

Population Development and Policy in Shrinking Regions: the Case of Central Europe

ADAPT2DC

ADAPTATION TO DEMOGRAPHIC CHANGE

Martin Šimon, Renáta Mikešová (eds.)

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This publication is an output of the ADAPT2DC project and contains large excerpts from the internal report on demographic change in Central Europe (output no. 3.1.5, version 2013). This deliverable provides basic comparative demographic analysis of regions in the Central European area. The study is based on data collected by the ADAPT2DC project partners according to instructions described in the deliverable Methodology Guidelines for WP 3.1 (D1.1). The publication contains project outcomes except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

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1 Demographic background analysis

Martin Šimon, Renáta Mikešová

The overall purpose of this book is to analyse population development and policy in shrinking regions and cities in Central Europe. The book was developed as part of the ADAPT2DC project¹ where it served as a departure point for related analyses and activities, but the authors are convinced that it can be further utilised by various national, regional and local stakeholders, planners and policy makers, who deal with the consequences of demographic change in their everyday praxis.² The depiction of the demographic situation in the regions in Central Europe³ was a precondition for subsequent analyses, including a comparative statistical analysis of infrastructure and service costs in Central Europe, microeconomic analyses of selected samples of infrastructure in pilot regions,⁴ and an analysis of opinions of stakeholders in the regions, etc. The book also served as the basis for the development of evidence-based policies that make planning and management of social and economic development more efficient⁵ and thus more resilient to development volatilities such as an economic crisis. This book includes: a) background statistical analysis of shrinking regions in Central Europe (chapter 1), b) definitions of shrinking regions at i) the NUTS 3 level and ii) at the sub-regional level (chapter 2), c) analysis of policy documents (chapter 3) and d) case studies of pilot regions (chapter 4). The territorial coverage of this book is the Central Europe area⁶ and its regions. The area includes the relatively heterogeneous group of former state socialist countries and western countries with market economies. The time frame used in the book is the last 10-20 years.

In this book the term ‘demographic change’ is used in a narrow sense referring only to demographic ageing and demographic shrinkage. Other processes that can be labelled as forms of demographic change such as the second demographic transition⁷ or increasing longevity⁸ are discussed only partially. This is due to the thematic focus of the book, which mainly deals with changing population numbers, changing age structures and regional population development as the background for related studies. The focuses of such studies are infrastructural costs

¹ New innovative solutions to adapt governance and management of public infrastructures to demographic change’ project (ADAPT2DC) is co-funded by the European Commission within Central Europe (grant agreement 3sCE414P4).

² Tomay, K., Kószeghy, L., Török, L.K., Šimon, M. (2014): E-book for tackling infrastructure costs in shrinking regions, ADAPT2DC project output, 89 pp.

³ Baron, M., et al. (2014): ‘Economics and Strategic Management of Local Public Services in Central Europe: Towards multidisciplinary analysis of infrastructure and service costs.’ Institute of Sociology, Academy of Sciences of the Czech Republic, Prague, 270 pp.

⁴ Ehrlich, K., Schaarwächter, M. (2014): ‘Position paper: a joint transnational vision for future provision of infrastructures and services in shrinking regions and cities of Central Europe.’ ADAPT2DC project output, 40 pp

⁵ Dorogi, Z., et al. (2014) ‘European strategy for regional responses to demographic changes.’ ADAPT2DC project output, 50 pp.

⁶ The Central Europe area consists of the following countries: Austria, Czechia, Germany (Mecklenburg-Vorpommern, Brandenburg, Sachsen-Anhalt, Sachsen, Thüringen, Baden-Württemberg, Bayern), Hungary, Italy (Nord Ovest, Nord Est), Poland, Slovakia, Slovenia.

⁷ van de Kaa, D.J., (1987): ‘Europe’s Second Demographic Transition.’ *Population Bulletin*, 42(1). 64 pp.; Lesthaeghe, R. (1995): ‘The second demographic transition in Western countries: an interpretation. Gender and family change in industrialized countries’, 17-62.

⁸ Leon, D. A. (2011): ‘Trends in European life expectancy: a salutary view.’ *International Journal of Epidemiology* 40(2): 271-277.; Van Oyen, H., Nusselder, W., Jagger, C., Kolip, P., Cambois, E., & Robine, J. M. (2013): ‘Gender differences in healthy life years within the EU: an exploration of the “health-survival” paradox.’ *International Journal of Public Health* 58(1): 143-155.

and their optimisation in regions affected by demographic changes.⁹ The added value of subsequent demographic analysis is that it is delivered at the NUTS 3 level which is more detailed than what is customary in such studies.¹⁰ The analysis on the NUTS 3 level allows us to evaluate demographic changes and changes in the spatial distribution of the population and population subgroups in a more detailed perspective. The regions at the NUTS 3 level are distinguished more clearly between metropolitan and non-metropolitan regions or between densely and sparsely populated regions than it is at NUTS 2 level.

