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STATE OF THE LAPLAND REGION

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State of the Lapland Region

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State of Lapland 2017
EXECUTIVE SUMMARY

The aim of this report is to present an analysis of the state of the Region of Lapland in Northern Finland by providing maps, data and a future-oriented analysis of the development trends in the Finnish Lapland and the surrounding North Calotte region. The report analyses and benchmarks Lapland against selected neighbouring regions in Norway, Sweden, Finland and Russia. Particular focus in given to comparisons between Lapland and other Arctic regions in the North Calotte region, i.e. Norrbotten in Sweden, Finnmark, Troms and Nordland in Norway, and Murmansk in Russia. The report highlights selected themes of demography, labour force, education, economy, and innovation. This summary section will recap the key findings for each above-mentioned theme from the case study region in a comparative manner.

Demography

Looking at the population growth in Lapland between 2008-2015, most of the municipalities surrounding Rovaniemi had a decrease between 1% and 2% while Rovaniemi itself had an increase of 0.5%.

All the northern regions of Norway and Sweden experienced net in-migration, whilst for Lapland the average net migration rate is -0,2%. However, there is more variation on the municipal level. In Norrbotten and Lapland, more urbanised municipalities attracted inhabitants while those more rural ones lost their inhabitants.

An overall deficit of women can be observed in the Lapland Region. However, on the regional level, Lapland has the most balanced gender situation compared to its surrounding regions in Sweden and Norway. On the municipal level, the highest female ratio (105) for the Lapland Region can be found in Rovaniemi. Gender imbalance is a more common situation in the rural and peripheral areas than on the urban and accessible areas.

Old age dependency rates are rising across the Lapland Region (as they are across the whole Nordic Region), but due to selective outmigration of younger people towards the cities and adjacent areas, old dependency rates are particularly high in rural municipalities in Lapland as well as in Norrbotten.

Despite that the global and national concentration trend of population into bigger cities and municipalities takes place in Lapland too, the demographic potential in Lapland surpasses for instance that of Norrbotten and has a more balanced gender situation compared to e.g. North Sweden and North Norway.

Labour Force

The employment rate in the Lapland Region in 2015 was 66.1%, which is lower than both the Nordic average (76.2%), Finish average (70.5%) and the EU average (67.1%). However, the employment

rate in the Lapland Region has been increasing since the financial crisis in 2009 and is now higher than before the crisis.

In Lapland the female employment rate is higher than the male employment rate for many of the municipalities. What stands out in northern Finland is mainly the low employment rates among men.

Assessing the cluster analysis of employment, which displays the overrepresented economic activities at municipal level and consequently indicates the diversification level of the local economy, the Lapland Region is dominated by activities related to tourism and agriculture, forestry and fishery. However, the most recent positive development in labour-intensive sectors, especially tourism, has the potential to produce additional positive effects on employment.

Attracting and keeping mobile and young people with higher education backgrounds in Lapland is an increasing challenge, especially for smaller municipalities.

Economy and Innovation

In the study area of this report, there are four regions, Finnmark, Troms and Nordland in Norway, and Norrbotten in Sweden, which had a GRP (Gross Regional Product) per capita above the European average in 2014. The economies in the top-performing but more peripheral regions are usually thriving thanks to a large, single industry often highly specialised internationally: in Norrbotten, mining; and in Finnmark, Troms and Nordland, oil exploitation and fisheries. Although the vitality of these sectors induces a high level of economic performance for these regions, it leaves the regional economies highly vulnerable to changes occurring in these sectors which are usually well beyond the boundaries and the control of Nordic regional actors, both economic and political. Lapland, by comparison, has been below the EU average at GRP at least during the measurable last five years (2010-2014), but has each year had a stable position right close below the EU average.

Looking at the GRP levels and Purchasing Power Parity (PPP) in Lapland as well in the Northern Norway and Sweden, it becomes apparent that prosperity of the regions in the Nordic countries does not fundamentally depend on their urbanity, with regional inequality across the Nordic countries is generally at a lesser level compared to many other European countries.

Within the Nordic region, the smallest shares of knowledge-intensive jobs are in fact to be found in the three northernmost Finnish NUTS 2 regions, of which Lapland is part of one, North and East Finland. This situation is partially attributed to traditional economic structures characterised by a predominance of basic and traditional industries. However, encouraging is that according to the EU's Regional Innovation Scoreboard, North and East Finland together are categorised as 'strong innovators', while Norrbotten and Västerbotten in Sweden belong to the top group as 'innovation leaders' and Norwegian Finnmark, Troms and Nordland belong to the third level, 'moderate innovators.

Although medium-low and low-technology industries remain important for employment and value–added generation in the Arctic regions, the transformation of the regional profile towards more knowledge-based industries like life sciences and information and communication technologies significantly increase the regional potential to attract foreign investors to the region. The increasing focus on creating more local value from Lappish natural resources and increasing their refinery levels

can have a positive impact in this regard. Recent positive trend in bioeconomy, especially the planned large-scale biorefinery investments, and in tourism may result in improvement in economy in several municipalities in Lapland.

Looking at the "gross domestic expenditure on R&D" within the study area of this report, only Troms has a share of the GRP consisting of research and development costs around the EU average (2.0%). All other regions are below the EU average. Interestingly, Nordland, Norrbotten, Lapland and Murmansk all share a similar share of research and development expenditures as part of the Gross Regional Product (0.5-1.5%).

In terms of business investments in research and development and their change between 2007 and 2013, Lapland inhibits a slight increase in investments while neighbouring Norrbotten in Sweden has experienced a decrease of over 5%.

The latest positive development in e.g. bioeconomy and circular economy have further potential to create a positive mind-set towards R&D intensive industries and increased R&D expenditure.

Regional Potential Index

In terms of the Regional Potential Index (RPI), which is created by Nordregio and indicates the overall development potential of a region, the weak score of Lapland in comparison to northern Norway and Sweden is due to relatively weak performance in both the labour and the economic dimensions of the RPI.

The lower performance in the demographic dimension of Lapland is due to weak scores in population density, net-migration and demographic dependency. These weak scores are, however, compensated by a top score in female ratio, and in demographic potential Lapland surpasses the Swedish region of Norrbotten.

In the labour force side, the weak score of Lapland is due to the lowest employment rate and the highest youth unemployment rate within the study area. However, Lapland has a relatively educated labour force with a high share of the age group 25-64 with high education degree.

Looking into the economic dimension of the RPI, the average low score of Lapland is due to average R&D investments and a relatively low value for GRP/capita. The top region is Norrbotten which has the highest GRP/capita and the second highest R&D investment among the selected regions. The region of Troms in Norway stands out in the RPI comparison between the regions addressed in this report, especially in terms of strong labour and economic dimensions of the RPI.

The analysis of the regional RPI index should be considered as one of the possible tools for regional development, revealing certain regional strengths and weaknesses. When working with RPI, it is important not to focus on aggregate only – one should dig deeper to analyse the components of RPI as well as the underlying factors, in order to find the policy measures to improve the RPI in short, medium, and long term.

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State of the Lapland Region
INTRODUCTION

Under this commissioned work by the Regional Council of Lapland in Finland, Nordregio has produced a report entitled as 'State of the Lapland Region', which is based on the model of Nordregio's State of the Nordic Region 2016 Report.[1] The work was undertaken between October 2016 and February 2017. State of the Lapland Region includes maps, data and a future-oriented analysis of the development trends in the Finnish Lapland, focusing on the following themes:

- Demography
- Labour market
- Economy
- Regional Potential index

Aim of this report

The report contributes to the Northern Cooperation of Foresight Project undertaken by the Regional Council of Lapland and serves as an evidence-based feed-in to the development of regional strategies in Lapland. The Northern Cooperation of Foresight Project is managed by the Regional Council of Lapland. The project is implemented with support from European Social Fund (ESF) from Finland's structural funds programme "Programme for Sustainable Growth and Jobs 2014-2020". The ELY Centre of Northern Ostrobothnia is responsible for the financing.

This report aims at presenting an analysis of the Lapland region by adapting the methodology of the State of the Nordic Region report into the regional development context of Lapland. It analyses and benchmarks Lapland against selected neighbouring regions in Norway, Sweden, Finland and Russia. Particular focus in given to comparisons between Lapland and other Arctic regions in the North Calotte region. The report highlights selected themes of demography, labour market, economy, education and innovation. With the data, maps and analysis presented, the report supports evidence-based regional development policies and activities in the Lapland Region.

Approach

Data and analyses for this report are generated mainly from 2008 onwards and emphasis is given to comparing the Finnish Lapland to other regions and municipalities in the North Calotte region (i.e. Norrbotten in Sweden, Finnmark, Troms and Nordland in Norway, and Murmansk in Russia). As the analysis and visualisations of the State of the Lapland Region is based on harmonised cross-border

[1] State of the Nordic Region Report is available at http://www.nordregio.se/en/Metameny/Nordregio-News/2016/State-of-the-Nordic-region-2016/ The report draws on the latest available statistics to present an analysis of demographic changes, labour market trends, education, economic performance, and developments in accessibility and infrastructure. For the first time, the 2017 edition of the report also included a Regional Potential Index, which highlights the strengths and weaknesses of the 74 Nordic Regions in relation to one another, and identifies the regions with the strongest growth potential.

data, the report will make it possible to identify municipalities in the neighbouring Swedish and Norwegian regions with similar characteristics as Lapland's municipalities, providing a starting point for possible cross-border cooperation and learning from each other on e.g. how to tackle similar issues related to regional development.

Geographic scope

The geographic scope of this project is six regions within the Barents region, located above the Polar Circle and with Finnish Lapland at its centre. Finnish Lapland stands as the core region for the analyses of this report. The geographic coverage of this study includes the northernmost regions in Norway, Sweden and Finland, as well as the north-westernmost Russian region of Murmansk, covering the Kola Peninsula. In Norway, three regions, *fylken*, namely Nordland, Troms and Finnmark are included; in Sweden, the *län* Norrbotten; in Finland, the *maakunta* Lapland (Lappi); in Russia, the *oblast* Murmansk. Geographically and climate-wise, these regions all have in common that they are located in the northernmost, Arctic part of the European mainland, with at least the main part of each region positioned above the Polar circle. All regions have access to the sea – the Norwegian regions and the Murmansk region border the Norwegian, the Barents and the White Seas, while Norrbotten and Lapland have access to the Baltic Sea. The region is generally very mountainous (figure A).

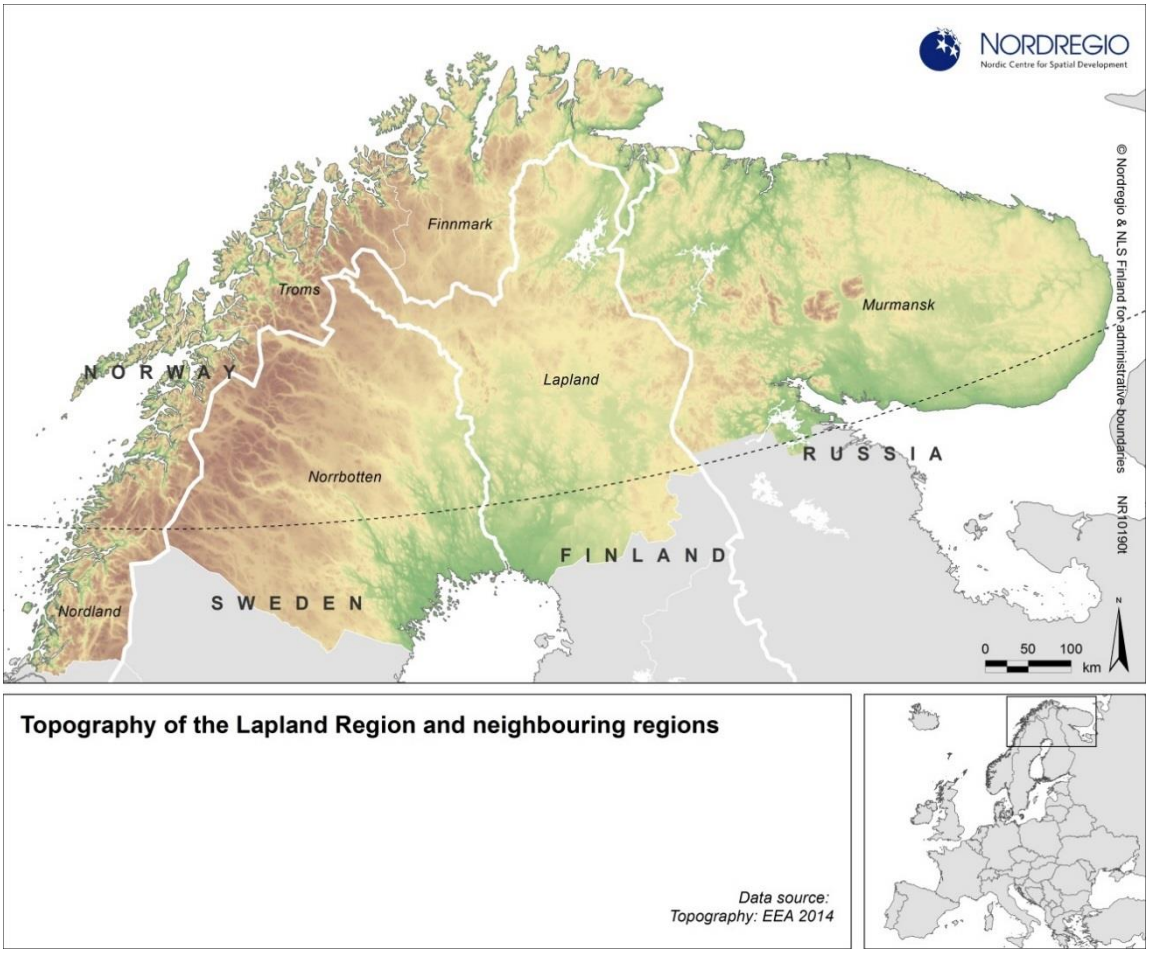

Figure A: Topography of the Lapland Region and neighbouring regions

Furthermore, this is a region with low population density, at least compared to the central and southern parts of Europe. Population-wise, the Murmansk region by far has the largest population, above 800 000 inhabitants. The other regions vary in population between 75 000 and 240 000 inhabitants each. The city of Murmansk and its surrounding towns is also by far the largest urban conglomeration in the region. The city of Murmansk is the administrative capital of the Murmansk region, as is Rovaniemi for Lapland, Luleå for Sweden, Bodø for Nordland, Tromsø for Troms and Vadsø for Finnmark. Out of these, Vadsø is the only regional capital which is not the largest city or town within its region (figure B).

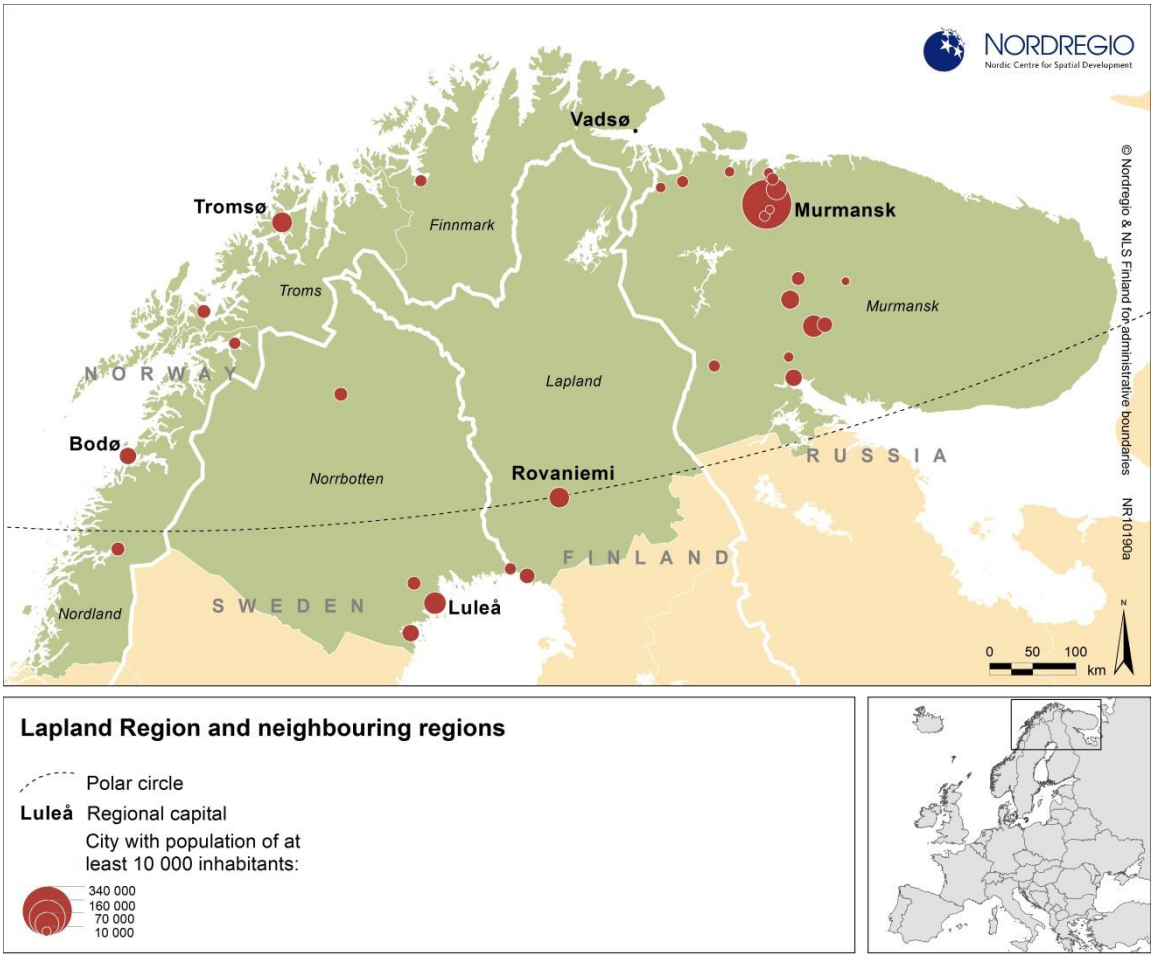

Figure B: The Lapland Region and neighbouring regions

Statistical data, comparability and limitations

Statistically, within the European nomenclature for statistical units, "NUTS", the regions in focus of this project are smaller so-called NUTS 3 regions, with the exception of the Murmansk region, which is comparable to the medium-sized NUTS 2 regions. As this project deals with the socio-economic development at regional and local (municipality) level across several countries, all included data has been scrutinised and harmonised in order to be comparable between all regions and municipalities. The selected indicators are generally based on the approach and methodologies developed for Nordregio's report "State of the Nordic Region 2016"[2], in particular the chapters on demography, employment, unemployment, education, economic development, innovation and the Regional

[2] http://www.nordregio.se/nordicregion2016

potential index. Whenever possible, the indicators are compared to a Nordic average (an average of the five Nordic countries plus Greenland, the Faroe Islands and Åland), to a EU average, and also to EU's 2020 goals.

The "State of the Nordic Region 2016" report focused on the regional development in the Nordic countries, and did not include Russia. Therefore, whenever possible, for this project data for the Russian Murmansk region has been supplemented. However, in this regard some limitations should be mentioned. Local level data below the regional (*oblast*) level in Russia is generally time-consuming to collect and map from public sources, and has therefore not been included in this project. Furthermore, even at regional level, comparable data might not be available for the Murmansk region, generally due to that regional data for Finland, Norway and Sweden is generally available from EU's Eurostat statistical database, while this is not the case with Russian regions. Therefore data for the Murmansk region cannot always be displayed in the maps of this report.

Theme 1

DEMOGRAPHY

Theme 1: Demography

The map below (figure 1.1.) shows the municipal population in the Lapland Region. For all the territories in northern Norway, Sweden and Finland, most populated municipalities experienced population growth during 2008-2016 (0,5% - 1,6%), while less populated ones had declined population (e.g. smaller costal municipalities in Norway). It is also interesting to see that most of the municipalities surrounding Rovaniemi had a decrease between 1% and 2% while Rovaniemi itself had an increase of 0.5%.

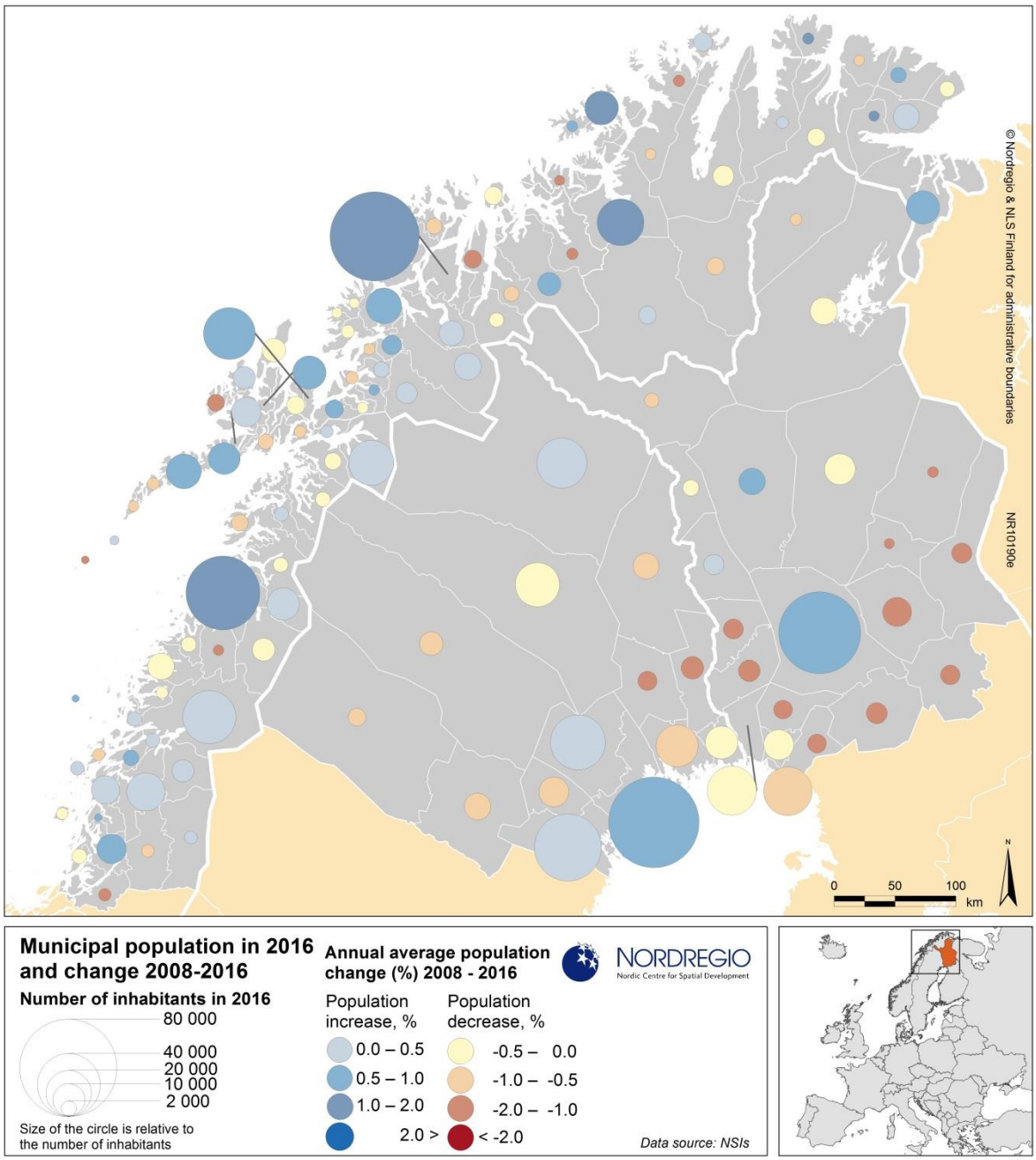

Figure 1.1. Municipal population in 2016 and change 2008-2016

The maps on the net-migration (figures 1.2. and 1.3.) illustrate the annual average changes from 2008, when the financial crisis started, to 2014. The Lapland Region had an annual average net migration rate of 0,5% during the period 2008-2015, but there is significant geographic variation between regions and between municipalities. The regional map shows that all the regions experienced net in-migration, except for Lapland whose average net migration rate is -0,2%. There is more variation on the municipal level. In the three regions of Norway, net in-migration occurred both in the urban municipalities and also in the majority of the rural municipalities. However, in Norrbotten and Lapland, more urbanised municipalities attracted inhabitants while those more rural ones lost their inhabitants.

