border controls on cross-border commuting and logistics can be mitigated through coordinated and institutionalised cross-border policy dialogue; • The mitigation of border control effects can form part of cross-border cooperation projects in various sectors. Economic networks, transport infrastructure initiatives and tourism-related actions can incorporate considerations related to the impacts of border controls.

Governance dimension	
Key analytical findings	• Although Aurora is a new programme established for 2021-2027 by merging the previous Interreg Nord and Botnia-Atlantic programmes, the cross-border programme area has a long tradition of cooperation, free movement and cross-border exchange; • The multi-level governance structure along the borders of this programme area shows broad spatial coverage. The most prevalent formats are councils, committees and conferences; • Cross-border public services in the cross-border programme area are widespread but strongly thematic. Dominant service is disaster management; • There is no participation in the b-solutions, but there are several information service-related institutionalised advice centres located south of the programme area; • Interreg cooperation has focussed on promoting social inclusion, digitalisation, and a just green transition, supporting climate change adaptation, biodiversity protection, and sustainable mobility; • Some of the Aurora programme's area share geographies with the 2021-2027 Interreg A Sweden-Norway Programme and Interreg B Northern Periphery and Arctic, North Sea and Baltic Sea Programmes. There is great potential and opportunities for further cooperation between the programmes.
Policy options	**Cross-cutting aspects** • Cooperation projects could strategically complement and add value to existing, well-established cooperation networks and linkages across the territory; • The Arctic dimension of the programme area offers a strong foundation for collaboration with other programmes, and for extending the benefits of this experience to wider cooperation contexts.

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