Doing comparative research across European regions requires the availability of comparable data. For this purpose a common terminological framework and a list of potential demographic indicators were developed. Subsequently, the availability of the defined indicators across NUTS 3 regions in Central Europe countries was determined. Then the nine indicators that were available in all NUTS 3 regions in Central Europe countries for at least two time periods were selected (total population, age structure of the population, active population, mean age, life expectancy at birth, total fertility rate, births, deaths and unemployment rate). In the next step the data in all countries and their regions were collected with the help of local stakeholders. Demographic data used in the analysis are available and comparable, only marginal deviations in definitions are presented. Definitions of demographic indicators were adapted from the RAMON database at Eurostat and from the EC report (3/2003/E/no25). Socio-economic data are less often available and less comparable. The data were collected together with information about their source and methodological notes necessary for their usage, thus they are in accordance with basic principles concerning data sources quality and data reliability. To avoid methodological issues and to ensure better comparability of demographic changes across the CE region basic comparable demographic data were collected, from which more advanced indicators were subsequently calculated. All the data for the book were collected for NUTS 3 regions (according to the NUTS 2006 version) across Central European regions (spatial information about NUTS 3 was available in GIS format from Eurostat). This spatial layer is suitable for the book's purposes because it covers all NUTS 3 regions of the CE countries. The comparability of data for NUTS 3 regions in time was assured by recalculating minor territorial administrative changes after the year 2006. In our interpretation of demographic development in Central Europe we use knowledge from a few regional typologies at the NUTS 3 level developed by the ESPON 2013 Programme.¹¹ In principle such regional typologies are useful also for demographic analysis, although there are also limitations. ESPON 2013 typologies were developed for Europe as a whole, not just the Central European area, and therefore limited use is made of such typologies due to the just minor variations in the Central European area. Furthermore, from a population-geography perspective there is a continuum between different types of regions (e.g. regions with different population density), but categories and typologies developed in the ESPON 2013 maps have delimited boundaries, which might not be optimal for spatial demographic analysis. We would recommend adjusting these typologies for particular European regions such as the Central European area. In our analysis we use three regional typologies:¹²

⁹ Baron, M., et al. (2014): 'Economics and strategic management of local public services in Central Europe: Towards multidisciplinary analysis of infrastructure and service costs.' Institute of Sociology, Academy of Sciences of the Czech Republic, Prague, 270 pp.

¹⁰ For a list of actual projects and events that are also related to the topic of demographic change, see ADAPT2DC webpage at <www.adapt2dc.eu>.

¹¹ For details, see the ESPON website –www.espon.eu/main/Menu_ToolsandMaps/ESPONTypologies/.

¹² Other typologies from the ESPON 2013 programme were not utilised due to the small [just minor] variations in the Central Europe area, which prevent a meaningful interpretation of them in the Central Europe area, or because they are not particularly related to the demographic situation in the regions.

1. Typology No. 1 - Urban-Rural regions delimiting:
 - a. predominantly urban regions,
 - b. intermediate regions - close to a city,
 - c. intermediate regions – remote,
 - d. predominantly rural regions - close to a city,
 - e. predominantly rural regions - remote;
2. Typology No. 2 - Metropolitan regions delimiting:
 - a. capital city regions,
 - b. second tier metro regions,
 - c. smaller metro regions,
 - d. other regions;
3. Typology No. 7 - Mountainous regions delimiting:
 - a. regions in which more than 50%
of the population lives in mountain areas,
 - b. regions in which more than 50%
of the surface is covered by mountain areas,
 - c. regions in which both more than 50% of the surface is covered
by mountain areas and more than 50%
of the population lives in mountain areas,
 - d. other regions.

1.1 Demographic analysis

The main aim of the demographic background analysis is to provide a basic comparison of shrinking and growing regions in Central Europe. This serves as a background for further studies focusing on analysing the costs of social and technical infrastructure and services provision in regions. It is important to stress that certain infrastructure costs are directly related to population numbers in a region; other infrastructure costs are related to the age structure of the population or to the settlement structure in a region. Therefore the knowledge of population development can serve as an important factor for modelling future service and infrastructure provision costs. For example, the costs of health care are highly age-dependent. They are relatively stable for young and middle-age populations, but grow significantly in old age and especially in old-old age. Another example are the costs for road maintenance. This depends only partially on the total population number, but more on the number of settlements and the length of the roads that need to be taken care of. Infrastructure costs can also be divided into categories according to the government level responsible for providing and maintaining the particular infrastructure.¹³ For example, health care can be the responsibility of regional government, whereas municipal councils might be in charge of waste management. Various differences in administration and budgetary sources for financing certain infrastructures in regions exist in different Central European countries.