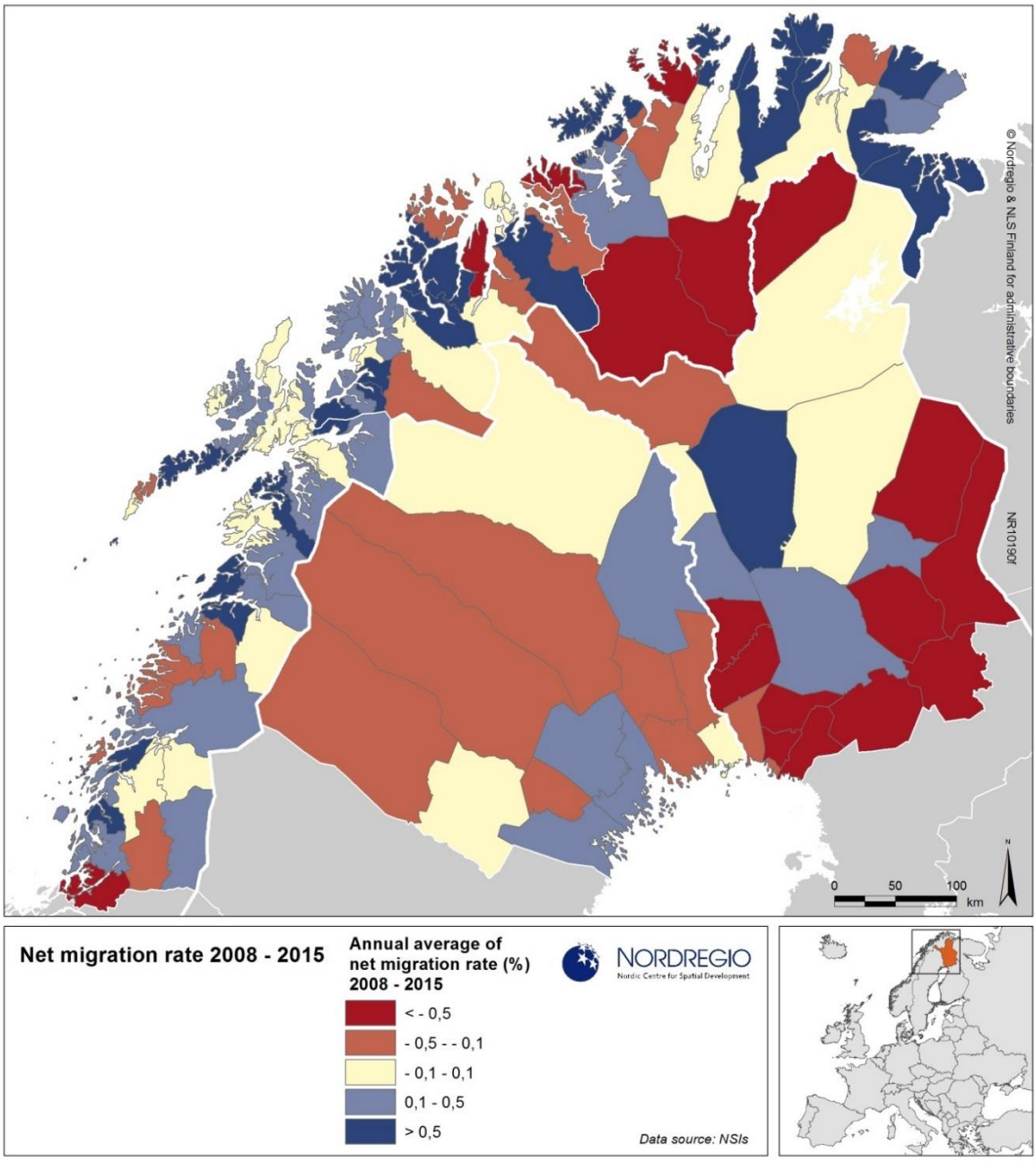

Figure 1.2. Net migration 2008-2015 on municipal level

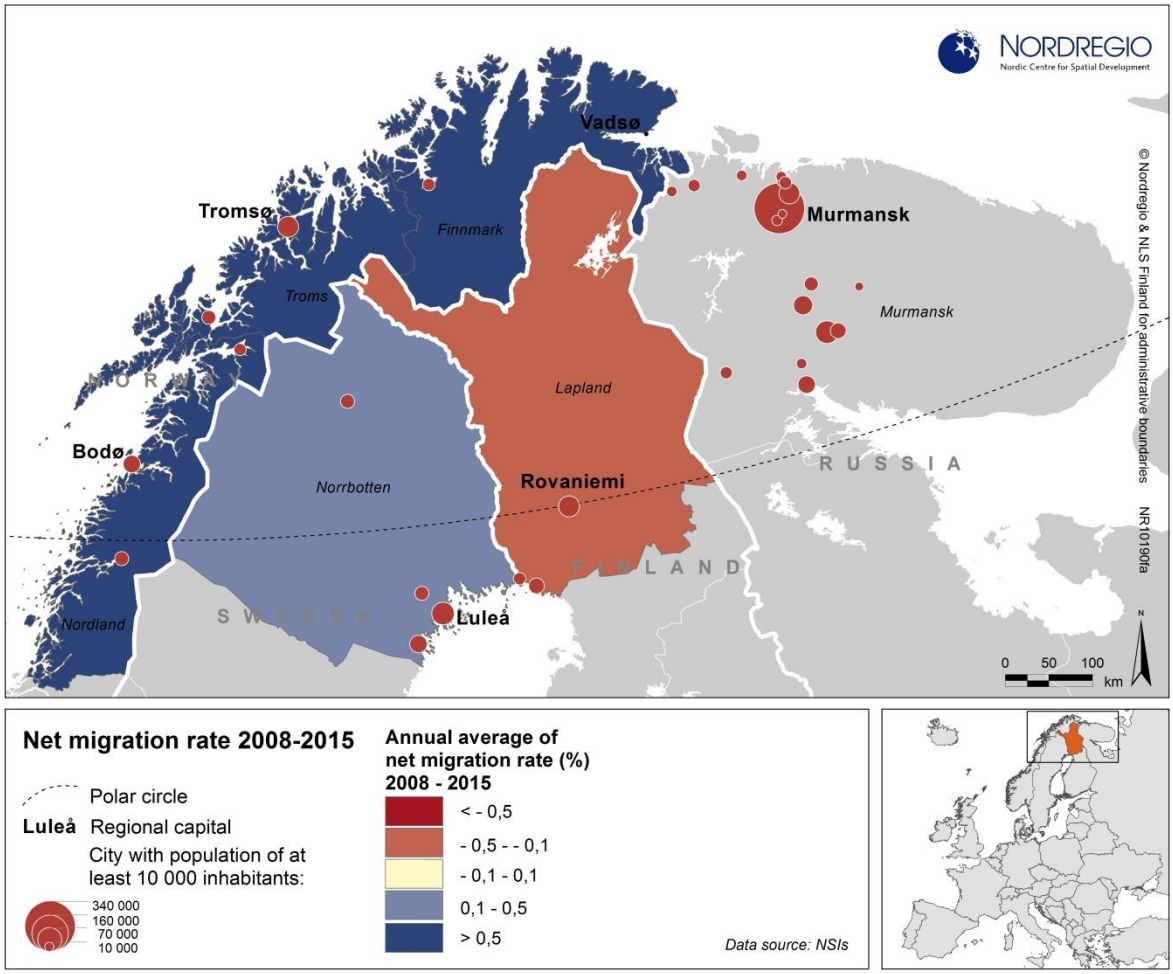

Figure 1.3. Net migration 2008-2015 on regional level

The following maps (figures 1.4. - 1.9.) demonstrate the population composition in terms of gender and age. An overall deficit of women can be observed in the Lapland Region (figure 1.4.). On the regional level, Lapland has the most balanced gender situation compared to its surrounding regions. On the municipal level, the highest female ratio (105) for the Lapland Region can be found in Rovaniemi; the lowest female ratio in 2016 (77) was in Gamvik located in the far North of Finnmark. The map highlights the differences between the countries and territories. Gender imbalance is a more common situation in the rural and peripheral areas than on the urban and accessible areas.

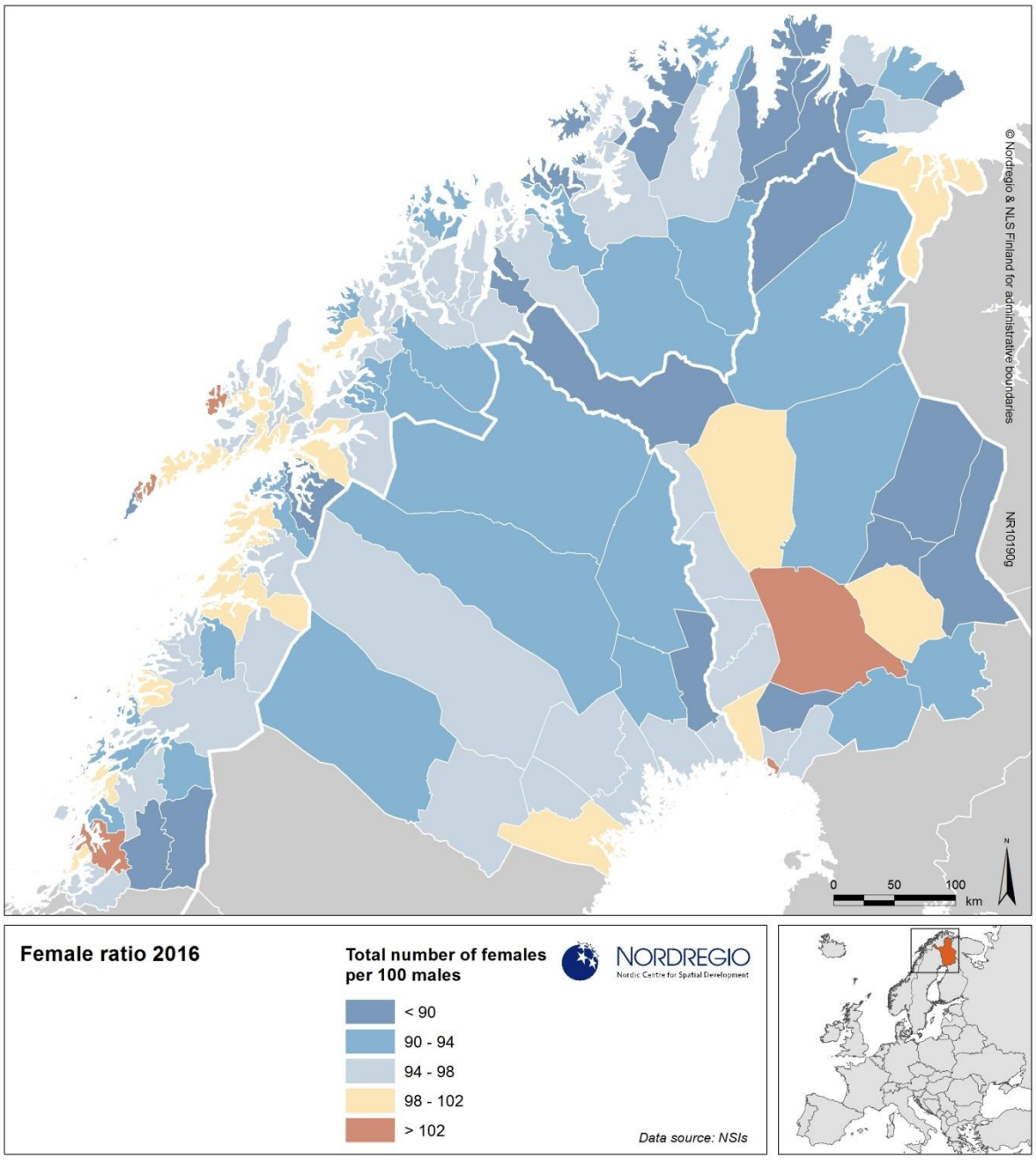

Figure 1.4. Female ratio in 2016 on municipal level

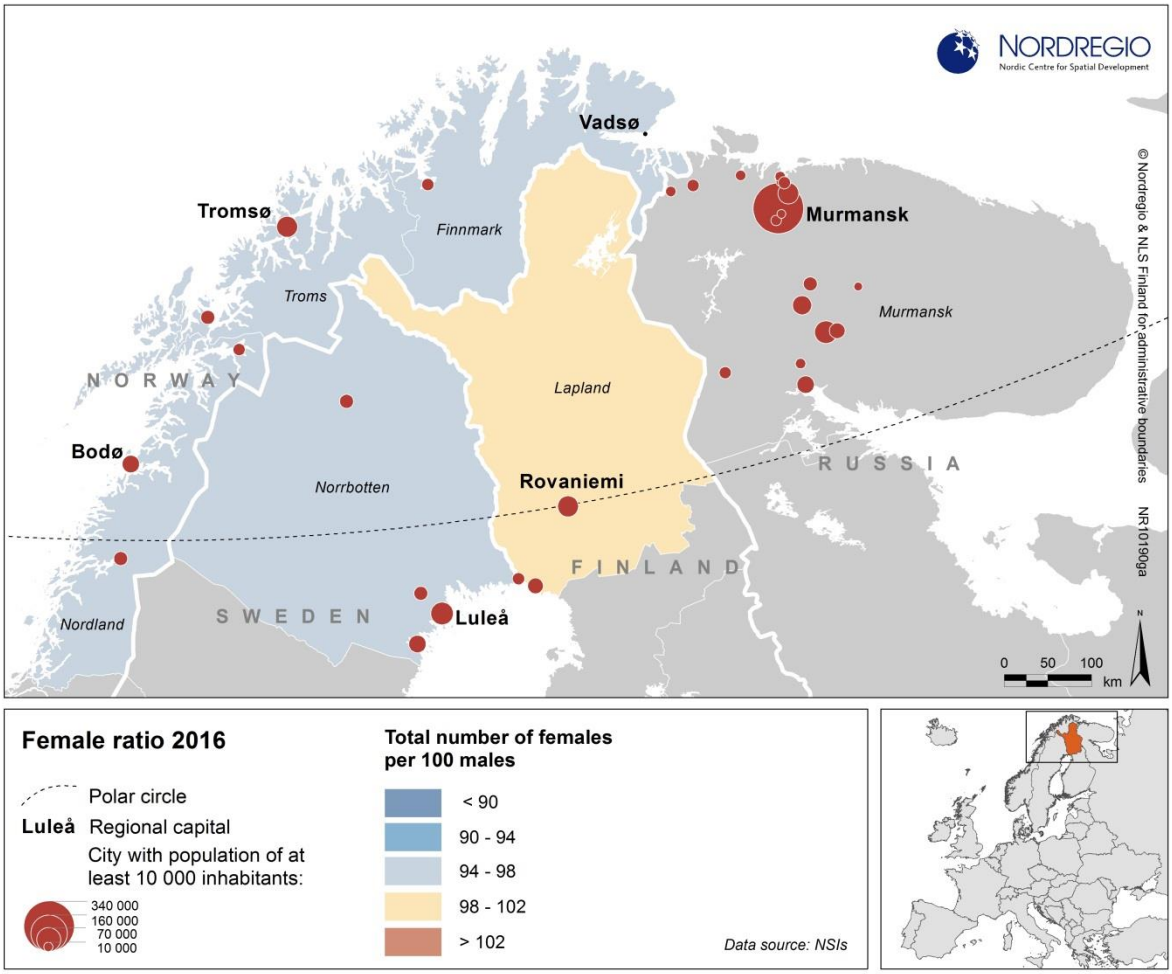

Figure 1.5. Female ratio in 2016 on regional level

Dependency ratios show the proportion of the population which is outside the normal working age population and is therefore dependent upon the economic activity and taxpaying capacity of others. For young people this is of course normally in the context of families and schools, but for older people this involves pensions and the provision of various social and health care services.

Old age dependency rates are rising across the Lapland Region (as they are across the whole Nordic Region), but due to selective outmigration of younger people towards the cities and adjacent areas, old dependency rates are particularly high in rural municipalities (figure 1.6.). The pattern can be clearly observed in Rovaniemi (27) and its surrounding municipalities (over 30). The lowest old age dependency rate in 2016 was in Tromsø located in Troms (18), and the highest rate was in Pello (64) which is the neighbouring municipality of Rovaniemi. On the regional level, Lapland and Norrbotten have overall higher rates than the Norwegian regions do.

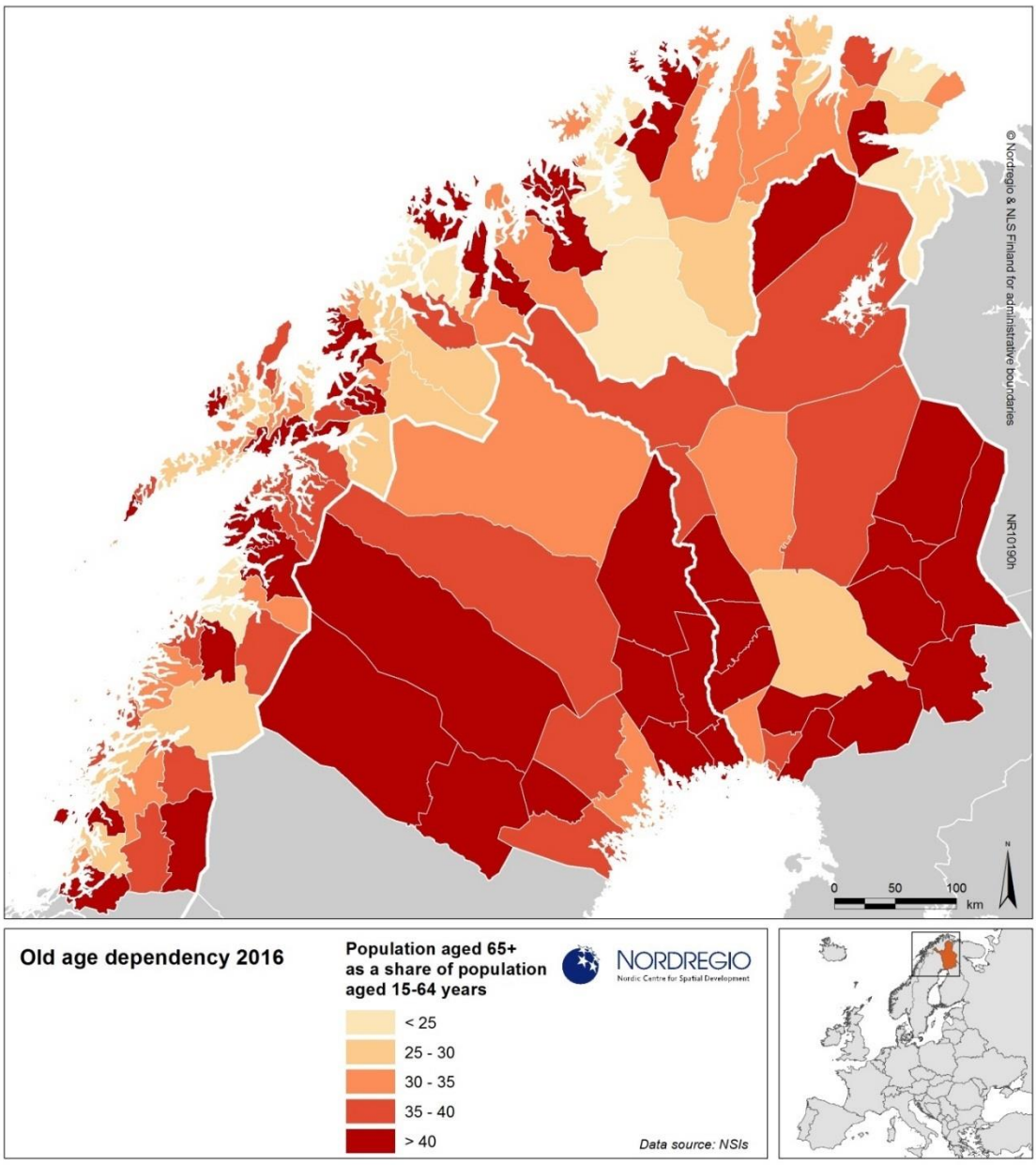

Figure 1.6. Old age dependency in 2016 on municipal level

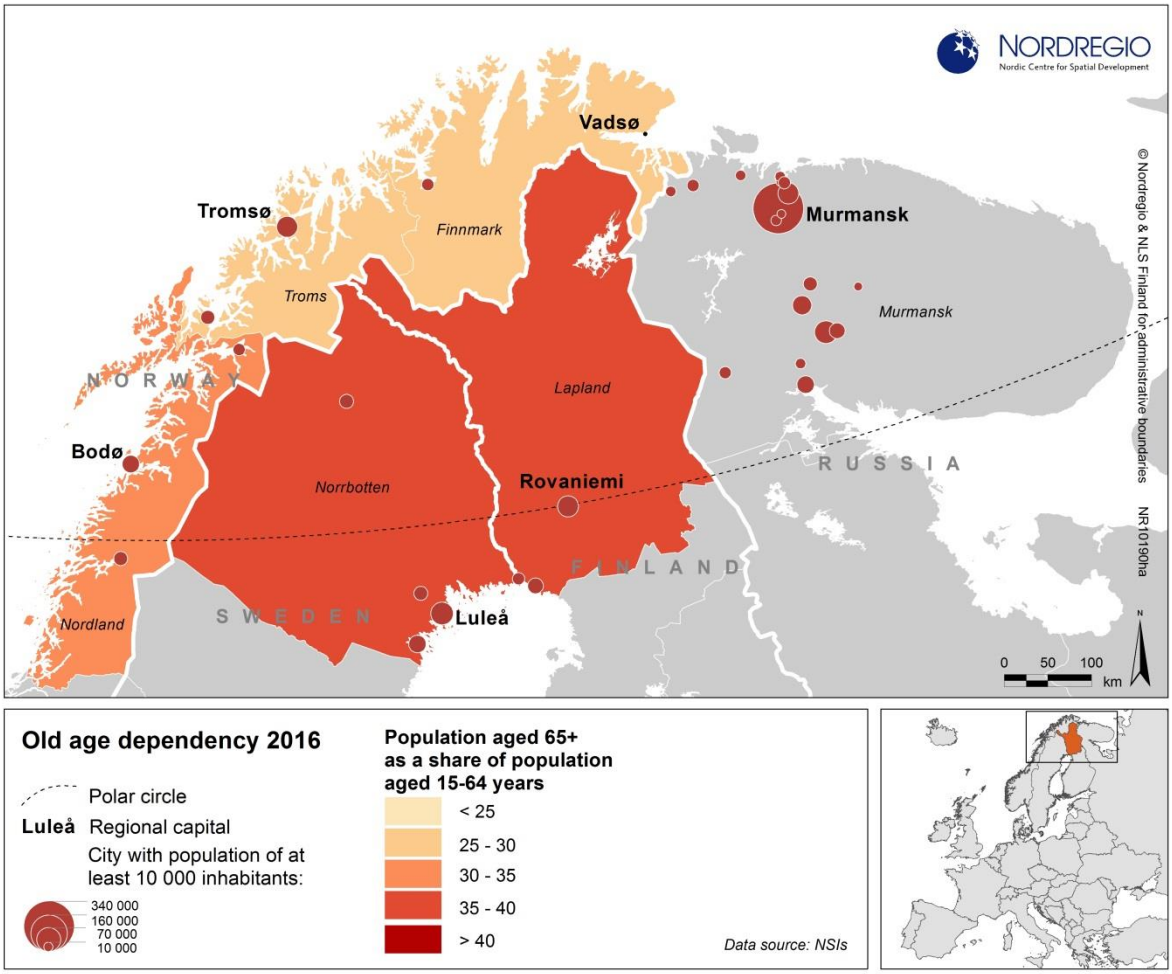

Figure 1.7. Old age dependency in 2016 on regional level

The maps 1.8. and 1.9. show the pattern of youth dependency rates. On the municipal level, the highest youth dependency rates were in urban adjacent municipalities – Lavangen (36) which is adjacent to Tromsø in Troms, and Ranua (33) which is adjacent to Rovaniemi in Lapland. The lower youth dependency rates can be found in more remote and sparsely populated municipalities. On the regional level, Lapland and Norrbotten have overall lower rates than the Norwegian regions do.

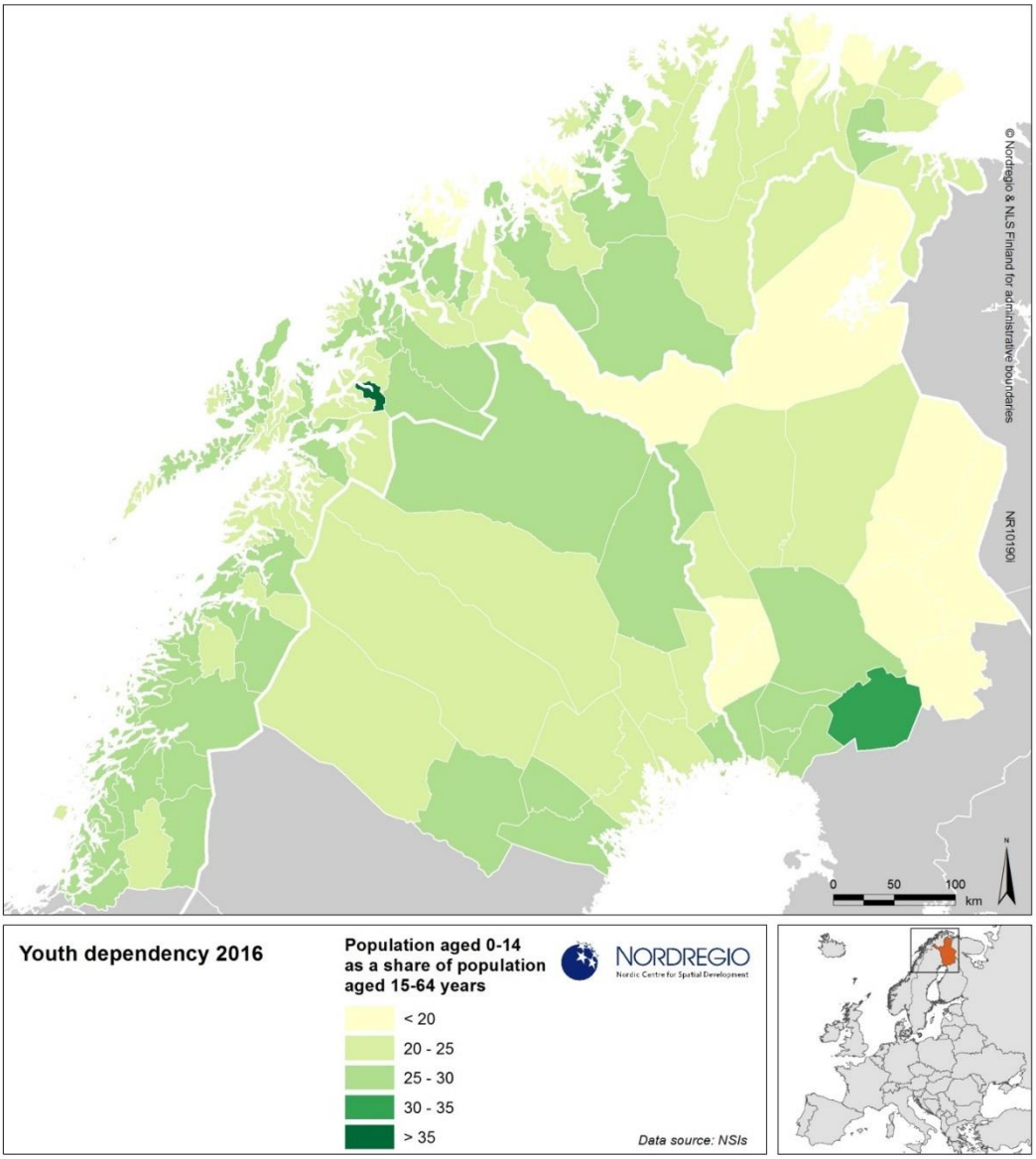

Figure 1.8. Youth dependency in 2016 on municipal level

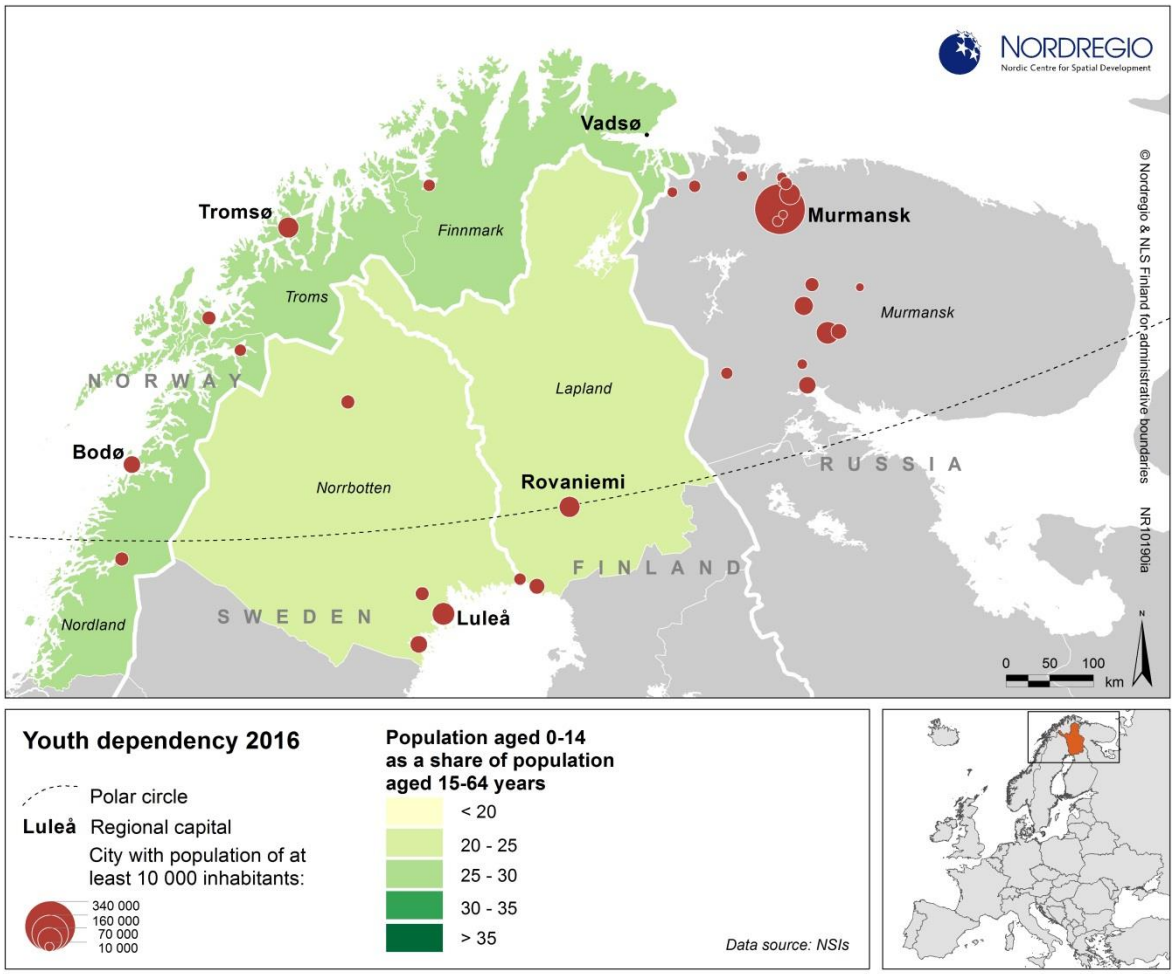

Figure 1.9. Youth dependency in 2016 on regional level

To conclude Theme 1 Demography:

- The population of Lapland keeps decreasing, with only Rovaniemi and Kittilä having a slight increase in population. It is also worth noting that the decreasing trend has lasted over 20 years
- The global and national concentration trend of population into bigger cities and municipalities takes place in Lapland, too
- On the regional level, the gender situation is more balanced in Lapland compared to e.g. the situation in North Sweden and North Norway
- It is also worth noting that demographic potential in Lapland surpasses that of Norrbotten

Theme 2

LABOUR FORCE

Theme 2: Labour Force

Employment

Employment rate is an important indicator of the economy of a region. The employment rates are usually affected by fluctuations in the economy. It can also be affected by the demographic profile, by how many that are studying, how well functioning the labour market is, etc. The figure 2.1. shows the employment rate in northern Norway, Sweden and Finland in 2015, measured as total number of employed persons 15 years or more as a share of total population 15-64 years.

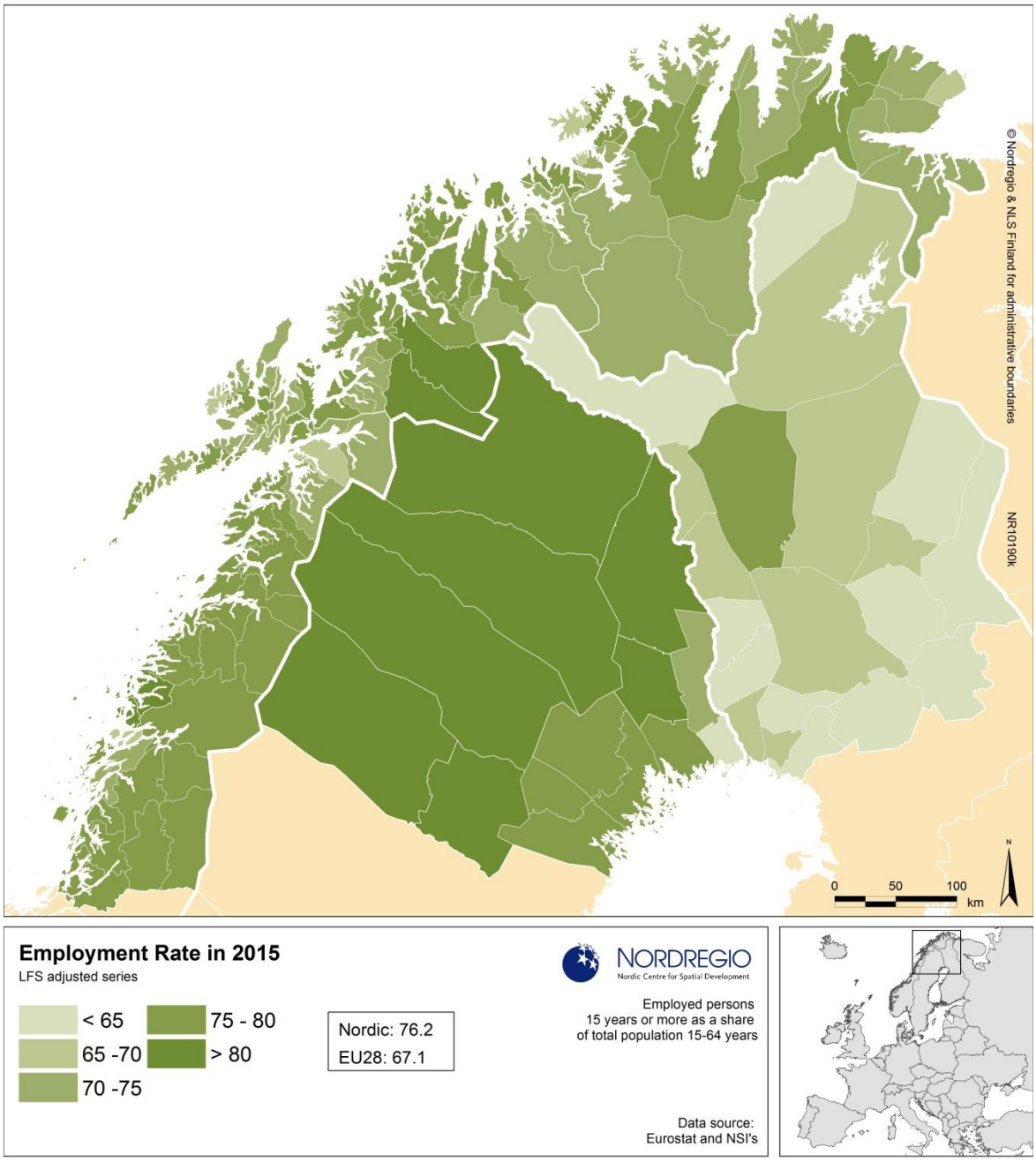

Figure 2.1. Employment rate in 2015

On a national level the employment rate in Finland is lower than in the other Nordic countries. This is also true if you compare the employment rates in the northern parts of Finland, Sweden and Norway. Northern Sweden sticks out with employment rates over the national average. In many of the municipalities in Norrbotten the employment rate is over 80%, e.g. in Kiruna and Gällivare (with most people working in extraction of natural resources (mining, forest)).

The employment rate in the Lapland Region in 2015 was 66.1%, which is lower than both the Nordic average (76.2%), Finnish average (70.5%) and the EU average (67.1%). However, as seen in the figure 2.2., the employment rate in the Lapland Region has been increasing since the financial crisis in 2009 and is now higher than before the crisis. The employment rates for all Finnish regions can be seen in figure 2.3.

In Lapland, employment rates under 60% can be found in Kemi, Posio, Ranua and Salla. The highest employment rates in the Lapland Region can be found in Kittilä 76.4%, Inari and Sodankylä 69.7% and Kolari, 69.5%. Especially Kittilä sticks out in the Lapland Region with one of the highest employment rates of all Finland, impacted by the Kittilä – Levi ski resort and mining industry.

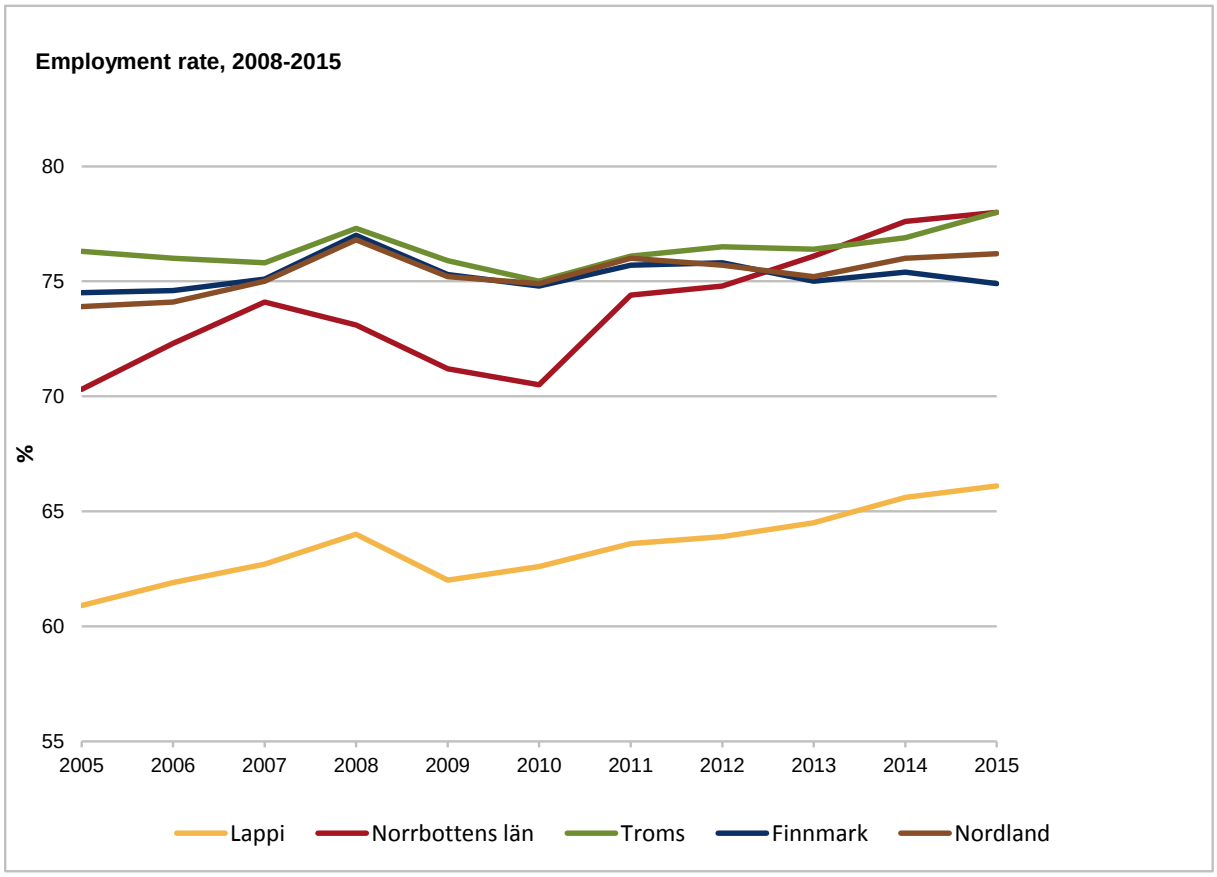

Figure 2.2. Employment rate 2008-2015 for Lappi, Norrbotten, Troms, Finnmark and Nordland

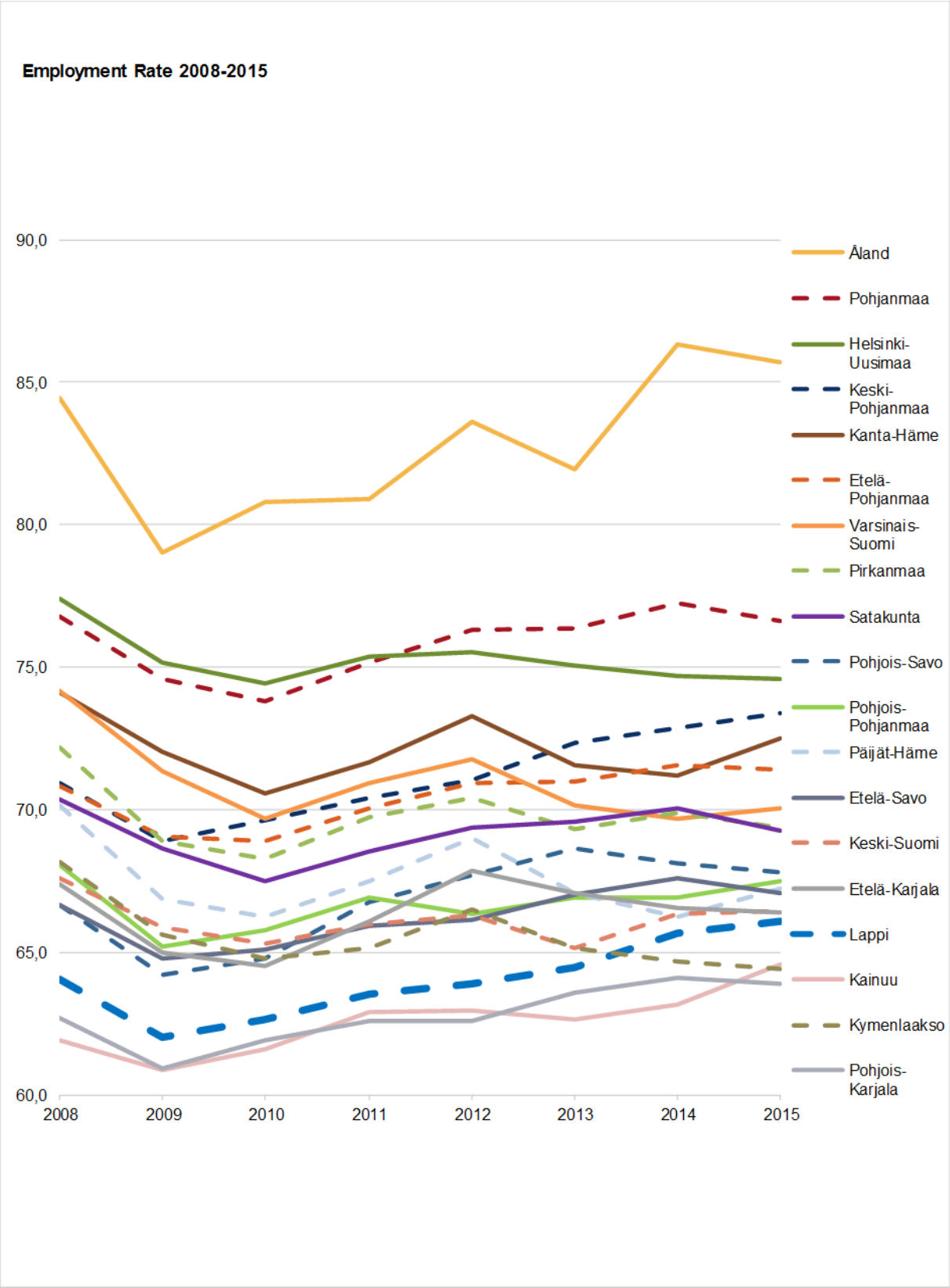

Figure 2.3. Employment rate 2008-2015 for the Finnish regions

The figure 2.4. shows the difference in employment rates between male and female with the blue shades showing municipalities where the employment rate is higher for men than for women, the pink shades where employment rate is higher for women than men and the grey shades where the differences are marginal.

The general pattern in the world is that the male employment rates are higher than the female employment rates. This pattern is, however, not true for northern Finland where the female employment rate is higher than the male employment rate for many of the municipalities.