In general, the effect of population ageing is threefold. Population ageing can influence the cost of a service per capita, the supply of certain services, and the demand for certain services. The day-care system can serve as an example of how population ageing influences a service supply. Facilities for the younger population are adjusted to the needs of an older population. Ageing can also influence the demand for services in day-care systems, which are labour intensive and require specific qualifications from the labour force. Ageing can be expected to have a different impact in densely and sparsely populated areas.¹⁴ Less concentrated settings in rural areas are more vulnerable due to the poorer availability of basic services and poorer accessibility to them. Similarly, the effect of population shrinkage is threefold. A decline in the total population will increase the service costs per capita for certain infrastructures, e.g. water management. There will also be changes in the supply of services (fewer services and poorer access to them) and the demand for services (a decrease of demand due to decreasing population size). As in the case of population ageing, the effect of population shrinkage can be more serious in rural areas, which are more vulnerable due to the lower population density. Population shrinkage is also a serious challenge for the provision of public services in general, because population shrinkage usually means a decrease in tax income for municipalities or regional governments.¹⁵

In sum the impact of population shrinkage or the impact of population ageing is a serious challenge for both local and national decision-makers. Many regions witness population ageing and population shrinkage simultaneously, which multiplies the impact of both processes. Such a situation has been occurring in regions in East Germany where the effects of population ageing were sharpened by a high level of out-migration of young and middle-aged people. The mean age

¹³ For further details, see ESPON SeGI report at: www.espon.eu/main/Menu_Projects/Menu_AppliedResearch/SeGI.html

¹⁴ Steinführer, A., Küpper, P., Tautz, A. (2012): 'Gestaltung der Daseinsvorsorge in alternden und schrumpfenden Gemeinden-Anpassungs- und Bewältigungsstrategien im Harz.' *Landbauforschung Sonderheft 367*. Braunschweig: Johann Heinrich von Thünen-Institut, 174 pp.

¹⁵ Bernt, M. (2009): 'Partnerships for demolition: The governance of urban renewal in East Germany's shrinking cities.' *International Journal of Urban and Regional Research* 33(3): 754-769.

in some regions is almost 50 years (Dessau-Rosslau, Altenburger Land and Suhl regions). The overall impact of population ageing and population shrinking on the costs of infrastructure strongly depends on the kind of service and how it is organised and provided to users.

1.2 Overall population development

The analysis of demographic development in regions in Central Europe is conducted in a broader framework, which is demographic development at the national level. The following two tables (Table 1, Table 2) describe the current demographic situation in countries in Central Europe and also include demographic projections for several indicators to the year 2030 at the national level. In Czechia, Germany, Hungary, Poland, Slovakia and Slovenia a decline in the total population size is expected. This will mainly be caused by negative natural change (a higher death rate than birth rate); migration is expected to somewhat mitigate the impact of population shrinkage due to natural change.

Another set of indicators shows the projected rise in life expectancy. This will of course also contribute to further population ageing. The current and projected total fertility rates (TFR) are low and significantly below replacement level (TRF = 2.1). The old-age-dependency ratio will increase in all Central European countries and thus the economic and social burden on the working-age population will grow.

Table 1: Population outlook in Central Europe I

Year	Total population (thousands)		Natural change (thousands)		Net migration (thousands)	
	2009	2030	2009	2030	2009	2030
Austria	8375	8988	-1.0	-11.0	21.2	31.2
Czechia	10507	10420	10.9	-47.0	28.3	22.9
Germany	81802	80152	-189.	-365.8	-10.7	187.1
Hungary	10014	9651	-34.0	-47.5	17.3	17.3
Italy	60340	61868	-22.8	-215.8	318.1	248.7
Poland	38167	36975	32.6	-153.3	-1.2	-1.3
Slovakia	5425	5332	8.3	-21.9	4.4	3.9
Slovenia	2047	2023	3.1	9.1	11.5	3.4
EU 27	501103	519942	523.1	-846.1	877.1	1093.1

Source: Demography report 2010¹⁶

¹⁶ Demography Report 2010: Older, more numerous and diverse Europeans. European Commission, Commission staff working document, March 2011.

Table 2: Population outlook in Central Europe II

Year	Life expectancy at birth (years)		Total fertility rate (children per woman)		Old-age-dependency ratio (65 or over / 15-65 years old; %)	
	2009	2030	2009	2030	2009	2030
Austria	79.9	82.5	1.39	1.48	25.7	38.1
Czechia	77.3	81.7	1.49	1.41	21.2	35.7
Germany	80.3	83.2	1.36	1.42	30.8	46.2
Hungary	74.1	79.1	1.32	1.42	23.8	34.1
Italy	81.8	84.4	1.42	1.46	30.8	42.4
Poland	76.3	80.2	1.40	1.36	18.9	36.0
Slovakia	75.2	78.3	1.41	1.34	16.7	32.3
Slovenia	79.4	82.0	1.53	1.40	23.0	40.8
EU 27	79.4	--	1.60	--	24.5	8.0

Source: Demography report 2010¹⁷

It is possible to describe population development in Central Europe using not only demographic figures but also the key processes which influence it. Table 3 summarises the key challenges posed by contemporary demographic change in Central European countries. The particular demographic or socio-economic processes have to be considered in relation to basic demographic figures presented above in Table 1 and Table 2. In principle there is a convergence in population ageing: a less-aged society ages faster than a more-aged society. Population shrinkage is more regionally unequal, but in countries which are losing population as a whole, population shrinkage is a relevant process in almost all regions. It is important to stress that population changes not only occur in situ, but also are significantly influenced by changing spatial patterns of population distribution. Residential decentralisation from cities to their hinterland is a common process in former socialist countries.¹⁸ This process shapes population distribution especially in metropolitan regions which are macro-regional spaces of population concentration.