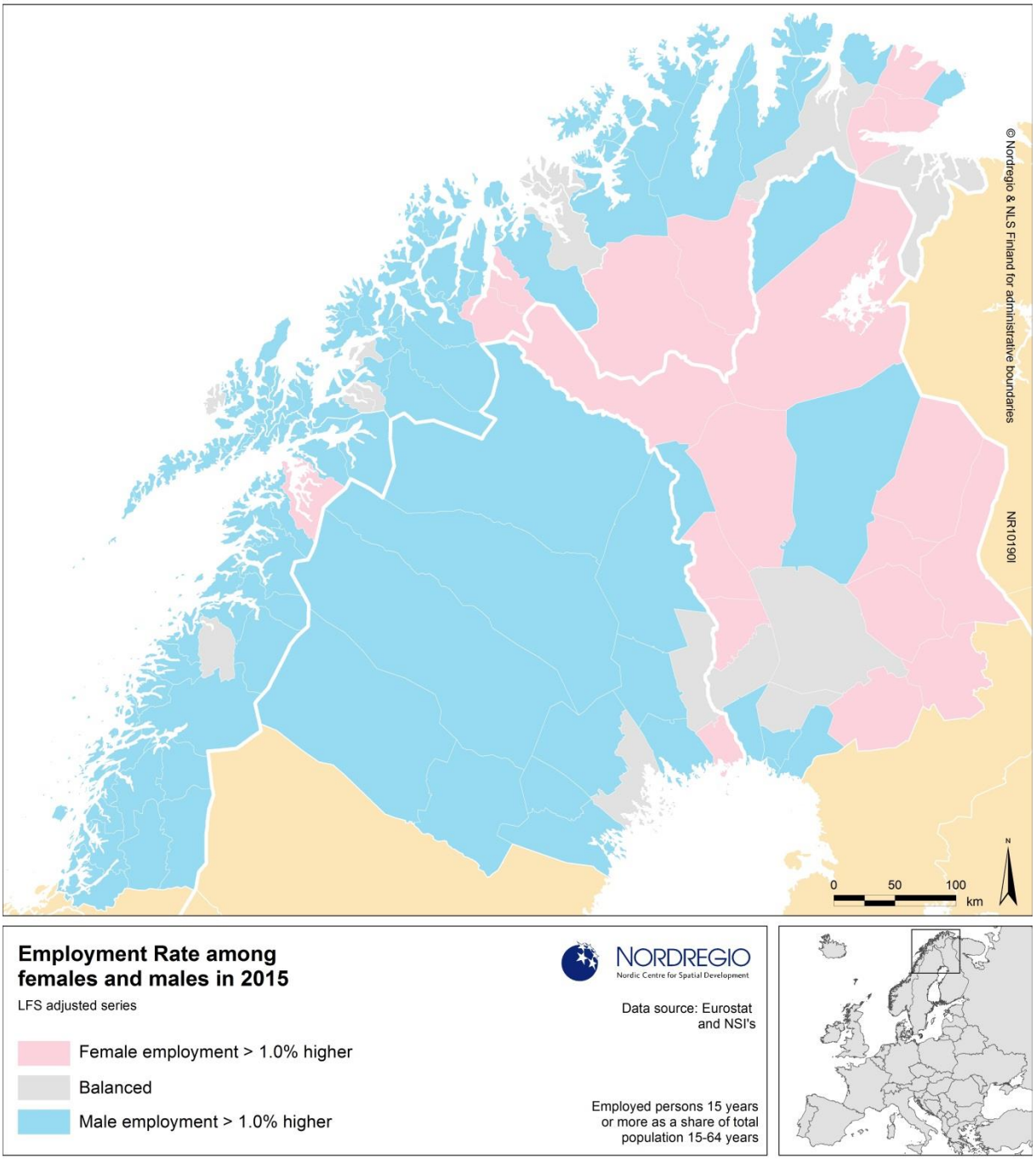

Figure 2.4. Employment rate among females and males in 2015

What stands out in northern (and also eastern) Finland is mainly the low employment rates among men. The employment rates for women are generally higher in northern Sweden and Norway although they are blue on the map (because the male employment rate is even higher).

The differences between the male and female employment rate is even bigger in northern Finland, with the female employment rate being higher than the male employment rate in almost all the municipalities.

The map 2.5. shows the major municipal out-commuting flows in 2013. The arrows stand for the share of the municipalities' working age population (15-64 years) that commutes to another municipality. The map displays commuting flows only in cases where 6% or more of the origin municipality's working age population commutes to work across municipal borders.

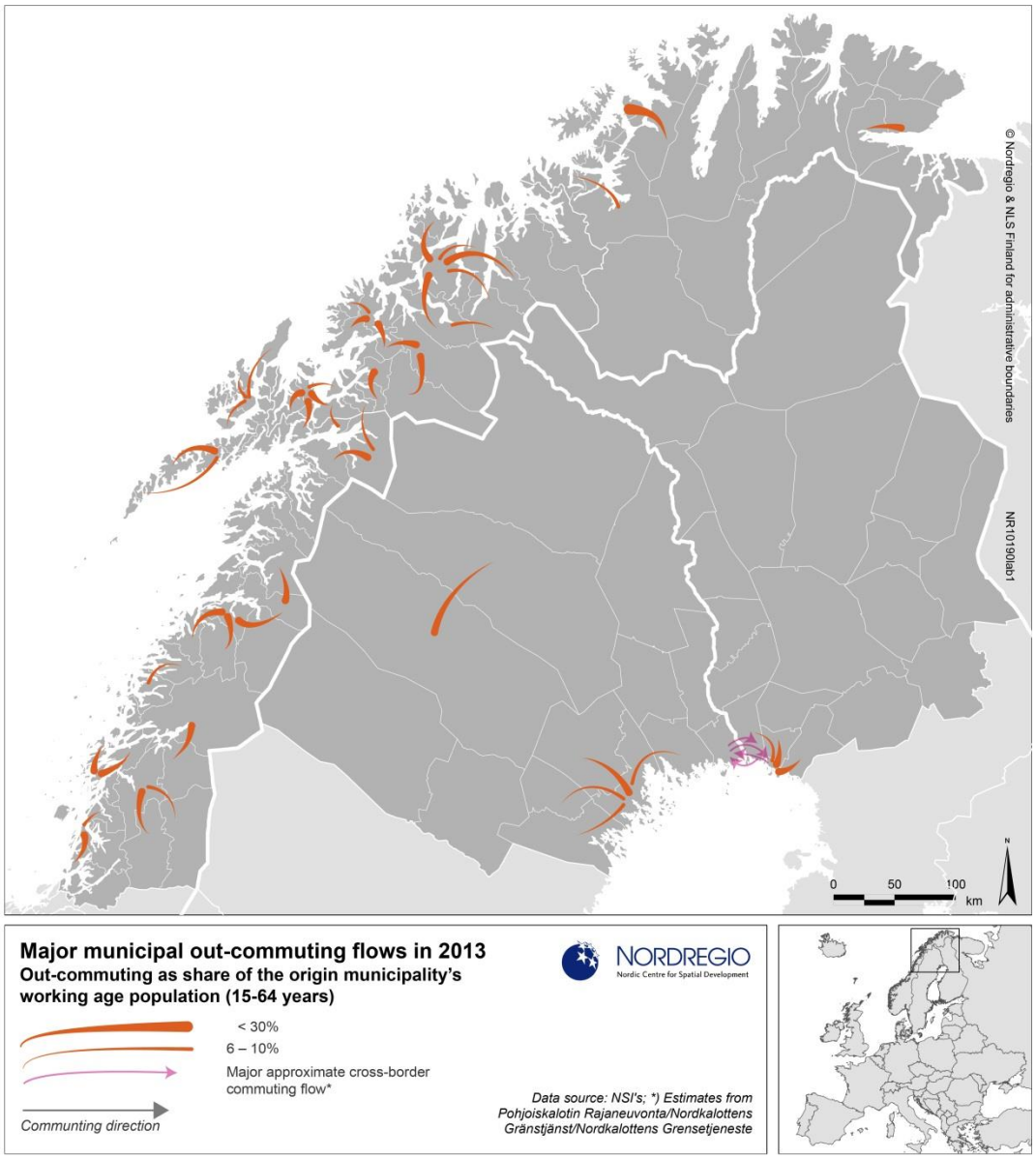

Figure 2.5. Major municipal out-commuting flows in 2013

The employment rate is usually measured from the 'night population', i.e. based on where people live. Since a labour market region is bigger than the municipalities where the people live there are often significant differences where people live and where they work.

The commuting data shows that the major commuting flows go to the bigger towns in the north, which also have larger labour markets: Luleå in Sweden, Tromsø and Bodø in Norway and Kemi in Finland. As the map shows, there are more commuting flows in Norway. Partly this can be explained by the fact that the Norwegian municipalities are smaller in size which makes commuting between the municipalities more common. The situation is quite the opposite in for northern Finland and Sweden, characterised by geographically large municipalities.

Data on cross-border commuting between Sweden and Finland has not been available for this study, and thus for instance the volume of the flow between Haparanda and Tornio is not visible on the map above. It is worthwhile to notice that work-based commuting for instance from the Finnish Lapland across the border to Sweden and Norway takes place daily along the Finnish-Swedish and Finnish-Norwegian border. A good example is the Finnish municipality of Utsjoki, which displays one of the lowest unemployment rates in the Finnish Lapland due its access to the Norwegian labour market across the municipal border adjacent to Norway.it

Unemployment

The map 2.6. shows the unemployment rate in 2015, measured as total number of unemployed persons as a share of the total economically active population (employed + unemployed) in the age group 15-64 years. Only people who are actively seeking employment are considered unemployed. Unemployment rate is generally considered a key indicator of the labour market performance which shows how well functioning the labour market is.

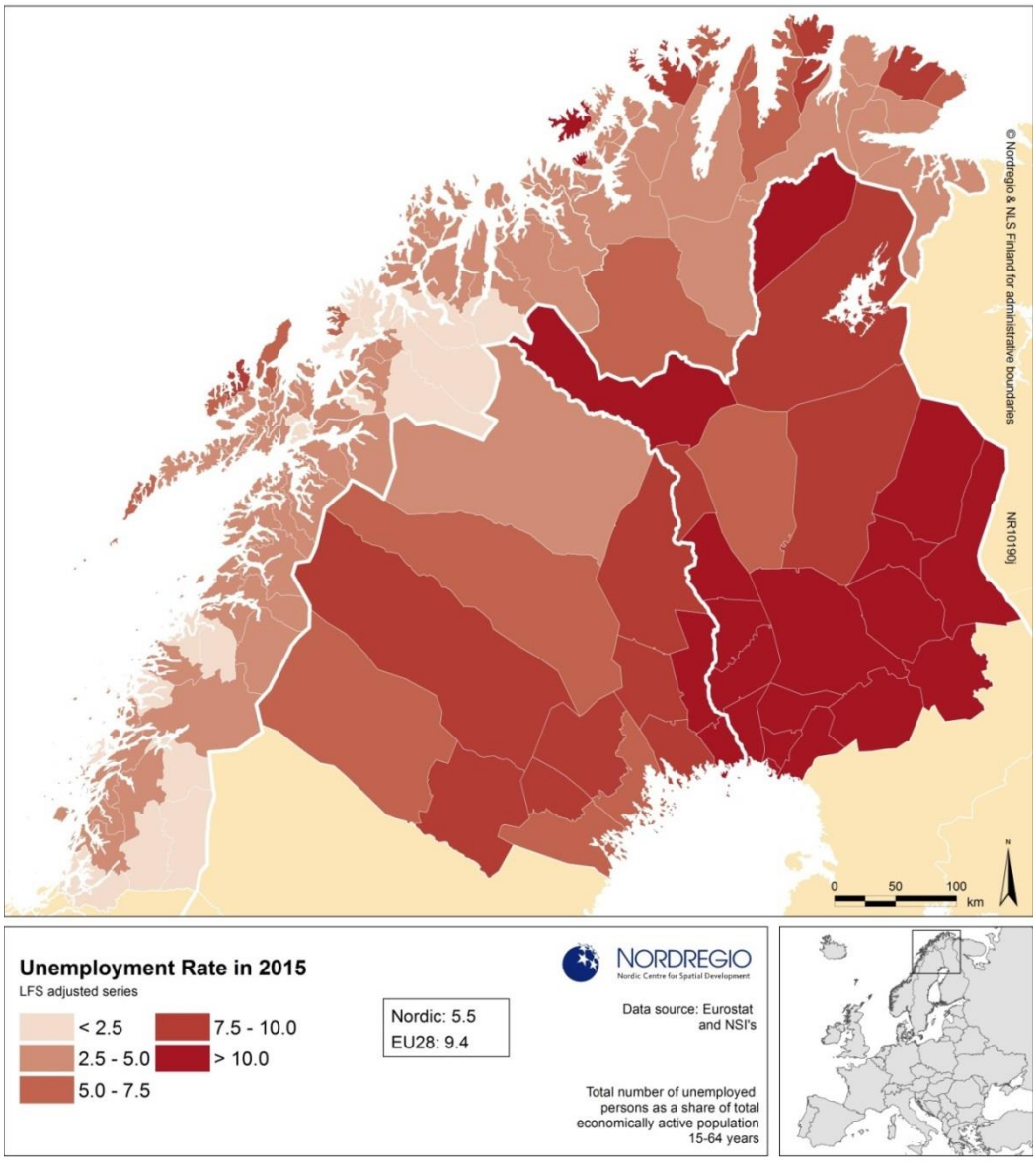

Figure 2.6. Unemployment rate 2014

In 2015, the unemployment rate in the Lapland Region was 11.1%, 11.9% for men and 10.3% for women. This was higher than both the Nordic (5.5%) and the EU (9.4%) average. The lowest unemployment rate could be found in Kittilä (7.1%) and the highest in Savukoski (16.1%).

In Norrbotten the unemployment rate was 7.4% in 2015, in Nordland 3.6%, in Troms 2.8% and in Finnmark 4.4%. In Norrbotten the highest unemployment rates could be found in Haparanda

(14.9%), Övertorneå (10.3%) and Pajala (9.5%) close to the finish border whereas the unemployment rate in e.g. Kiruna (4.0%) and Gällivare (6.5%) was significantly lower.

In general the unemployment rate in Norway is lower than the other Nordic countries. Also in northern Norway the unemployment rate is lower than in Northern Sweden and Finland. It is worth noting that many Norwegian municipalities have both lower employment rate and unemployment rate than for example Swedish municipalities.

As seen in figure 2.7., the financial crisis does not seem to have had a long lasting impact on the unemployment rates in the region. For all the regions in northern Norway, Sweden and Finland the unemployment rate decreased until 2007-2008, after which the unemployment rate increased slightly but has since stabilised. The causes to the unemployment therefore seem to be more structural.

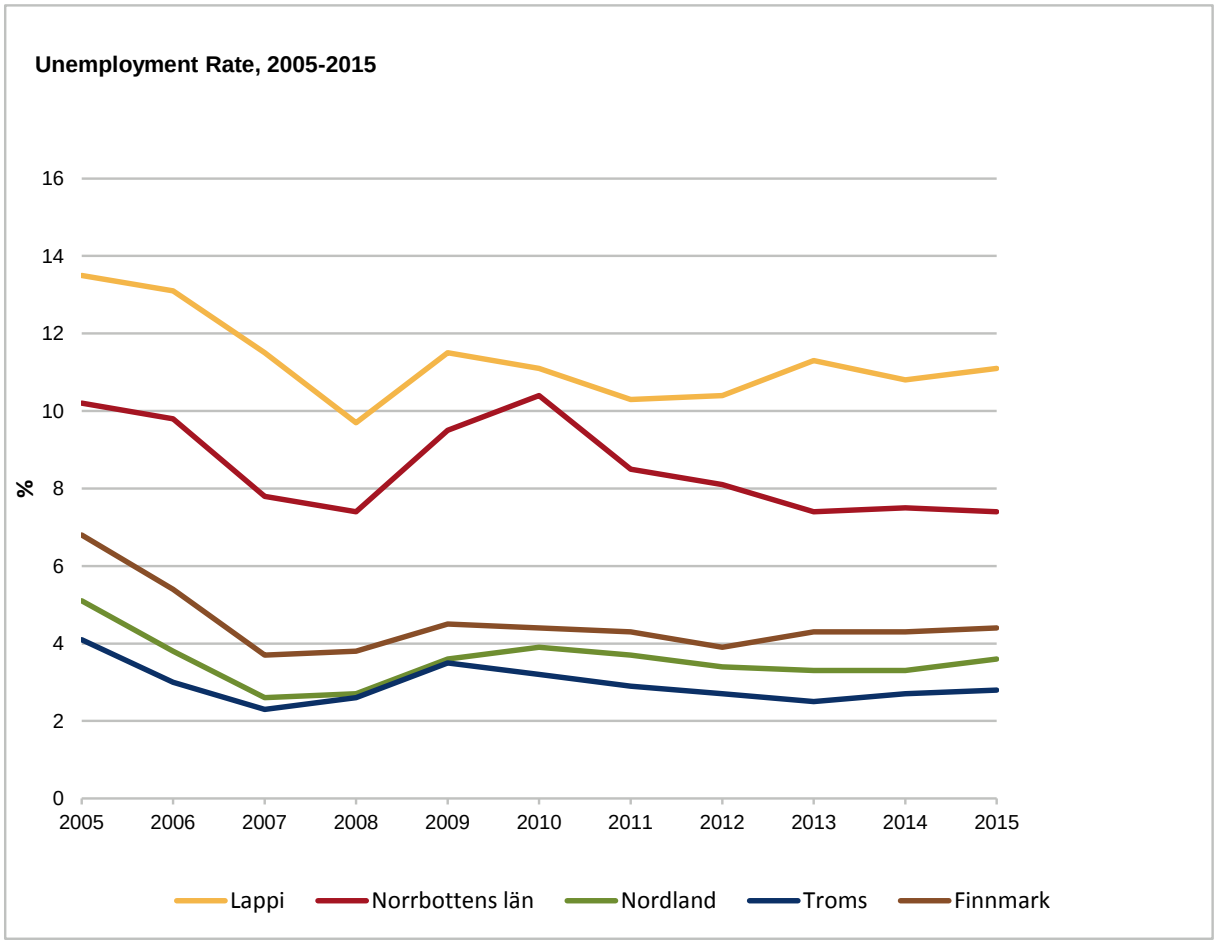

Figure 2.7. Unemployment rate 2005-2015 for Lappi, Norrbotten, Nordland, Troms and Finnmark

For all the regions the male unemployment rate was higher than the female unemployment rate in 2015 (figure 2.8.).

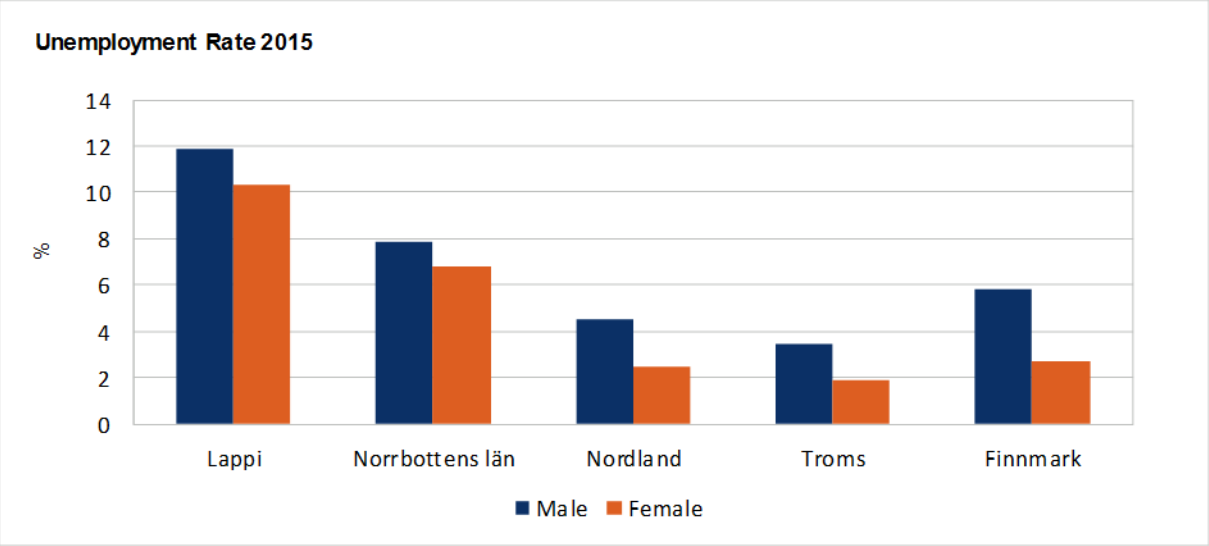

Figure 2.8. Unemployment rate among males and females in 2015

Map 2.9. shows the youth unemployment rate for 2014, measured as total number of unemployed in the age group 15-24 years as a share of the economically active population for the same age group. Youth unemployment rates are generally much higher than the unemployment rates for all ages. It is also more sensitive to economic crisis, which for example was obvious after the financial crisis in 2007-2008 with the youth unemployment rates increased in most European countries.

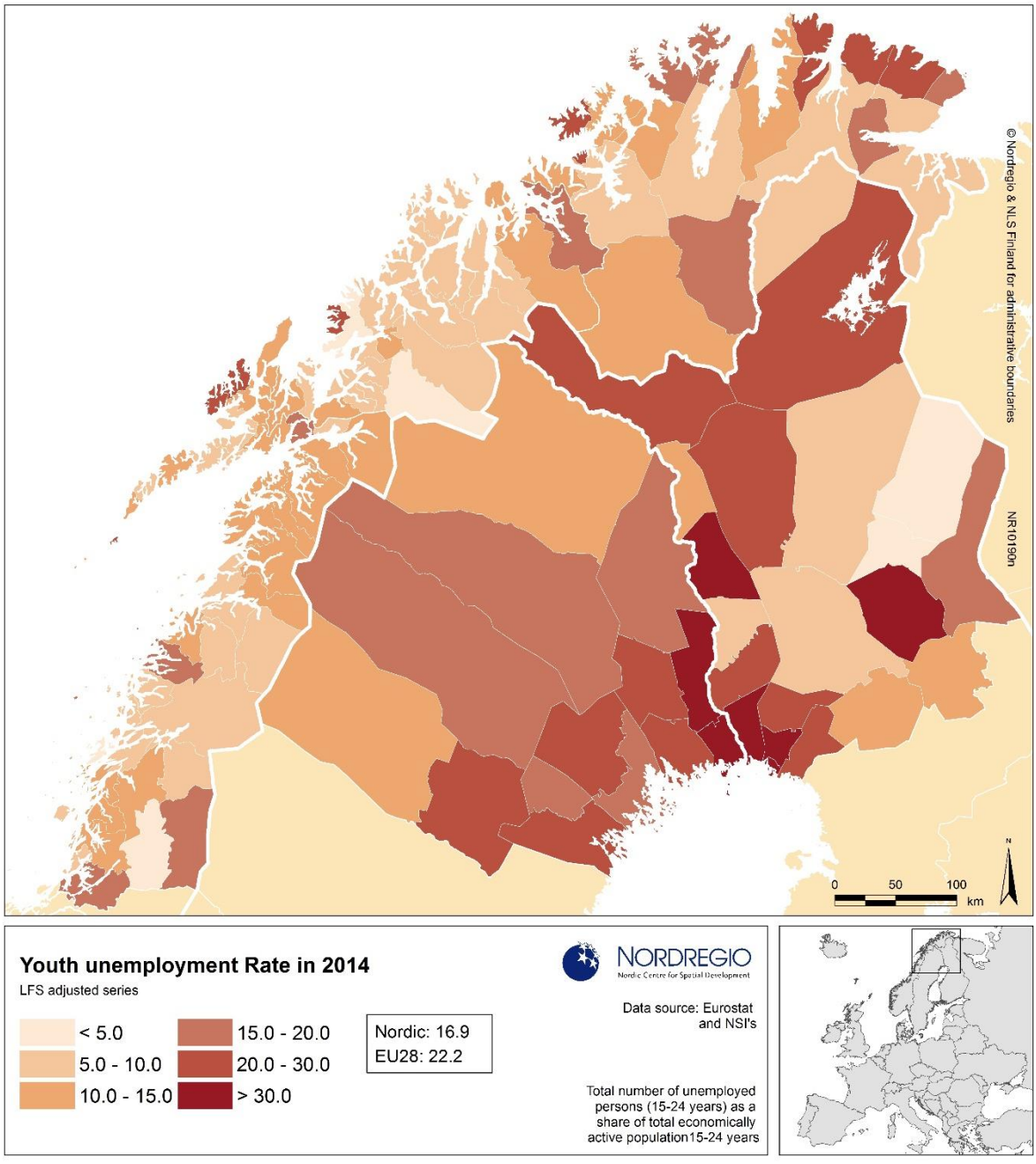

Figure 2.9. Youth unemployment rate 2014

In 2014 the youth unemployment for the Lapland Region was 24.7%, higher than both the Nordic and EU average, and especially high in Kemi, Keminmaa and Kemijärvi (above 40%). In Lapland there are, however, also municipalities with rather low youth unemployment, e.g. Pelkosenniemi,

Utsjoki, Savukoski. It is worthwhile to notice that the whole labour force for the age group 15-24 in these municipalities is also very low (less than 30 persons).

The youth unemployment is also high in the north east of Sweden with youth unemployment rates around 20% in Haparanda, Övertorneå, Arvidjaur and Överkalix. In Norway the youth unemployment rate is generally lower than in Finland and Sweden.

One cause of the high youth unemployment rates in Sweden and Finland can be that students that look for extra jobs are considered unemployed. (Statistics Sweden, 2013)

About the data:

- The data of the maps in the employment section above is based on the labour force survey (LFS) data from Eurostat. This is survey data that should be comparable between countries. This data is, however, only available at NUTS2 level. Register data has therefore been used to allocate data to the municipal level.
- For Finland and Sweden the LFS data gives higher employment rates than the register data. For the Lapland region the employment rate according to the LFS data is 66.1 % vs. 59.8% according to the register data.

Education

Education and skills levels play an important role in social and labour market policy and this is also true for regional development. Crucial for a positive economic development within a region is its access to a population pool with right types of education and skills.

In general, the Nordic countries are doing well when it comes to education-related indicators, but regional variations remain. One of two main Europe 2020 targets within the education field is "at least 40% of 30-34–year-olds completing third level education". This means that the EU promotes the view that at least two fifths of people aged 30-34 years should complete courses at the higher or tertiary education level. This target can be compared to the fact that European labour market projections have indicated that by 2020, in order for the EU to compete internationally, 35% of all jobs in the EU will require skills comparable to a completed tertiary level education (EU Commission 2015).

This indicator, as distributed to the municipalities within the geographic scope of this report, is visualised in figure 2.9. Blue hues display municipalities which in 2014 were above the Europe 2020 threshold of 40% having completed tertiary level education. In the other direction, red hues mark administrative units where the 40% target had not been accomplished by 2014.

In the entire Nordic Region, the highest education levels, above 40% (indicated by the three darkest blue hues), among 30-34–years-olds can, to a large extent, be found in either university cities, or in socio-economically strong municipalities in the main metropolitan areas. At the regional level in some cases the existence of an important university within a rather sparsely populated region positively contributes to a high tertiary education average in those regions. In our study area, this is the case in Troms (Tromsø), (other regions with a similar situation are Västerbottens län (Umeå) in Sweden and and Sør-Trøndelag (Trondheim) in Norway), and as shown in figure 2.9., Troms is the only municipality with an attainment above 60%.

Looking more into the details within the study area on the share of 30-34–year-olds who completed third level education in the different municipalities, a number of Norwegian municipalities stand out as they reached the EU 2020 goal of at least 40%. In Norrbotten, only Luleå and Piteå reached this level, in Lapland, only Rovaniemi. Contrary, in the majority of municipalities in Lapland and also in Norrbotten, which also generally do not host a university, there are big challenges regarding higher education levels for this fairly young age group, with higher education rates below 30%, which is rather distant from the mentioned EU 2020 goal (40%) and also from the EU 28 average (42%) and even more from the Nordic average (55%). In this context, it should be noted that while 30-34 years is an age group where many people have finalised their studies, it is still, in geographical terms, a relatively mobile group. As such, the individuals who constitute it may still choose to move from the city in which their studies were undertaken. However, this is also a sign of the challenges for these municipalities in Norrbotten and Lapland, apart from Luleå, Piteå and Rovaniemi, to attract mobile and young people with higher education backgrounds to their municipalities.

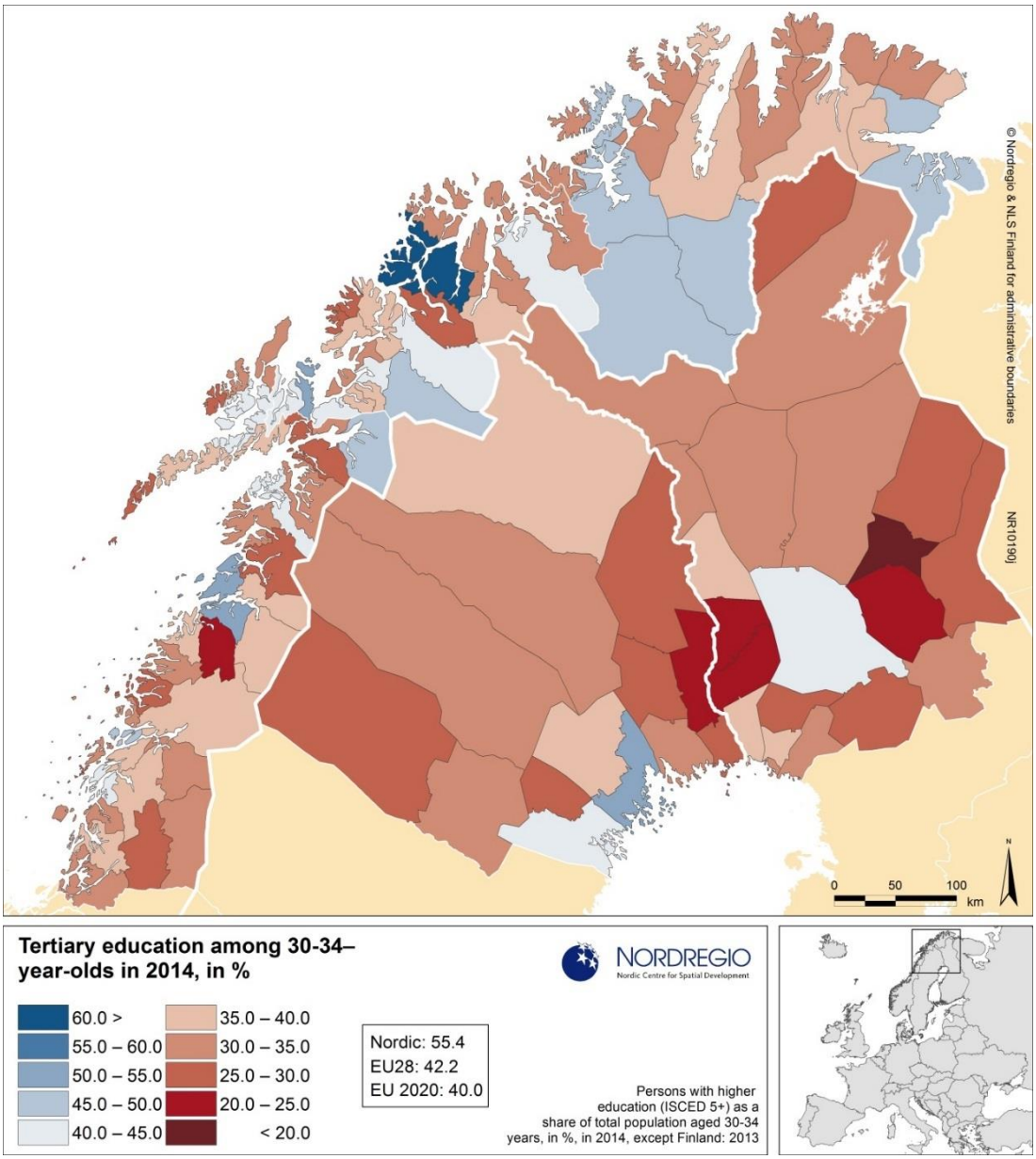

Figure 2.9. Tertiary education among 30-34–year-olds in 2014, in %

In the EU as a whole, more women than men in the age range 30-34 have attained a tertiary level education with this trend increasing. The same situation exists in the Nordic region, and also within the study area of this report. The Nordic average is a striking 15.1% unit difference between men and women in favour of women. In fact, no region within the Nordic countries has a higher share of highly educated males than females in the age range 30-34 (figure 2.10.).

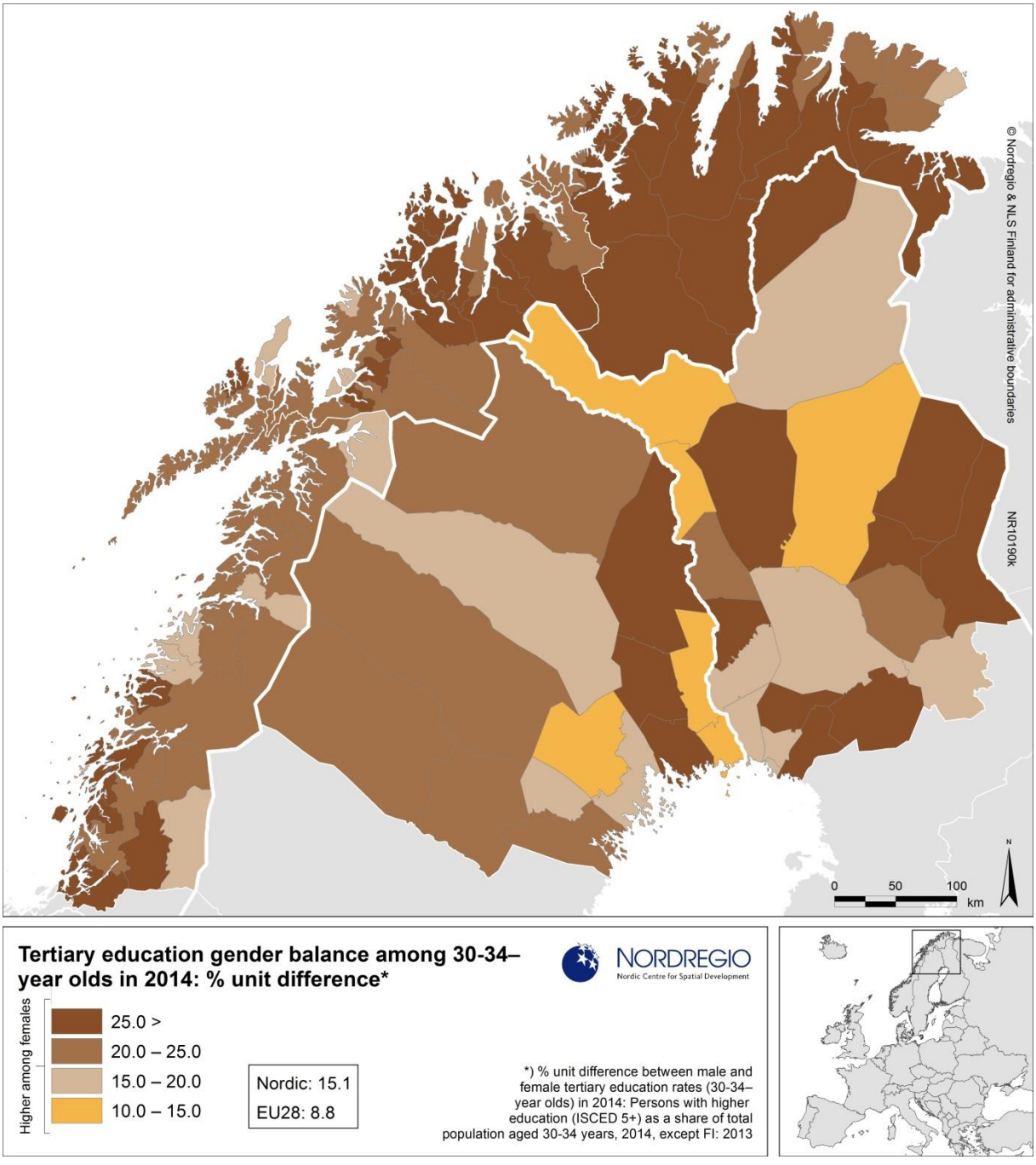

Figure 2.10. Tertiary education gender balance among 30-34–year olds in 2014

At the municipal level, in the Nordic region, a handful of municipalities still have a higher share of men than women with tertiary level education in age range 30-34, but none of these are located within our study area. The Nordic municipalities which have the largest differences between highly educated females and males (dark brown hues in the map) are generally found in rural areas, which

is also the case in our study area. In the study area, the largest differences in higher education levels between men and women are found in rural municipalities, namely: a majority of the municipalities in Finnmark (especially those that are not located along the coast), in six municipalities in Eastern and Southern Lapland, as well as Pello and Kittilä, also in Lapland, and, in Norrbotten, in Pajala, Överkalix and Kalix, and a few municipalities in Nordland and Troms.

Typical for many city areas in the Nordic countries is that, although the share of highly educated women is still higher than men, the differences between men and women's education levels are less pronounced, suggesting that it is the men in rural areas who generally do not proceed to higher education, while men in urban areas, as well as females in both rural and urban areas, tend to opt for higher education. Interestingly, however, the municipalities in the study area of this report with the smallest differences in higher education levels between men and women (yellow in the map) are not necessarily located with a large city. These municipalities with the smallest differences are Muonio, Enontekiö, Sodankylä, Övertorneå, Haparanda and Boden.

In the Nordic Region as a whole, a considerable share of the municipalities – close to half of them – are above the EU average (29.3%) in terms of persons in working age who are also generally past their student years (i.e. aged 25-64 years) and carry higher education degrees. Within the geographical scope of this report, the situation is somewhat different, as fewer municipalities, less than 40% of them, are below the EU average (figure 2.11.).

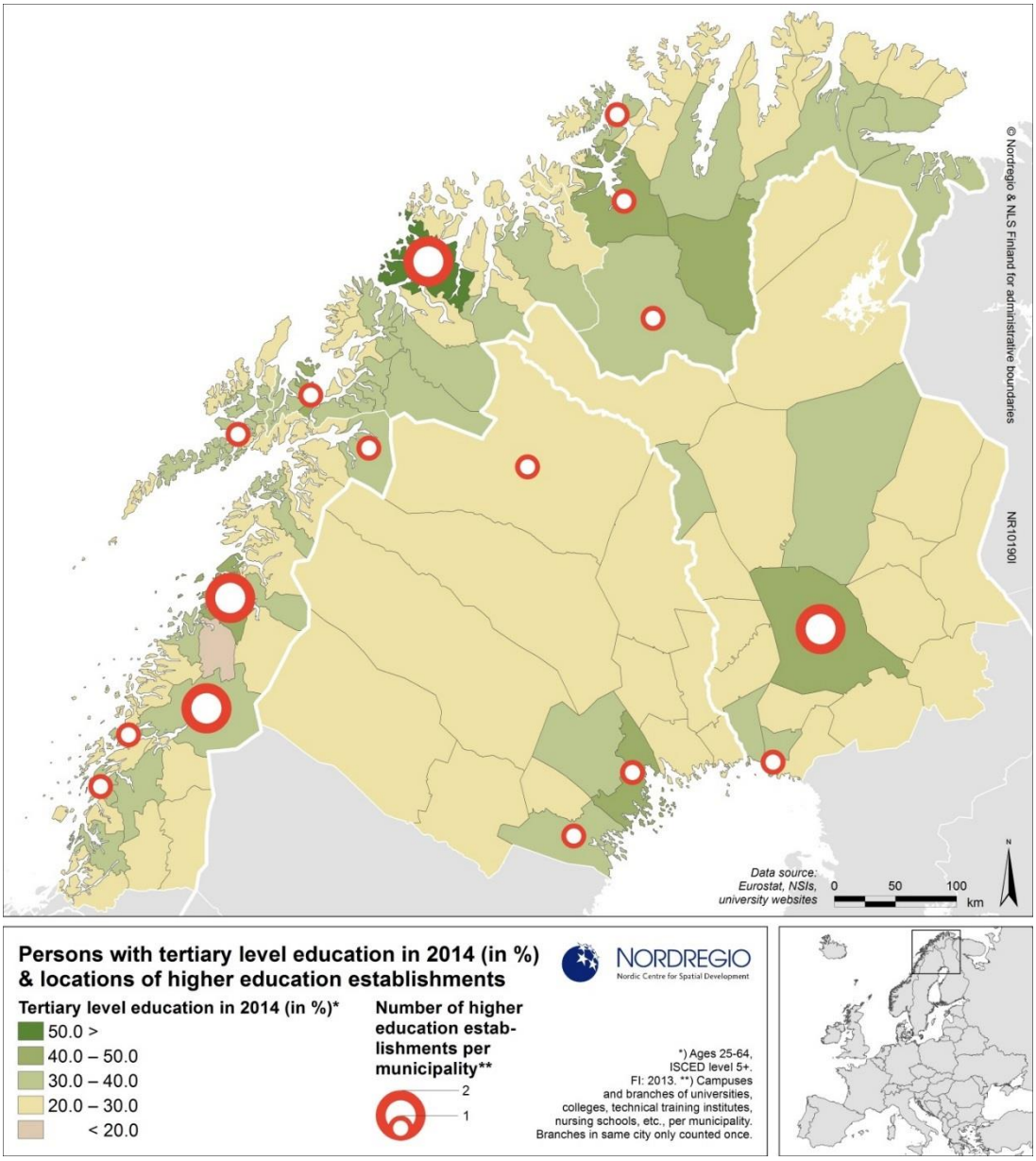

Figure 2.11. Persons with tertiary level education in 2014 and locations of higher education establishments

Municipalities that are coloured yellow in the map have a tertiary education level around or below the EU average, 20-30%. The brow hue in the map reflects that a municipality is well below the EU average, i.e. tertiary education levels among 25-64 year-olds below 20%. Such low shares apply only to a handful of municipalities in Denmark, Finland, Norway and Sweden, respectively, but to all municipalities in Greenland. In the study region of this report, there is only one such municipality, Beiarn in Nordland. That shows that within the study region, there is a rather solid base of working

aged people with higher education degrees, without the bottom extremes of other parts of the Nordics.

Municipalities in green hues in the map have levels of tertiary education above the EU average, which was 29.3% in 2014. The darker the green hue, the higher the level of tertiary education among the working age population. In the entire Nordic Region, there are ten municipalities with the highest levels of higher education, above 60%, and all of these are to be found in the largest city regions. The highest rate of the working aged population having higher education in a municipality within our study area is Tromsø in Troms *fylke*, above 50%. Other municipalities with higher education rates among the working aged population of 40% or more are Bodö in Nordland, Rovaniemi in Lapland, Luleå in Norrbotten, Karasjok and Alta in Finnmark and Harstad in Troms. There's only one of these municipalities that do not host a university or other higher education establishment, namely Karasjok. This, again, highlights the influence that higher education provision in a municipality has on the share of that population with a higher education degree.

In the Nordic region today, more than 160 out of some 1200 municipalities have at least one higher education establishment within their borders. This reflects the policy of establishing higher education institutions in new regions, including those far from the most populous urban centres or traditional university towns, a process which has been ongoing in the Nordic countries since the 1960s (Hedin, 2009). Higher education establishments are also included in figure 2.11. In this context, higher education establishments are any kind of campuses or side-branches of a university, a university college, a technical training institute, a nursing school, or other establishments of higher education, both theoretical and more practically-oriented. These municipalities are represented by a red circle in the map, centred on the municipality in question. The size of the circles corresponds to the number of campuses or branches within a municipality. Despite the fact that higher education establishments in the Nordic region have been established fairly evenly – in a geographical sense - across the Nordic regions, and have now existed for several decades in less populous regions, it should be noted that the number of students is still far greater in institutions in the Nordic metropolitan areas (Hedin, 2009). Moreover, in the sparsely populated North, where our study area is located, the largest urban settlements are also the prime centres for educational resources, e.g. Tromsø in Troms, and Rovaniemi in Lapland (Hirshberg & Petrov, 2014). In fact, apart from Tromsø and Rovaniemi, within our study area only Fauske and Rana in Nordland have more than one higher education establishment (large red circles in figure 2.11.).

To conclude Theme 2 Labour Force:

- The employment in Lapland has developed positively after the global financial crisis in 2009
- There are promising examples of Lapland municipalities with high employment rate, especially Kittilä with positive employment effects created by tourism and mining
- Low employment rate among men compared to Nordic and EU average is worth taking note
- Despite the low employment rates in several municipalities in Lapland, the most recent positive development in labour-intensive sectors, especially tourism, is likely to produce additional positive effects on employment
- The higher education in Lapland is concentrated in Rovaniemi and Kemi-Tornio regions
- Attracting and keeping mobile and young people with higher education backgrounds in Lapland is an increasing challenge, especially for smaller municipalities
- There are interesting benchmark experiences on Arctic education to be found in Norway (several municipalities) and Sweden (Luleå)

Theme 3

ECONOMY

Theme 3: Economy

GRP, or Gross Regional Product, measures the overall economic output of all economic activities in a region (measured in terms of purchasing power parity, or standards). While this measure for instance does not consider sustainability, it is, in the assessment of regional performances, the most stable and most commonly harmonised measure for economic comparisons. In relation to the EU average, many Nordic regions have maintained their previously strong positions when it comes to economic development. In particular, capital regions and larger cities remain strong economic centres in the Nordic region. These regions show GRP per capita levels which correspond, or even exceed, most other metropolitan regions in Europe. In addition to the Nordic urban regions, there are also a number of "peripheral" regions in the Nordic countries which display high levels of GRP per capita.

Economic development

In the study area of this report, there are four regions, Finnmark, Troms and Nordland in Norway, and Norrbotten in Sweden, which had a GRP per capita above the European average in 2014 (figure 3.1).

These Swedish and Norwegian northern regions in the study area can even be viewed as 'top performers'. However, they should be seen in the context of the existing economic structures in northern Norway and Sweden. Urban economies in other parts of the Nordics are often based on a diverse range of economic activities and benefit from trends in urban growth, while the economies in the top-performing but more peripheral regions are usually thriving thanks to a large, single industry often highly specialised internationally: in Norrbotten, mining; and in Finnmark, Troms and Nordland, oil exploitation and fisheries.[3] Although the vitality of these sectors induces a high level of economic performance for these regions (also related to secondary and tertiary service sectors), it leaves the regional economies highly vulnerable to changes occurring in these sectors which are usually well beyond the boundaries and the control of Nordic regional actors, both economic and political. Lapland, by comparison, has been below the EU average at least during the measurable last five years (2010-2014), but has each year had a stable position right close below the EU average. As its Nordic counterparts within the study area, Murmansk is a region rich in natural resources. However, with its large population, which levels out the GRP figure in absolute numbers, the GRP per capita level for Murmansk oblast has been significantly lower than the neighbouring Norwegian, Swedish and Finnish regions within our study area, and was so also in 2014.

[3] For Norway the GRP figures from off-shore activities, including oil and gas extraction, are excluded from our regional maps.

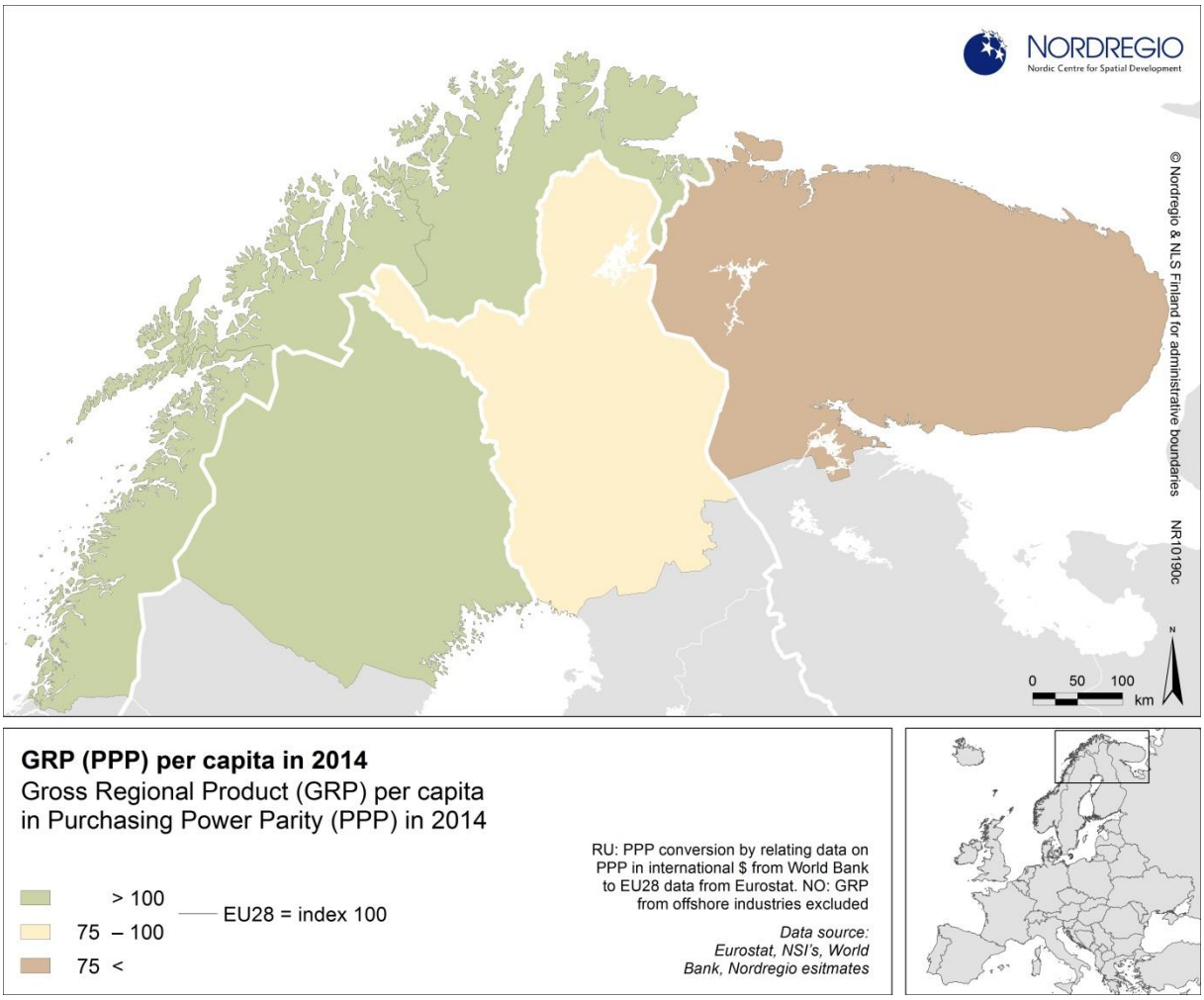

Figure 3.1. GRP (PPP) per capita in 2014

Turning to GRP annual average change, over the period from the economic crisis 2009 until 2013, there's a partly different story. As with all other Swedish regions, Norrbotten during these years saw a strong increase in real GRP growth, above 7% (figure 3.2). Also in the other Nordic regions of the study area, there was significant growth, among these regions highest in Finnmark and lowest (but still up to 3%) in Lapland. Striking is also that within their national context, the three Norwegian regions as well as Finnish Lapland were top performers during this period, in particular Lapland in Finland: a country where several other regions even saw a negative annual average GRP change during the 2009-2013 period.