¹⁷ Ibid.

¹⁸ Sailer-Fliege, U. (1999): 'Characteristics of post-socialist urban transformation in East Central Europe.' *GeoJournal*, 49(1): 7-16.; Pichler-Milanovič, N., Gutry-Korycka, M., Rink, D. (2007): 'Sprawl in the post-socialist city: the changing economic and institutional context of central and eastern European cities. *Urban Sprawl in Europe: Landscapes, land-use change and policy*', 102-135.

Table 3: Key demographic processes and challenges in Central Europe¹⁹

Key demographic processes and challenges

Austria ²⁰	low fertility level average values of life expectancy moderate ageing
Czechia ²¹	relatively younger population, but the pace of ageing will be faster average fertility levels and life expectancy moderate shrinkage is expected in the near future population shrinkage in the peripheries decentralisation from cities to the hinterland
Germany ²²	already an aged population with a low ageing dynamic high life expectancy, but low fertility levels high out-migration and fast population shrinkage in eastern Germany possible shortage in the labour force
Hungary ²³	long-term population decline at the national level due to low fertility levels low levels of foreign migration, moderate out-migration de-concentration from cities to their hinterland life expectancy significantly below the EU-27 average high male mortality rate

¹⁹ The data described in this table and in subsequent parts of this report refer only to countries in Central Europe and parts of countries that are included in the Central European area.

²⁰ Kulu, H. (2008): 'Fertility and spatial mobility in the life course: evidence from Austria.' *Environment and planning A* 40(3): 632.; Wilson, T., Bell, M. (2004): 'Australia's uncertain demographic future.' *Demographic Research* 11(8): 195-234.

²¹ Rychtaříková, J. (2011): 'Demografické faktory stárnutí.' *Demografie* 53: 97-108.

²² Herfert, G. (2007): 'Regionale Polarisierung der demographischen Entwicklung in Ostdeutschland: Gleichwertigkeit der Lebensverhältnisse?' *RUR* 5: 1-21.; Lang, T. (2012): 'Shrinkage, metropolisation and peripheralisation in East Germany.' *European Planning Studies* 20(10): 1747-1754.; Gatzweiler, H-P., Meyer, K., Milbert, A. (2003): 'Schrumpfende Städte in Deutschland? Fakten und Trends.' *Informationen zur Raumentwicklung* 10/11: 557-574.; Gatzweiler, H-P., Milbert, A. (2009): 'Schrumpfende Städte wachsen und wachsende Städte schrumpfen.' *Informationen zur Raumentwicklung* 7: 443-455.; Brandsstetter, B., Lang, T., Pfeifer, A. (2005): 'Umgang mit der schrumpfenden Stadt – ein Debattenüberblick.' *Berliner Debatte* 16 (6): 55-68.

²³ Kulcsár, L. J. Brown, D. L. (2009): 'Public perceptions of population changes in Hungary.' *Eastern European Countryside* 15 (1): 23-36.; Cseh-Szombathy, L. (2003): 'Changes in demographic processes in Hungary.' *Demográfia: 5-20* [cit. 23. 10. 2014]. Available at: www.demographia.hu.

Key demographic processes and challenges

Italy ²⁴	<p>already an aged population with a low ageing dynamic</p> <p>high life expectancy, but low fertility levels</p> <p>high old-age-dependency ratio</p> <p>stable population due to significant immigration from abroad</p>
Poland ²⁵	<p>high levels of out-migration at the national level</p> <p>relatively younger population, but the pace of ageing will be faster</p> <p>population de-concentration from core cities to the suburban hinterland</p> <p>depopulation of peripheral rural areas</p> <p>life expectancy and fertility level below the EU-27 average</p>
Slovakia ²⁶	<p>relatively young population, but very low fertility levels</p> <p>fast population ageing is expected, especially in rural areas</p> <p>life expectancy below the EU-27 level</p> <p>population shrinkage at the national level is expected</p>
Slovenia ²⁷	<p>aged population with a slower pace of ageing</p> <p>population concentration in the metropolitan region of Ljubljana</p> <p>average life expectancy and fertility level of the EU-27</p> <p>depopulation of rural peripheries</p>

Source: Demography report 2010,²⁸ authors' analysis of scientific literature²⁹

²⁴ Vignoli, D., Rinesi, F., Mussino, E. (2013): 'A home to plan the first child? Fertility intentions and housing conditions in Italy.' *Population, Space and Place* 19(1): 60-71.;

²⁵ Kupiszewski, M. (2005): 'Migration in Poland in the period of transition – the adjustment to the labour market change.' *PIE Discussion Paper Series*. Central European forum for migration research.; Kurek, S. (2011): 'Double transitions? Regional patterns of population ageing in Poland.' *Geografiska Annaler: Series B, Human Geography* 93(2): 163-184.; Kurek, S., Lange, M. (2012): 'Urbanisation and changes in fertility pattern in Poland and in the selected countries of Western and Southern Europe.' *Bulletin of Geography. Socio-economic Series* 17: 77-85.