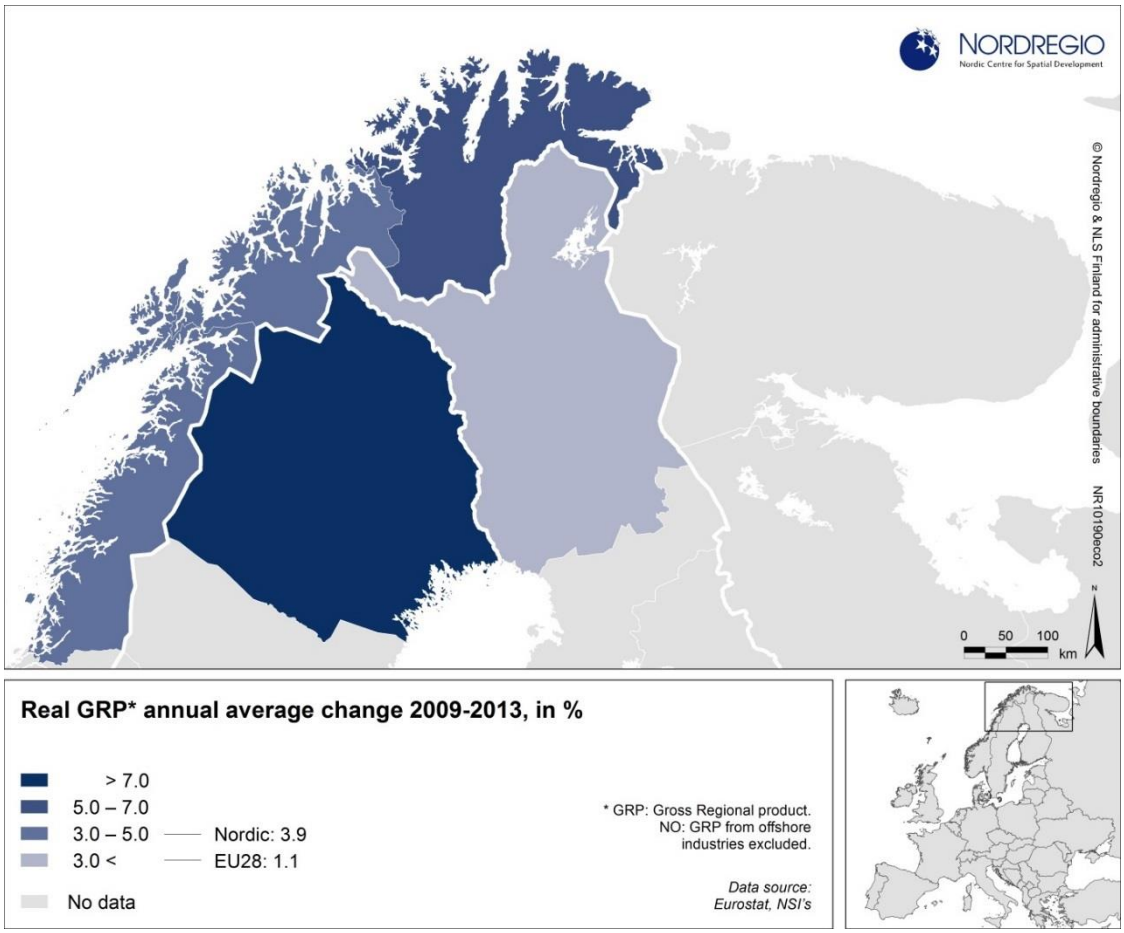

Figure 3.2. Real GRP (Gross Regional Product) change 2009-2013

GRP per capita distribution in the regions within the study area was discussed in the beginning of this chapter, with the help of the map in figure 3.1. Figure 3.3 essentially contains the same map, however in this case the GRP figures in absolute numbers have been added to the map, as bars in yellow. By that, the picture from the GRP per capita base map is partly reversed, especially regarding the Murmansk region. Measuring the Gross Regional Product in absolute numbers, in million Purchasing Power Parity (PPP, a theoretic "currency" suitable for GRP comparisons between countries), and not taking into account the population of each region (which is the case with the GRP per capita indicator), Murmansk stands out as a region with much higher "turnover" compared to its Nordic neighbour regions, above a value of 15400 PPP. Norrbotten and Nordland each has about half the absolute PPP values compared to the Murmank regions', followed by Troms and Lapland, and Finnmark with the by far smallest GRP measured in PPP.

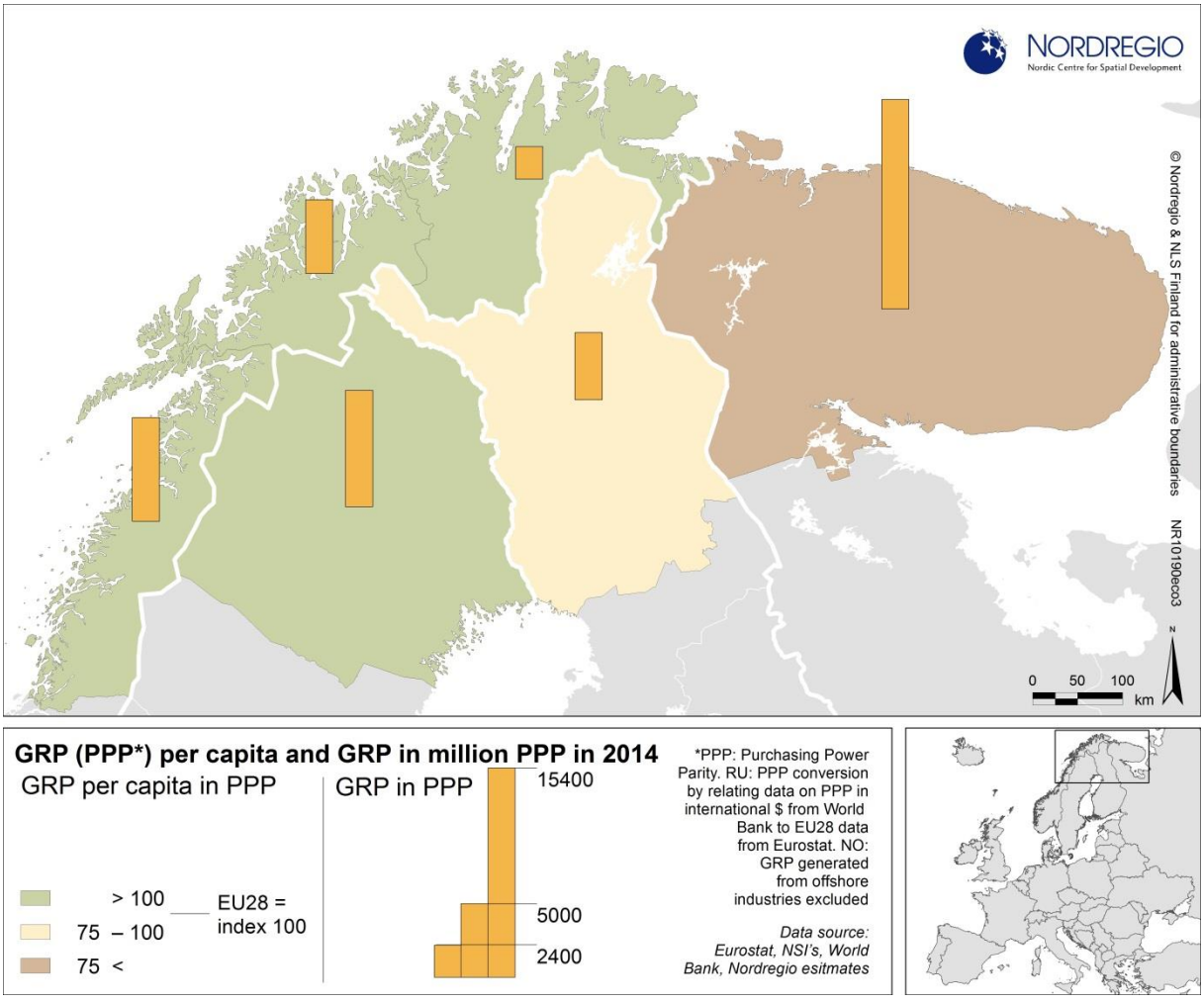

Figure 3.3. GRP (PPP) per capita and GRP in million PPP in 2014

In the Nordic region as a whole, and in many parts of Europe, metropolitan and city-regions are the key centres of economic production. However, most regions within our study area all have a fairly high GRP for being non-metropolitan regions, located as they are far from the respective countries' capitals. For example, in north-west Russia, only the two regions around the St. Petersburg metropolitan area, St. Petersburg and Leningrad, have a higher GRP than Murmansk. In Sweden, the three regions around Stockholm, Gothenburg and Malmö are absolutely dominating regarding regional contribution to the national GDP, but Norrbotten is on par, or have higher GRP than many

other Swedish regions. Nordland and Troms in Norway, and Lapland in Finland, are also ranked around the middle spectrum when ranking each country's regions according to the GRP. Thus, the regions within the study area covered in this report are a proof that prosperity of the regions in the Nordic countries does not fundamentally depend on their urbanity, with regional inequality across the Nordic countries is generally at a lesser level compared to many other European countries.

The dominance of major metropolitan areas in both the Nordic and their neighbouring countries is clear when the Gross Regional Product is measured per person employed (figure 3.4). This is an indicator on labour productivity, which indicates how much output a given number of employees produce. Since this indicator includes the total production by persons actually *employed* in the region, it gives a more nuanced picture of productivity than GRP per capita (which relates the GRP to the entire population). However, again striking when it comes to the northern regions within the study area, there are at least four northern regions distant from the capital cities that challenge the overall pattern. In a Nordic comparison, the regions Nordland, Troms, Norrbotten and Finnmark are top performers in GRP (PPP) per person employed, along with the capital cities and a few other regions. A possible reason for this is the richness in natural resources or well-developed major tourism infrastructure in these particular regions (Rispling & Grunfelder 2016).

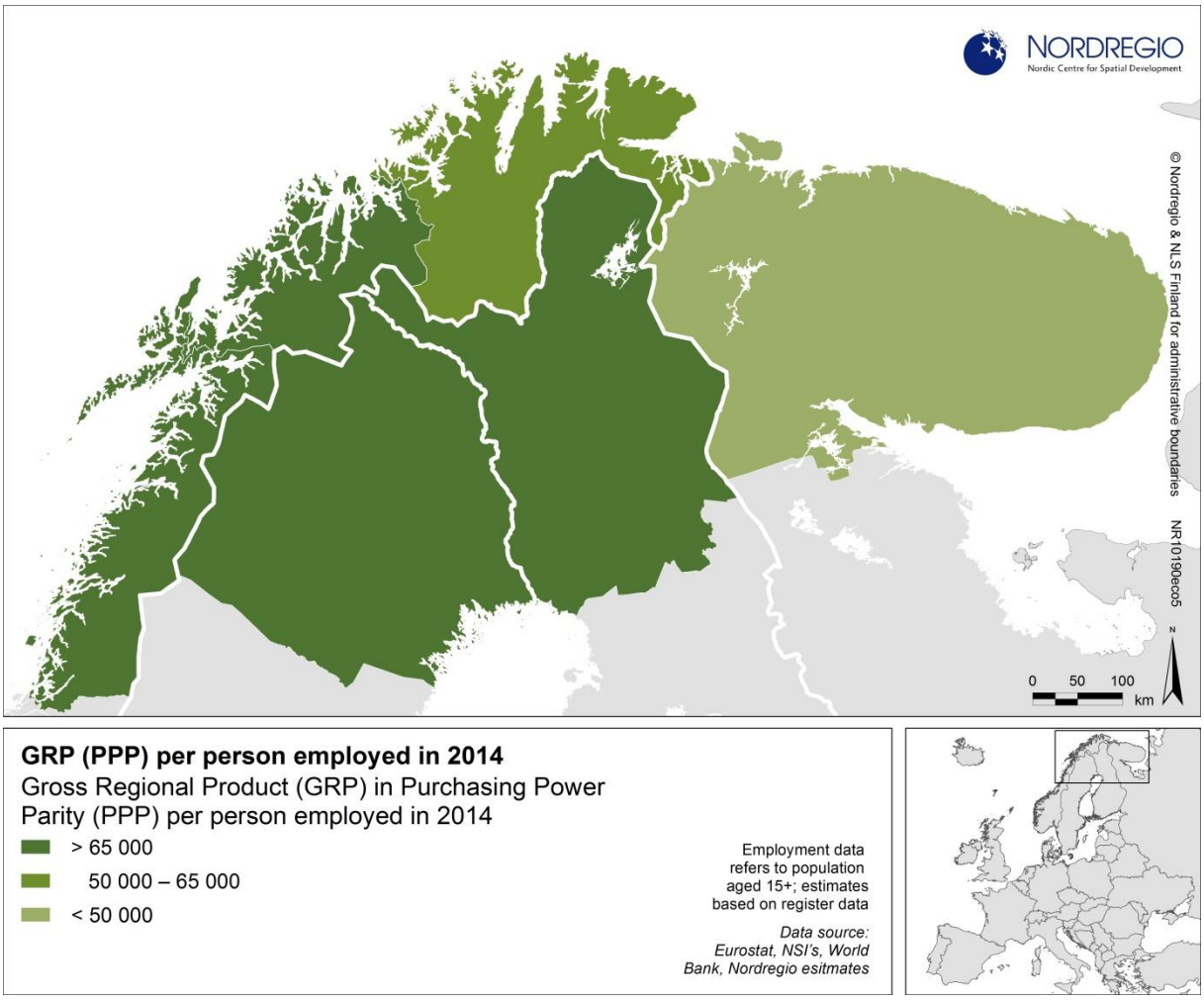

Figure 3.4. GRP (PPP) per person employed in 2014

Natural resources and tourism are also two characteristics of the dominating economic activities in the municipalities within the Nordic part of this report's study area (figure 3.5). In Lapland, Inari, Kittilä, Enontekiö, Muonio and Kolari form a cluster of municipalities with, in particular, many employees within hotels, restaurant and other tourism service sectors (blue in the map). Among the Nordic countries, only the area bordering Dalarna and Jämtland in Sweden has a similar dominance of tourism based work force. The municipalities Tornio in Lapland, Gällivare in Norrbotten, Sörfold in Nordland, and Berg in Troms have an inclination towards raw material extraction and industries (yellow), while a number of municipalities are based largely on energy resources (electricity and water supply; grey): Kemijärvi in Lapland, Jokkmokk in Norrbotten, several municipalities in Nordland, and Kvalsund and Porsanger in Finnmark.

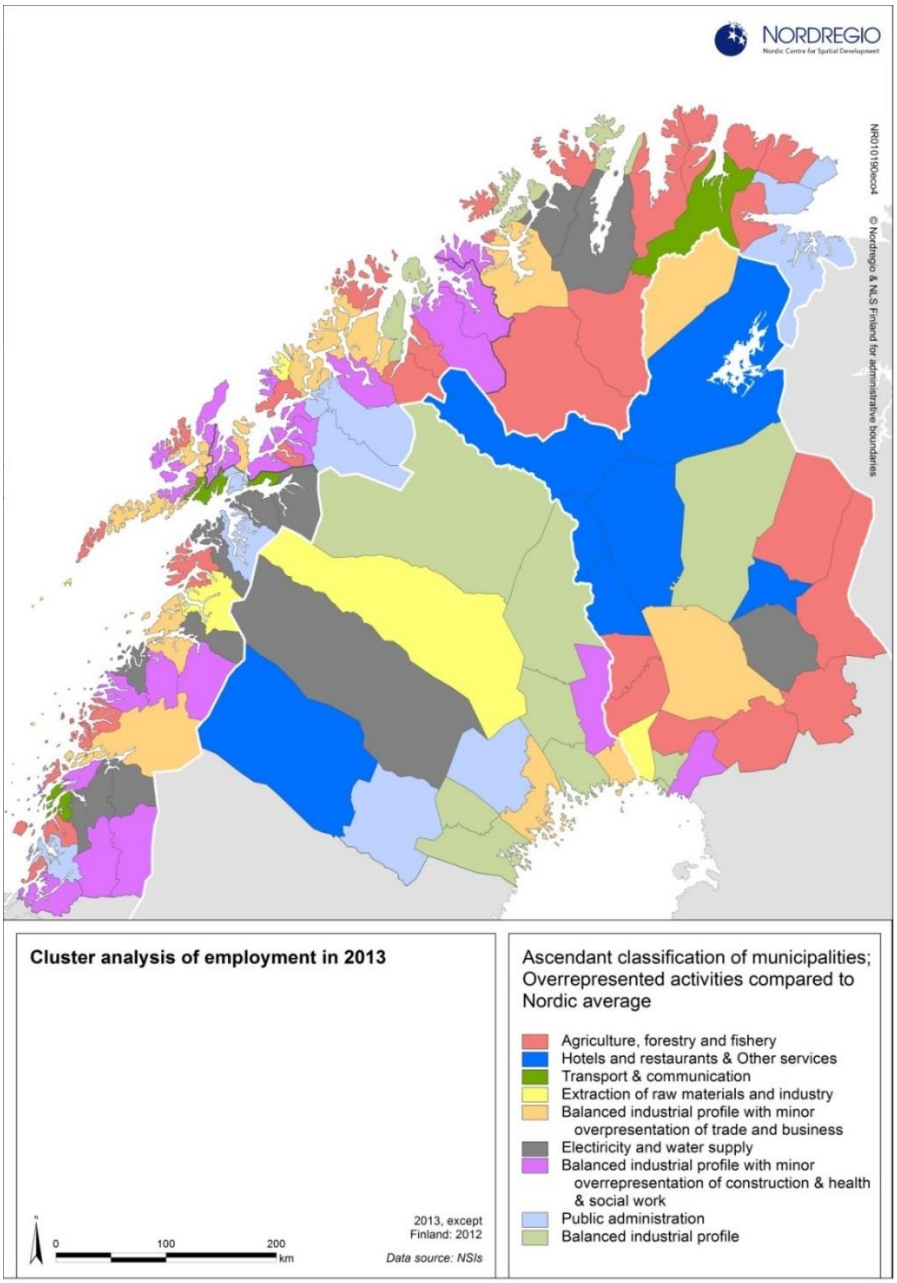

Figure 3.5. Cluster analysis of employment in 2013

Generally in the regions within the Nordic countries there are at least some municipalities dominated by the public sector, or firms related to public utilities and services. This is also the case in the regions within the study area of this report. City regions, on the other hand, are usually the centres of financial institutions, insurance firms, larger corporate headquarters, consultancy firms and firms in the tertiary sector of the economy. In the Nordic Barents regions, municipalities with this typical city regional profile are rather few, but Tromsö is one example (dark yellow). Secondary sectors (known as manufacturing, transport and some related service sectors) are scattered throughout the Nordic countries, but are strong in secondary and smaller cities, and less so in the study area. The primary sectors of agriculture, forestry and fisheries are generally prevalent in more sparsely populate regions of the Nordics, for example in Iceland outside the capital region, in different parts of Norway, and in many municipalities in central, eastern and northern Finland. In Lapland, the primary sector (red) is strong in the eastern and south-eastern municipalities, as well as Tervola, Ylitornio and Pello further west. The Barents area of Norway also has a fair number of municipalities dominated by the primary sector: a number of municipalities in Finnmark, and also a few in both Troms and Nordland.

Innovation

In the Nordic region, innovation is high on the agenda, as it is in Europe, marked by the Europe 2020 Flagship Initiative, Innovation Union, which aims 'to improve conditions and access to finance for research and innovation, to ensure that innovative ideas can be turned into products and services that create growth and jobs' (EU Commission 2010). In the literature, there is a general consensus that place matters for innovation and regions play an important role in enabling innovation and in the achievement of national and regional growth objectives (OECD 2013).

However, how can innovation be measured across regions? It is not always an easy subject to grasp using quantitative indicators, as the regional innovation capacity consists of a number of elements, including different sectors and their cooperation; different technical and social innovations and their uptake; general education levels and labour force aspects; business development; financial aspects, including e.g. research and development spending; and policies and strategies for innovation, including e.g. public-private partnerships.

Comparing innovation as part of regional development in different countries also requires available and comparable data. EU's statistical institution, Eurostat, provides some innovation related indicators, but often at the medium-sized regional level, "NUTS 2", while in the study area of this report, the focus is on regions at the more detailed regional "NUTS 3" scale. Furthermore, an institution like Eurostat does not include Russian regions, such as Murmansk. Innovation indexes, or innovation composite indicators, have been developed for European regions, but they have similar problems related to cross-border analysis: the indexes might only include EU countries – which in the context of this report, leaves out both the Norwegian Barents *fylken* and Murmansk *oblast* – or only include the NUTS 2 level.

There is thus much potential in exploring new sources and indexes that could include both EU and non-EU countries in the Nordics and the neighbouring countries, and have an onset in the finest regional level, "NUTS 3". In the meantime, research has to use available indicators. The Regional Innovation Scoreboard (RIS) index provides a comparative assessment of the regional innovation performance in the European context. The regions' performance is measured by which incorporates three types of Innovation indicators i.e. *enablers* e.g. tertiary education and R&D expenditures as a percentage of GDP; *firm activities* e.g. EPO patent applications, SMEs innovation/patents and R&D expenditure in the business sector as a percentage of GDP; *outputs* e.g. knowledge-intensive activities (Hollanders et al., 2016). Regions are classified into four groups showing different levels of

regional innovation performance: innovation leaders, strong innovators, moderate innovators and modest innovators.

Figure 3.6. illustrates the current position of the northernmost NUTS 2 regions in Norway, Sweden and Finland in respect to their relative performance on the RIS index compared to that of the EU. As the NUTS 2 regions in these countries are large, and especially for northern and eastern Finland encompasses a number of NUTS 3 regions, this measurement is not very precise regarding the innovation performance for the single NUTS 3 regions of Norrbotten in Sweden and Lapland in Finland. Only the Norwegian NUTS 2 region in this context includes the geographic scope for this project (Finnmark, Troms and Nordland in one combined region). However, the map gives an indication on the innovation status of the Swedish and Finnish regions within the scope of this project, although combined with its closest neighbouring regions.