²⁶ Mládek, J., Čupeřlová, K. (2010): 'Population processes and structures in the urban and rural spaces of Slovakia.' *European Countryside* 3: 72-93.; Podolák, P. (1995): 'Interregional migration pattern in Slovakia: Efficiency analysis and demographic consequences.' *Geoforum* 26(1): 65-74.

²⁷ Bole, D., Gabrovec, M. (2012): 'Daily commuters in Slovenia.' *Geografski vestnik* 84(1): 171-185.; Korošec, V. (2005): 'Razvojni problemi podeželskih naselij Spodnjega Podravja.' *Geografski vestnik* 77 (2): 59-79.; Benkovič Krašovec, M. (2005): 'Razvojne možnosti naselij v depopulacijskih območjih glede na starostno sestavo gospodinjstev.' *Geografski vestnik* 77(2): 81-93.

²⁸ Demography Report 2010: Older, more numerous and diverse Europeans. European Commission, Commission staff working document, March 2011.

²⁹ Selected articles related to particular countries are quoted in footnotes.

The structure of demographic data analysis is divided into four parts. Firstly, basic information about actual population distribution in the NUTS 3 regions is presented. This is considered to be core information, which will be interwoven into the interpretation of all the other demographic indicators. The impact of population shrinking and population ageing is different in densely and sparsely populated areas as well as in metropolitan and non-metropolitan regions. Secondly, selected indicators of demographic ageing are discussed. The value of mean age and a change in mean age indicate the level and the pace of population ageing. Supplementary indicators of crude birth and death rates and the values of life expectancy are presented. Thirdly, selected indicators of population shrinkage are presented. The extent of population shrinkage is depicted by using absolute as well as relative indicators of population change. The values of the total fertility rate show serious risks for future population development, and the regional differentiation of unemployment illustrates the economically more and less advanced regions. Finally, core information about the distribution of and changes to the main age groups are included. The development of young and old age cohorts in relation to the working-age population indicates the level of economic dependency and gave us a clear picture about changes to the age-related infrastructure. The chapter about demographic data analysis is summarised with a short look at expected population development in the future.

It is recommended that the maps and the text be read together and linkages be sought between different types of indicators. The demographic development is not linear, but it is significantly shaped by different cohorts and generations. Therefore, in some cases the average value of an indicator is calculated and pictured in the map. The reason for this adjustment is to present a more accurate picture of demographic change in the longer term perspective. Further details about the data displayed and their interpretation by the authors of this study are described in the chapters below.

1.2.1 Population distribution

The main aim of this chapter is to describe basic population geography in Central Europe. Knowledge about spatial patterns of population distribution is a key precondition for understanding contemporary demographic changes and their consequences for society in regional perspective. This is considered to be core information which will be interwoven into the interpretation of all the other demographic indicators in subsequent chapters. The key reason why the basic population geography of Central Europe forms the introductory chapter of this study is because the impact of population shrinking and population ageing is different in distinct national contexts, in densely and sparsely populated areas and in metropolitan and non-metropolitan regions.³⁰ The unit of analysis are NUTS 3 regions as defined by Eurostat (updated version 2006). NUTS 3 regions are also units of analysis in this whole analytical part.

The chapter focuses on two different indicators which provide information about the spatial distribution of the population and about units of analysis. Firstly, basic information about total population distribution in NUTS 3 regions is presented. As the uneven areas of NUTS 3 regions visually distort the perception of population distribution a second map depicting population density in regions is presented. Additional notes on various regional typologies useful for the analysis of demographic changes in NUTS 3 regions are included.

³⁰ Marti-Hennenberg, J. (2005): 'Empirical evidence of regional population concentration in Europe, 1870-2000.' *Population, Space and Place* 11: 269-281.