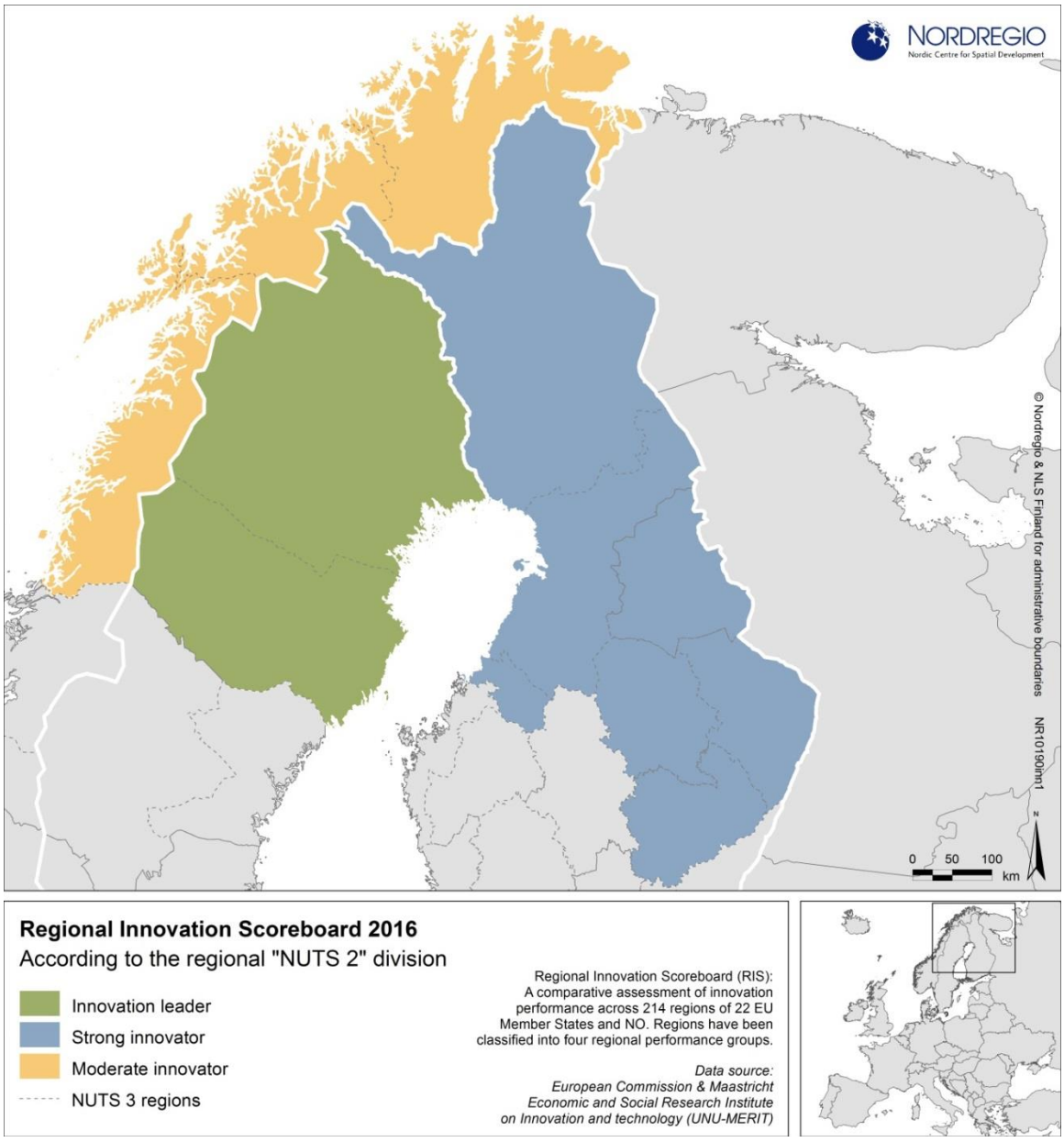

Figure 3.6. Regional Innovation Scoreboard 2016

It is a striking fact that three different performance groups are represented here, one for each country. Norrbotten and Västerbotten in Sweden belong to the top group, as innovation leaders. The Finnish regions are part of the "strong innovation" group, while Norwegian Finnmark, Troms and Nordland belong to the third level, moderate innovators. The performance group affiliation is also in line with the general national pattern: among Sweden's regions, innovation leader is the most common affiliation; in Finland, strong innovators is the performance group for all but one region (the capital region, Uusimaa which is an 'innovation leader'); out of Norway's NUTS 2 regions, only two perform better than moderate innovators.

The share of employees in the technology and knowledge-intensive sectors is another central indicator for measuring the innovation potential in a region. Data is only available at NUTS 2 level, but does show the general situation in the regions in focus for this study together with their closest neighbours. Figure 3.7. illustrates with the orange parts of the pie charts the share of employees in the technology and knowledge-intensive sectors per NUTS 2 region. Generally, there's a concentration of technology and knowledge-intensive jobs to the most populous cities and regions in the Nordics, such as the capital areas. There are, however, some examples of the existence of relatively high concentrations of knowledge-intensive jobs in some Nordic regions outside the major cities. Two of these are within the geographic scope of this project, namely Nord-Norge (Northern Norway, i.e. Finnmark, Troms and Nordland), and in Sweden, Övre Norrland (Upper Norrland, i.e. Västerbotten and Norrbotten).

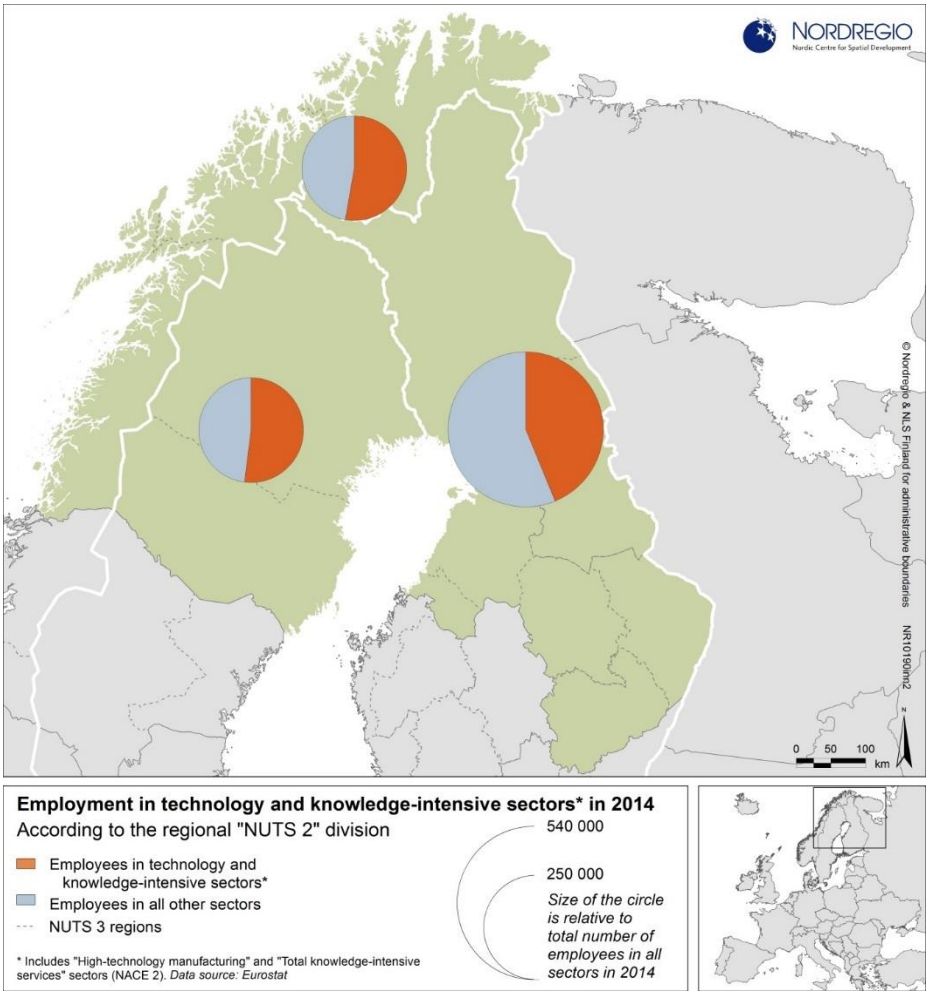

Figure 3.7. Employment in technology and knowledge-intensive sectors in 2014

In peripheral regions, such as the mentioned Övre Norrland, economic diversification into knowledge-intensive activities is often prompted by rather limited venture capital inflow. Although medium-low and low-technology industries remain important for employment and value–added generation in Övre Norrland, the transformation of the regional profile towards more knowledge-based industries like life sciences and information and communication technologies significantly increases its potential to attract foreign investors to the region. Within the Nordic region, the smallest shares of knowledge-intensive jobs are in fact to be found in the three northernmost Finnish NUTS 2 regions, of which Lapland is part of one, North and East Finland. This situation is partially attributed to traditional economic structures characterised by a predominance of basic and traditional industries.

The background colours in figure 3.8. show the regional R&D intensity, which is composed of (total research and development expenditure as a share of the Gross Regional Product (GRP). This is a standardised EU measurement tailored to follow innovation, and is also related to growth. The EU Commission has pointed out this indicator as one of the 2020 goals, under the names "gross domestic expenditure on R&D" or "R&D intensity". Research and development expenditures are of interest to the regional innovation development as they summon the total efforts within a region, be it within the private business, higher education or government sectors.

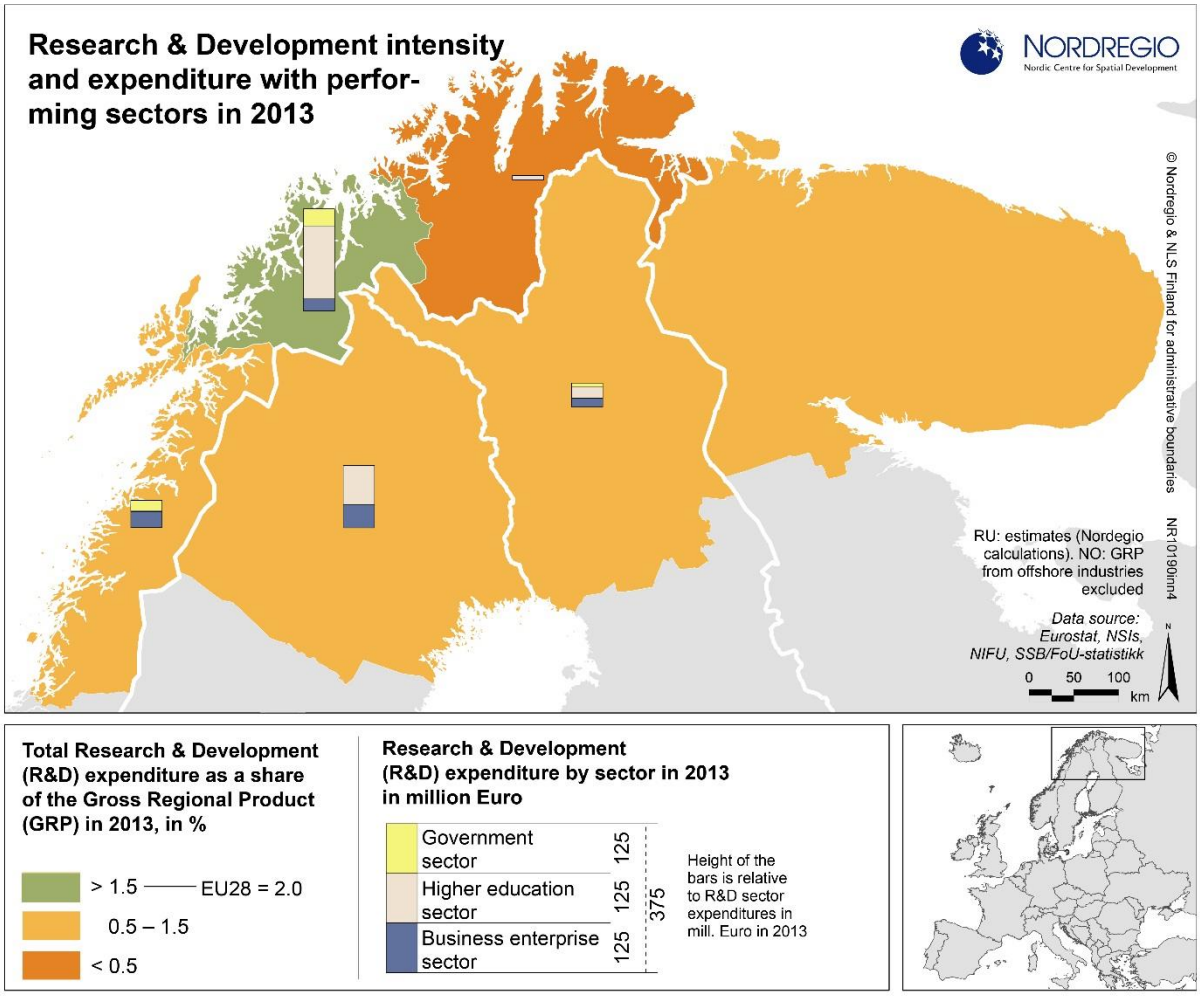

Figure 3.8. R&D Intensity and Expenditure (GERD) with Performing Sectors in 2013

The region in green hue in figure 3.8. is close to the average of the 28 EU countries, while regions in yellow-orange hues are clearly below this average. Within the study area of this report, only Troms has a share of the GRP consisting of research and development costs around the EU average (2.0%). All other regions are below the EU average. Interestingly, Nordland, Norrbotten, Lapland and Murmansk all share a similar share of research and development expenditures as part of the Gross Regional Product (0.5-1.5%). Finnmark is below 0.5%.

What are research and development expenditures consisting of? This is indicated by the bars in the same map, which shows the research and development expenses in million Euro. For Troms, we can here see the explanation why the research and development expenditures are relatively high: compared to the other Nordic Barents regions, Troms, with several higher education establishments within its borders (see the education chapter), has big spending on the higher education sector. Norrbotten is closest to Troms regarding higher education expenses, but still has only half of Troms' costs. Within the business sectors in the Nordic Barents area, Norrbotten, Troms and Nordland have the highest research and development expenditures (the Murmansk region lacks specified sector data).

Not only compared to the EU, but even more so in a national or Nordic context, the regions within the study area lack particularly high overall research and development expenditures. This is most probably due to the aforementioned (see the economy chapter) traditionally resource-based economies within these regions. Considering this background, Troms and to some extent also Norrbotten stand out with their – in relation to the neighbouring Nordic and Barents regions – relatively high expenditures on the higher education sector, most probably due to the existence of a university within the respective region.

As shown in figure 3.8., Troms (high) and Finnmark (low) were the only regions in 2013 that stood out from the others in 2013 in terms of research and development as a share of the GRP. However, examining the *changes* over time in research and development expenditure, from 2007 to 2013, a partly different story is revealed (figure 3.9.). The Norwegian regions all increased significantly their research and development expenditures between 2007 and 2013, although it should be noted that the changes for Nordland and especially Finnmark started at very low levels. Lapland also increased its research and development expenses, but to a lesser extent, and also from a rather low level in 2007. Only Norrbotten experienced a drop.

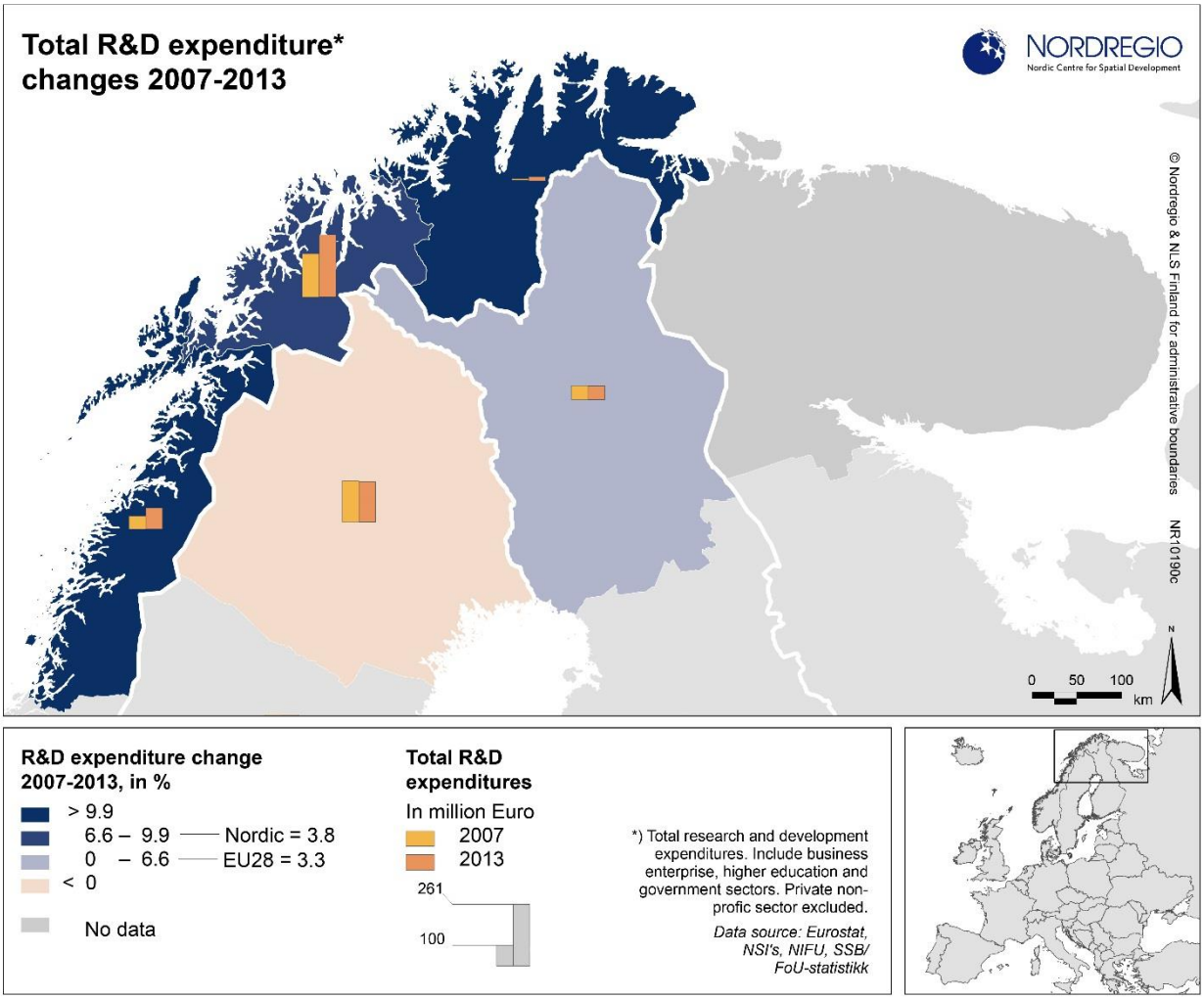

Figure 3.9. Total R&D expenditure changes 2007-2013

A detailed look at the private business sectors' research and development expenditures between 2007 and 2013 is given in figure 3.10. The map does not depict the current size of the business sector, only the change in R&D investments, both in absolute terms (size of the circles) and in percentages (blue hues for positive change, red for negative).

In the economically dominant Nordic cities and regions the strong Nordic RDI environments have experienced considerable growth in the private business sectors' research and development expenditures, ranging from 5 to 10%. By comparison, Norrbotten and some other Nordic regions located far from the capitals have experienced a dramatic decrease (over 5%) in private business research and development expenditures. Again, however, Norway's northern regions have not suffered significantly compared to their counterparts in Sweden and Finland, which is partially attributed to regional policy differences across the Nordic regions.

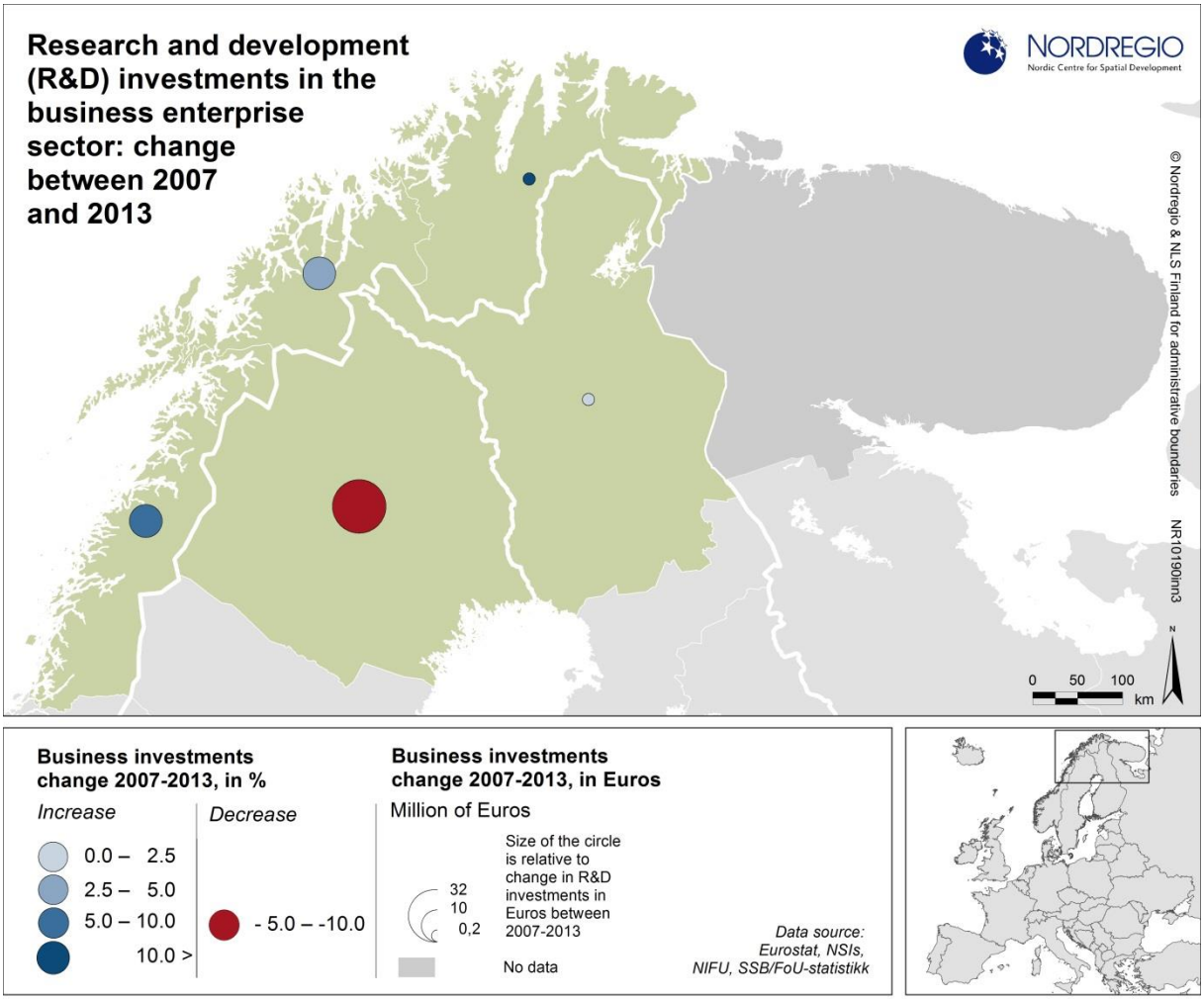

Figure 3.10. Research and development investments in the business enterprise sector: change between 2007 and 2013

Despite somewhat changing research and development expenditures within our study area, these regions largely follow the general Nordic pattern of *no significant changes* in the overall level of Nordic innovation capacity and performance. One explanation for this is that the Nordic countries are characterised by a robust knowledge-intensive industrial structure, which appears to be more resistant to crisis than those of some other European countries, and which also seems to be the case

in the Nordic Barents area. The Nordic countries and regions currently represent a good to excellent level of innovation performance compared to other European countries and their regions, although there are some significant differences between the countries, as the RIS Scoreboard shows (figure 3.6.). Generally, innovation performance and the competitiveness of the Nordic region is explained by the existence of good preconditions for research and development in terms of a relatively high workforce share of doctorates (e.g. Sweden ranks third in Europe), high levels of direct funding of business R&D, and high employment levels in the knowledge intensive sectors (although with some variations across regions). The parts of Finland, Sweden and Norway within the study area of this report, however, in this situation with no striking development changes over time, show a continued lag behind their southern counterparts in the respective countries.