1.2.1.1 Total population 2011

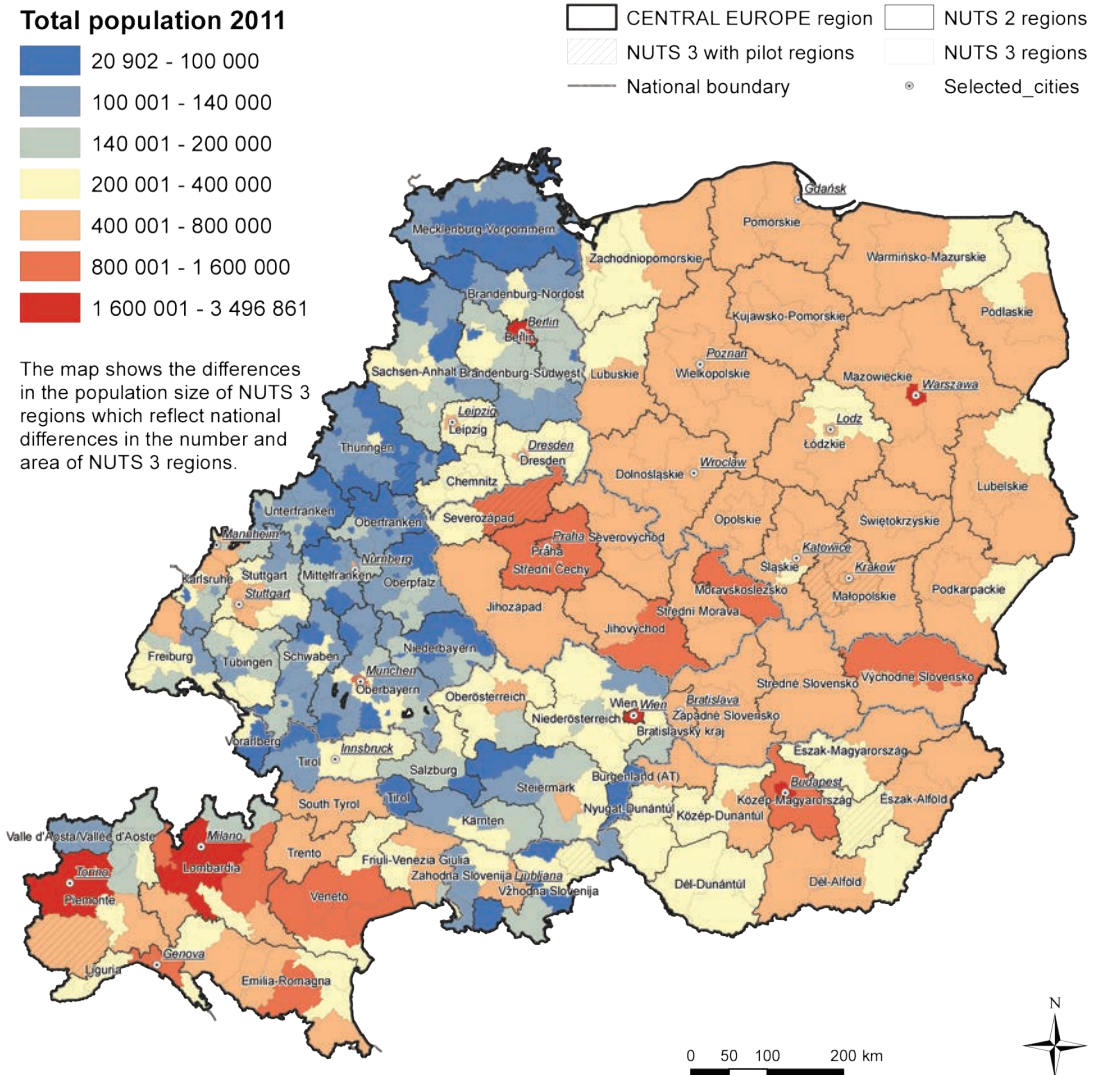
Map 1 shows the total population in NUTS 3 regions in 2011. The differences between populations in regions largely depend on how large or small an area the NUTS 3 region covers. There are notable differences in the average size of the area of a region between countries, which are the result of the historical development of NUTS 3 regions in different countries. Poland, Czechia, Slovakia and Hungary have relatively larger NUTS 3 regions which tend to have a more or less similar population size. Therefore, a typical NUTS 3 region in these countries includes one or more regionally important cities and its surrounding rural hinterland. Exceptions from this standard are regions of national capitals and a few other big cities which cover smaller areas and have a slightly bigger population size. Capital city and big city regions are often surrounded by another NUTS 3 region which is basically an urban hinterland and together can be conceived as a single metropolitan region (e.g. the Miasto Wrocław Region as a core city and Wrocławski Region as its hinterland). Slovenia, Austria and Italy have medium-sized regions. In Austria and Slovenia only regions which include big cities have a bigger population size (e.g. Osrednjeslovenska Region which includes the City of Ljubljana). The regions in Italy cover densely populated areas with a high number of cities and conurbations and therefore are bigger in population size. All the federal states in Germany have relatively small NUTS 3 regions. Whereas in other countries a regional city and its hinterland together usually form one NUTS 3 region, in Germany the regional city is usually one NUTS 3 region and the hinterland of a regional city is usually another NUTS 3 region. This distinction allows us to see in greater detail whether demographic processes are similar or different in urban and rural areas. As we have described, there are some differences in NUTS 3 delimitation in Central Europe, which reflect national and historical factors behind the development of this spatial statistical classification. These differences might lead in some cases to a possible variation in the explanation of spatial patterns describing demographic changes. As the authors of this study we will notify the reader in our interpretation of the maps if such a situation occurs.

It is of crucial importance to stress that the demographic situation in a region at the NUTS 3 level might not be characteristic for the whole area of a particular NUTS 3 region (see Chapter 2 for examples). Different, and partially even contradictory demographic changes and geographic processes altering the spatial distribution of the population may be going on at the same time. For example, consider Central Bohemia Region, which is a NUTS 3 region surrounding the capital city of Prague. There is intensive suburbanisation and population growth in its inner circle close to the City of Prague and long term out-migration and population decline in its outer border, which is too far for daily commuting to Prague.³¹ Therefore, for the correct interpretation of demographic development at the NUTS 3 level it is necessary to supplement the data presented with scholarly literature dealing with population geography or spatial demography in particular countries or regions. Several examples of population changes at LAU³² 1 or LAU2 level are presented in the chapters about pilot regions (chapter 4) and in the chapter defining population shrinkage at the sub-regional level (chapter 2).

³¹ Ouředníček, M., Temelová, J., Pospíšilová, L. eds. (2011): *Atlas sociálně prostorové diferenciacie České republiky*. Nakladatelství Karolinum, Praha.

³² LAU stands for Local Administrative Unit.

Map 1: Population distribution in Central Europe 2011

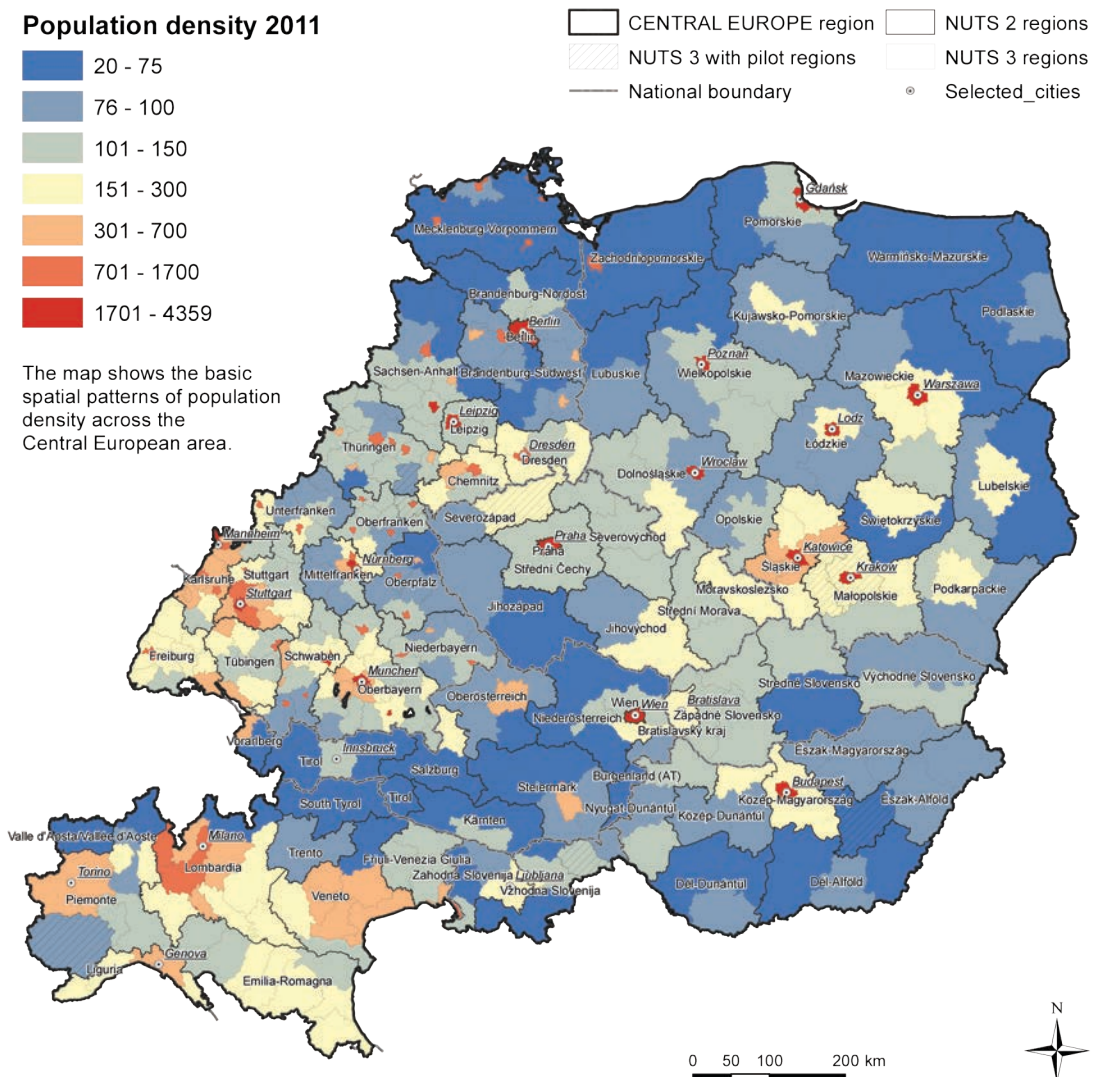


1.2.1.2 Population density 2011

Further information about the spatial distribution of the population is presented in Map 2 depicting the population density in NUTS 3 regions in 2011. Population density is defined as the average number of inhabitants per square kilometre in NUTS 3 regions. Map 2 shows the main urban centres and their metropolitan areas (e.g. Budapest and Pest region), the broader densely populated agglomerations (e.g. Slaskie in Poland or Stuttgart-Karlsruhe-Manheim in Germany), and less populated rural areas (e.g. Warminsko-Mazurskie in Poland or Burgenland in Austria). The impact of demographic change on the costs of infrastructure differs in densely and sparsely populated regions and also depends on the settlement structure in particular regions. For example, a decline in the total population in a highly urbanised region will result

in an increase in infrastructural costs per capita (public transport, water provision) or a decline in the number of services (schools, medical care), but does not jeopardise the provision of certain services per se. The commuting distance to services and their accessibility for inhabitants are still on a relatively acceptable level. The unused infrastructure and costs for its maintenance together with decreasing tax returns might pose serious challenges to local and regional governments. A different situation occurs in sparsely populated areas or regions with a fragmented settlement structure and with many small villages. In such regions a decline in the total population will also result in increasing infrastructural costs per capita and a decline in the number of services as in the previous case, but some services might become untenable or unsupported due to low population density, longer commuting distances and few potential customers (e.g. shops, schools, health care, public transport, etc.). Long-term or selective out-migration from such regions might lead to decreasing social capital and subsequently to decreasing ability of local populations to adapt to the changing situation.

Map 2: Population density in Central Europe 2011



1.3 Trends in population development