To conclude Theme 3 Economy:

- Despite the strong process industry concentration in the Kemi-Tornio region, the economy of Lapland lags behind the strongest regions in the North Calotte region, especially Tromsø
- The utilisation of natural resources and tourism characterise the economy of several municipalities in Lapland
- Recent positive trend in bioeconomy, especially the planned large-scale biorefinery investments, and in tourism may result in improvement in economy in several municipalities in Lapland
- According to the EU's Regional Innovation Scoreboard, North and East Finland are categorised as 'strong innovators', while Norrbotten and Västerbotten in Sweden belong to the top group as 'innovation leaders' and Finnmark, Troms and Nordland in Norway belong to the third level, 'moderate innovators.'
- Regarding R&D expenditure, only Troms meets the EU average of 2%, whereas Lapland falls into category 0.5-1.5 %
- The latest positive development in e.g. bioeconomy and circular economy are important and have potential in creating the positive mind-set towards R&D intensive industries and increased R&D expenditure - in the medium-term and long-term perspective.
- Bearing in mind the challenges related to the creation of critical mass and environments for innovation in sparsely-populated regions, considering cross-border collaboration and pooling of resources in the North Calotte region appears increasingly relevant

Theme 4

REGIONAL POTENTIAL INDEX

Theme 4: Regional Potential Index

The map below (figure 4.1.) shows the overall results of the Regional Potential Index (RPI) for the geographical focus area of this report. Regional Potential Index, developed by Nordregio for the 2016 edition of State of the Nordic Region report, indicates the overall development potential of a region (for detailed methodology, see the explanatory part at the end of this chapter). The overall results include the three dimensions of RPI: demographic, labour force and economic. The overall ranking is of particular interest as it highlights the recent socio-economic situation of these regions which is closely linked to their performance in the near future, in terms of regional development potential.

The colour indicates the number of points each region has in the overall RPI. Each of the three dimensions has between 15 and 90 points (see figure 4.2.). The darker the red colour on the map, the higher the number of points. The scores vary between 110 in Lapland (Finland) and Murmansk (Russia) to 227.5 in Troms (Norway). The weak score of Lapland is due to relatively weak performance in both the labour and the economic dimensions of the RPI.

The region of Troms in Norway stands out, especially in terms of labour and economic dimensions of the RPI.

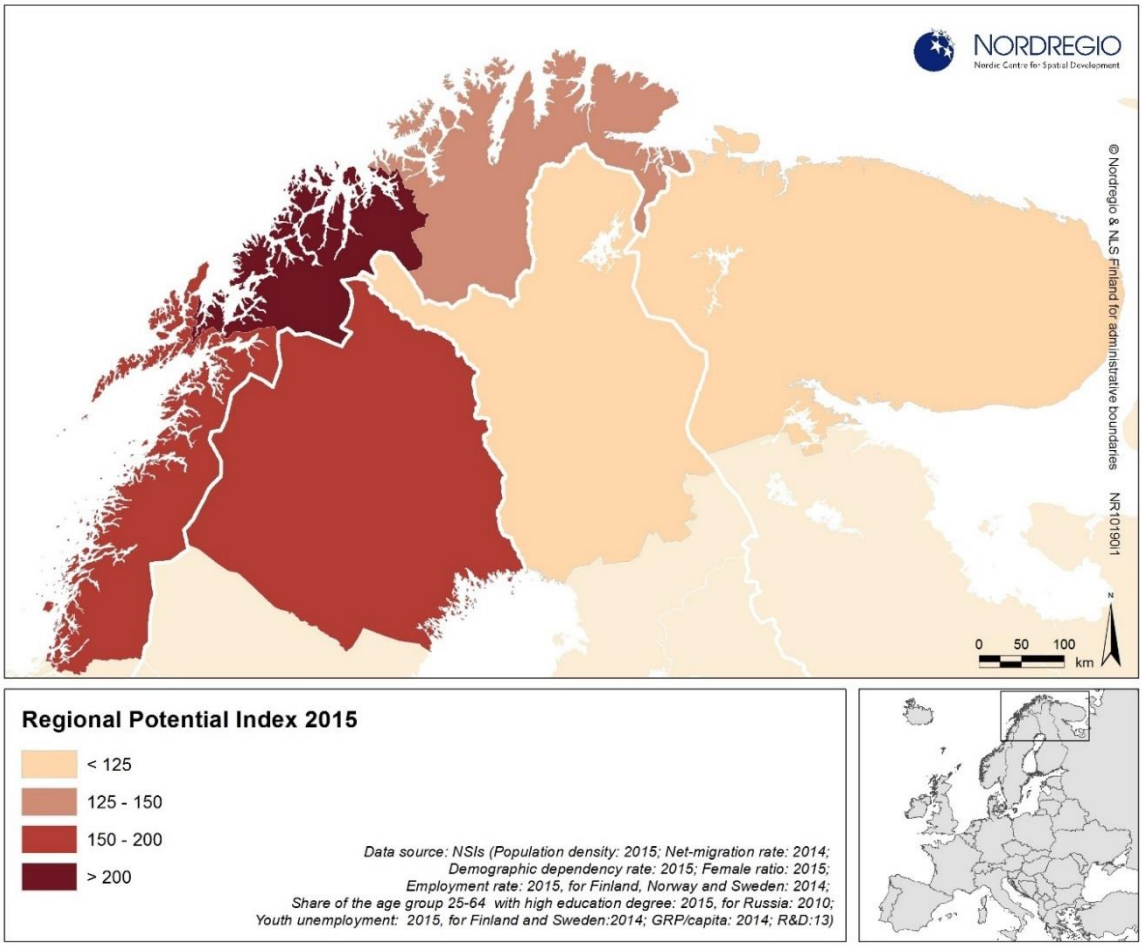

Figure 4.1. Regional Potential Index 2015

Rank 2015 (2010)	Regions	Regional Potential	Demo	Labour	Eco
1 (1)	Troms	227,5	67,5	80	80
2 (2)	Nordland	190	75	55	60
3 (3)	Norrbotten	172,5	37,5	50	85
4 (4)	Finnmark	135	45	55	35
5 (6)	Lappi	110	45	30	35
5 (5)	Murmansk	110	45	45	20

Figure 4.2. Results of the Regional Potential Index

Figure 4.3. shows the **demographic dimension** of the RPI. This dimension includes four indicators: population density, net-migration, demographic dependency rate and female ratio.

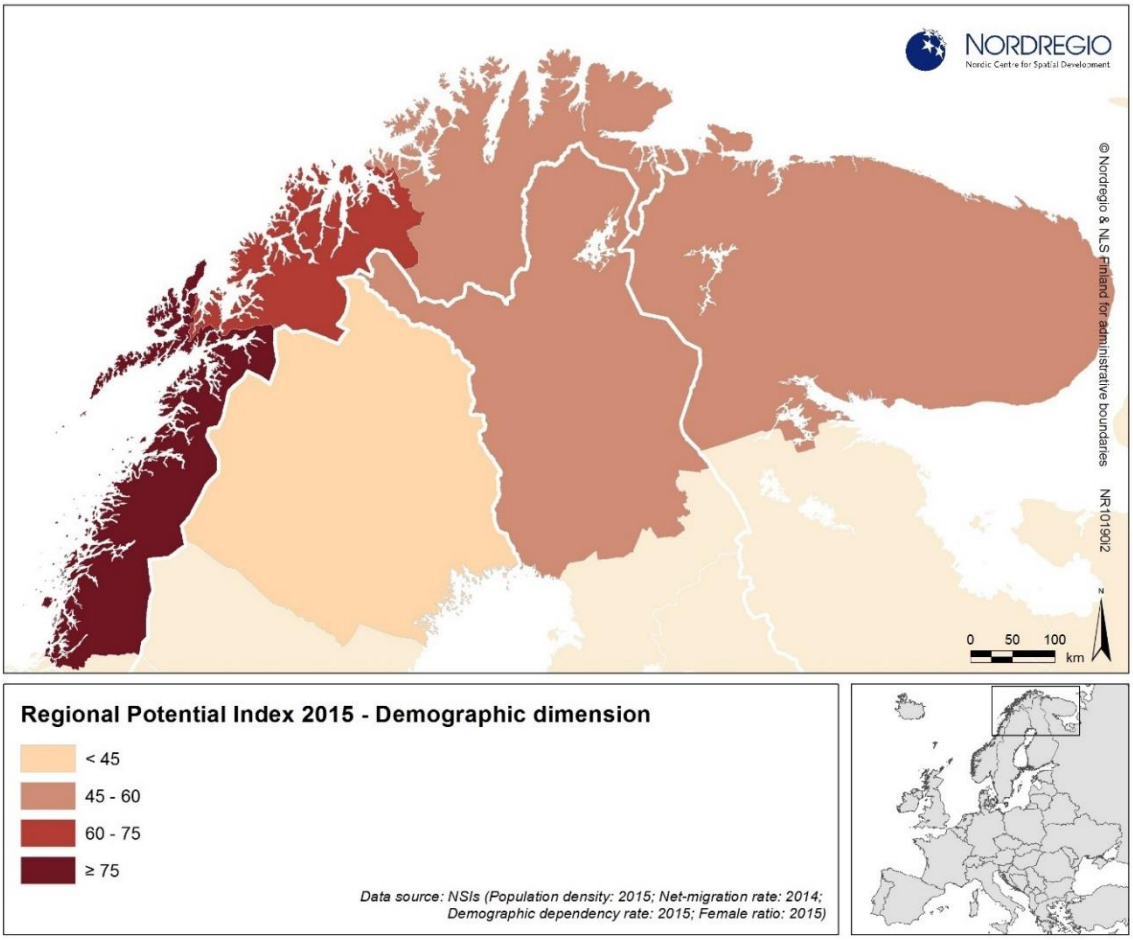

Figure 4.3. Demographic dimension of the Regional Potential Index 2015

The colour indicates the number of points each region has in the demographic dimension. Each of the four indicators has between 3.75 and 22.5 points, hence a maximum of 90 points. The darker the red colour, the higher the number of points. The scores vary between 37.5 in Norrbotten (Sweden) to 75 in Nordland (Norway). The Finnish region of Lapland has 45 points, the same amount as for Finnmark (Norway) and Murmansk (Russia). The average score of Lapland is due to weak scores in

population density, net-migration and demographic dependency. These weak scores are compensated by a top score in female ratio.

Troms and Nordland stand out thanks to the highest population density within these study area, net in-migration, balanced gender ratio and a fair rate of demographic dependency.

The situation between 2010 and 2015 shows that the selected regions have the same ranks in 2010 and in 2015. The only changes are Lapland gaining one rank and Murmansk loosing one rank. The change is mainly due to lower scores in the demographic dimension of the RPI for Murmansk region, which has an increasing demographic dependency rate and a more uneven gender balance over time.

Figure 4.4. shows **the labour force dimension** of the RPI. This dimension includes three indicators: employment rate, share of the age group 25-64 with high education degree and youth unemployment.

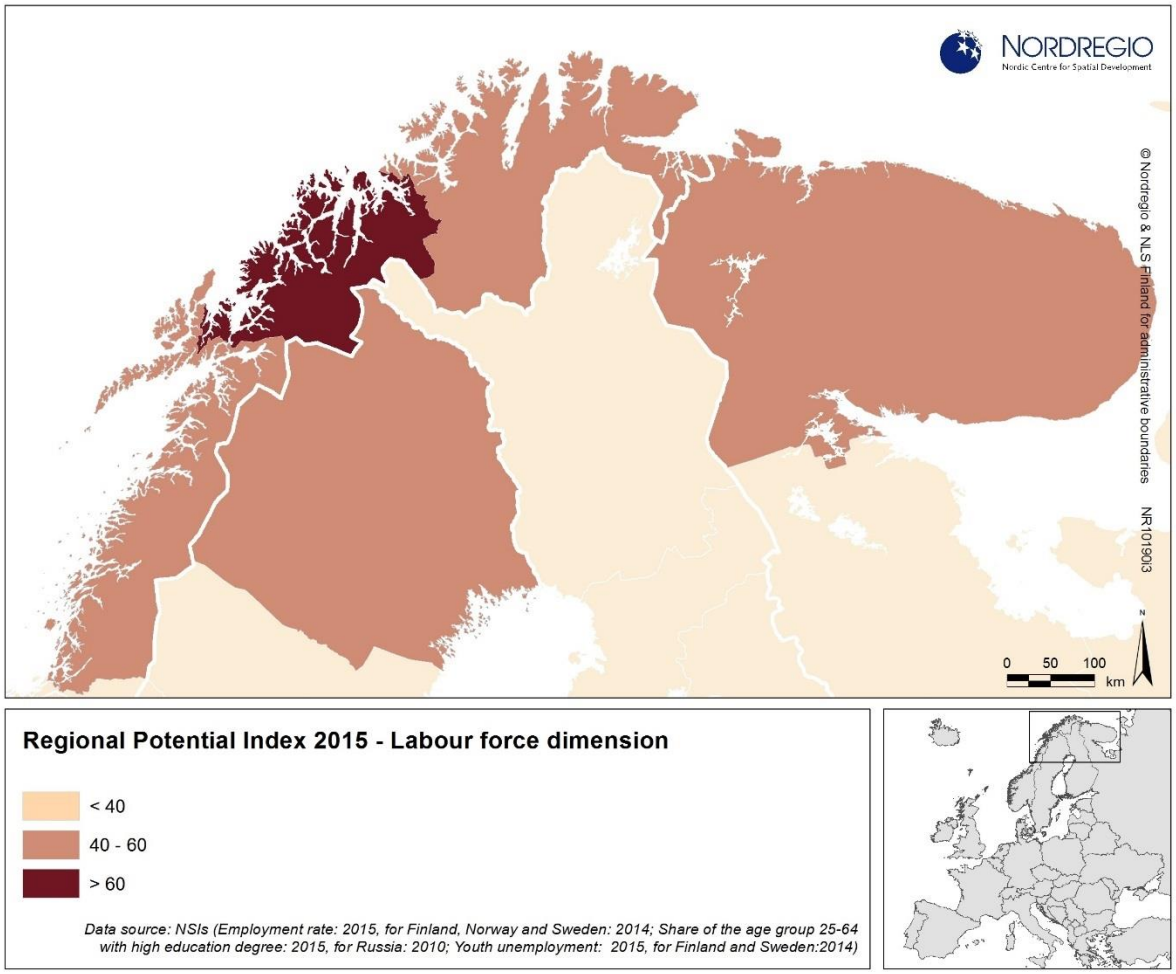

Figure 4.4. Labour force dimension of the Regional Potential Index 2015

The colour indicates the number of points each region has in the labour force dimension. Each of the three indicators has between 5 and 30 points, hence a maximum of 90 points. The darker the red

colour, the higher the number of points. The scores vary between 30 in Lapland (Finland) to 80 in Troms (Norway). Other regions have scores between 45 and 55. The weak score of Lapland is due to the lowest employment rate and the highest youth unemployment rate within the study area. However, Lapland has a relatively educated labour force with a high share of the age group 25-64 with high education degree.

Troms has the best score in educated labour force and the second best score in both employment rate and youth unemployment rate, resulting in the first rank in the labour force dimension of the RPI.

Figure 4.5. shows the **economic dimension** of the RPI. This dimension includes two indicators: gross regional product per capita (GRP/capita) and total investment in research and development (R&D).

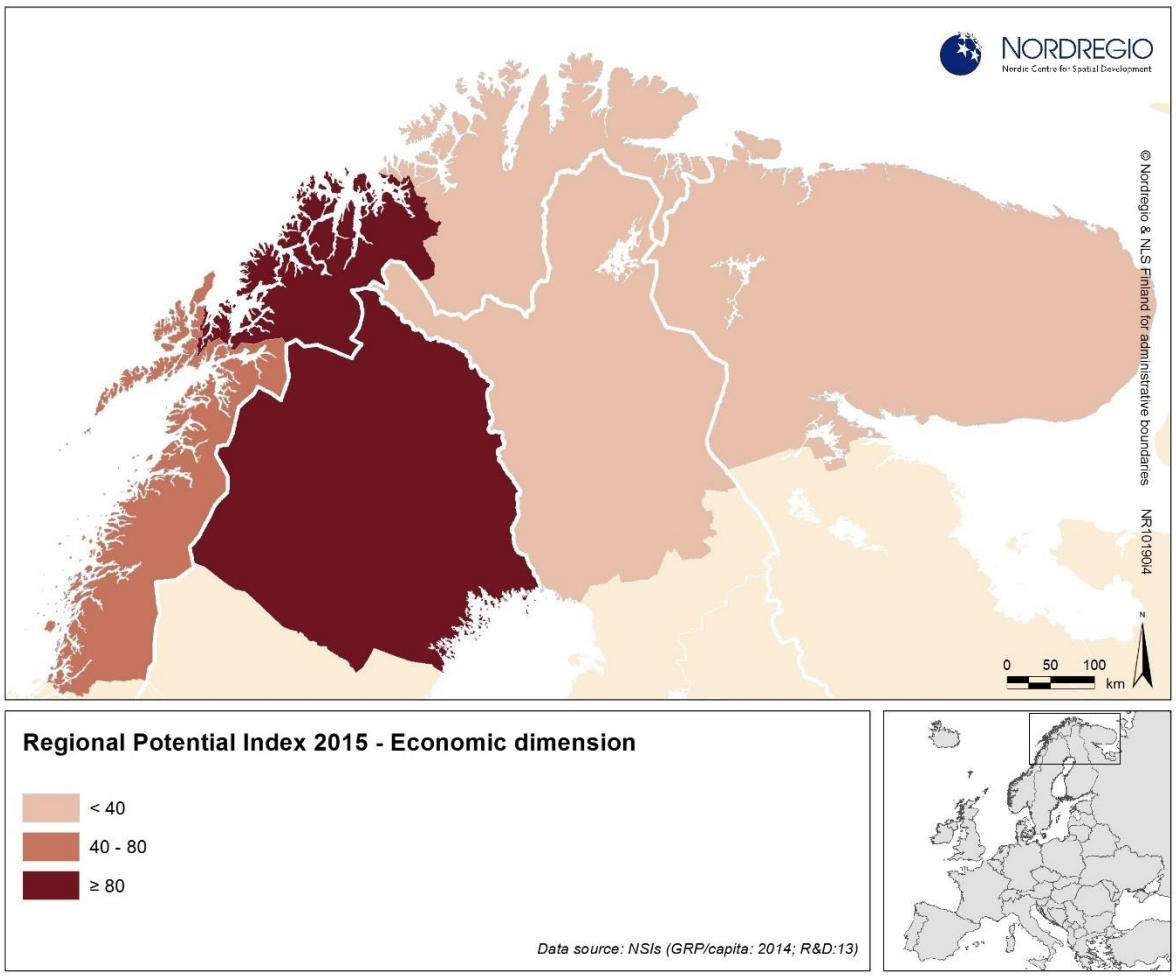

Figure 4.5. Economic dimension of the Regional Potential Index 2015

The colour indicates the number of points each region has in the economic dimension. The indicator GRP/capita has between 10 and 60 points and the indicator R&D has between 5 and 30 points, hence a maximum of 90 points. The higher of GRP/capita is explained by large implication in explaining the economic dimension of a region. The darker the red colour, the higher the number of points. The

scores vary between 20 in Murmansk (Russia) to 85 in Norrbotten (Sweden). The Finnish region of Lapland has 35 points, the same amount as for Finnmark (Norway). The average score of Lapland is due to average R&D investments and a relatively low value for GRP/capita.

The top region is Norrbotten which has the highest GRP/capita and the second highest R&D investment among the selected regions. The Swedish region is closely followed by the Norwegian region of Troms.

To conclude Theme 4 Regional Potential Index:

- Regional Potential Index (RPI) of Lapland scores relatively low compared to e.g. North Norway and North Sweden
- The analysis of the regional RPI index should not focus on aggregate only – one should dig deeper to analyse the components of RPI, and the underlying factors, to find the policy measures to improve the RPI in short, medium, and long term
- Finally, regional economy and regional development is more than an index figure alone – although the RPI figure and its component figures reveal certain strengths and shortcomings. For example, the recent bioeconomy and tourism development indicate positive things in the future in Lapland. Moreover, although past development gives some indication of the future, it is the current and future decisions which count!

The Purpose of the Regional Potential Index:

Rankings and indexes are developed for many different purposes. One example from the EU level is the ranking of regions to define eligible areas for structural funds based on GRP levels in the past. National rankings are created to show the most favourable business climate or the best place to live.

The purpose of Nordregio's Regional Potential Index is to:

- show the current performance of administrative regions of the Nordic countries;
- identify regions with high potential for future development and their common denominators;
- to identify regions in need of further support and policy measures to strengthen their potential and meet existing challenges.

Last but not least, the index provides policy-makers with insights on regional strengths and weaknesses, and could be used for comparative learning between Nordic regions with similar geographies but different outcomes in the ranking when it comes to creating effective regional development strategies.

Methodological elements of The Regional Potential Index

Nordregio's **Regional Potential Index** is made up of indicators that have been carefully selected because of their implications for regional or territorial development. The data has been harmonised and standardised and is drawn from a solid data base that covers a long period of time and many geographical levels. The selected indicators do not have high correlation and only a limited amount of data sources had gaps. The selected indicators also offer strong communicative value allowing the ranking to be easily understood and widely used in the regional development context. Much of the data included in the ranking is drawn on in other chapters of this report and is also available on NordMap[4]. The three themes, related indicators and weighting can be seen in Table 4.6.

[4] Nordmap is an interactive web-mapping tool for monitoring demographic, labour market, accessibility and welfare trends in the Nordic Region.

Demographic potential	**Population density**	**3,75-22,5**
	Net migration rate	**3,75-22,5**
	Demographic dependency rate	**3,75-22,5**
	Female ratio	**3,75-22,5**
Labour market potential	**Employment rate**	**5-30**
	Share of the age group 25-64 with high education degree	**5-30**
	Youth unemployment rate	**5-30**
Economic potential	**GRP/capita**	**10-60**
	Total R&D investments	**5-30**

Figure 4.6. Indicators included in the index and their respective weights

As can be seen in Table 4.6., GRP/capita is weighted more heavily than the other indicators. The reason for this is that it has historically been determined as perhaps the most relevant measure of both current performance and future development of a region. Total score for demographic potential has also been modified to have a total score of 90, consistent with the other two themes, by allocating between 3.75 and22.5 points for each indicator. Indicators connected to environmental values are not included in this ranking. This is mainly due to relatively small differences within this region, when comparing with other parts of the world (except soil sealing).

Despite the rigorous process through which the ranking was developed, some limitations remain and the ranking should be understood from a rather instrumental point of view: *Firstly*, the ranking does not include cross-border data. Consequently, regions located on national borders where workers commute to work in another country and may have received lower rankings than if cross-border data was considered. *Secondly*, due to a lack of good, quality recent data for a number of regions, the ranking does not include indicators of accessibility. *Finally*, the ranking does not take into account any qualitative dimensions, such as experienced life quality, or the existence of regional development or smart specialisation strategies. It also doesn't give any advice on what would be required in the future in order for regions to build on the dimensions included in the index.

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