Key demographic and socio-economic indicators representing various population changes in Central Europe are presented in this chapter. In the first part indicators related to population ageing (mean age, birth rate, death rate, and life expectancy at birth) are dealt with. In the second part indicators related to population shrinkage (population change, total fertility rate, components of population change, unemployment level) are discussed. In the third part indicators using specific age groups are examined (young-age-dependency ratio, old-age-dependency ratio). In the last part the future outlook of population development in Central Europe is discussed. Each group of indicators is briefly introduced and the main lesson learned from their analysis is highlighted in the conclusion of the section. The individual indicators are always shown in the form of a map depicting the spatial patterns in NUTS 3 regions in Central Europe and respective commentary explaining the main features displayed.

Besides the demographic and socio-economic indicators presented later in this chapter, additional indicators were considered. The indicators of household size, immigration, outmigration, selective migration, commuting, housing vacancy share, capacity of primary schools, poverty rate, number of pensioners, and part-time employment were reviewed in Central European countries, but were not available in requested detail in all Central European countries and thus could not be used for comparative analysis. The indicator of active population was available with the requested detail but was not utilised in the analysis due to methodological problems.³³

Migration per se is not analysed directly in this study. Although migration shapes the demographic situation and development in regions, a) it is hard to predict its development in the next few years and b) migration cannot change the overall and general trends in Central Europe in the short- or medium-term horizon. An exception to this pattern can be metropolitan regions or parts thereof, which are attractive for foreign migration and a young labour force. Contemporary migration to CE countries from third countries is in numbers too low to mitigate the impact of demographic change. On the other hand, migration is indirectly taken into account in several places in the book. For example, a map of the components of population change (see Map 11) or of long-term population development (Map 8) includes the impact of migration at the level of NUTS 3 regions. On a regional level the migration balance and development are described in the chapter about pilot regions (chapter 4).

1.3.1 Indicators of ageing

The mean age of the population is considered to be the best measure of how certain populations age.³⁴ Not only the level of ageing but also the pace of ageing is crucial for an analysis of population development in general and population shrinkage in particular. The change in the mean age of the population measured in a decennial period shows a convergence between regions in Central Europe. Regions with a younger population tend to age more rapidly and vice versa. The faster pace of ageing also suggests that the concomitants of population ageing such as a growth in the number of people outside the labour force or an increase in retirement annuities

³³ The indicator was removed from the analysis due to the different definitions of 'active population' in Central European countries.

³⁴ d'Albis, H, Collard, F. (2013): 'Age groups and the measure of population aging.' *Demographic Research* 29(23): 617-640.

will rise more rapidly. Political representation and public administration in those regions thus will have less time to adapt to demographic changes. Supplementary indicators of the crude birth and death rates and the values of life expectancy are presented.

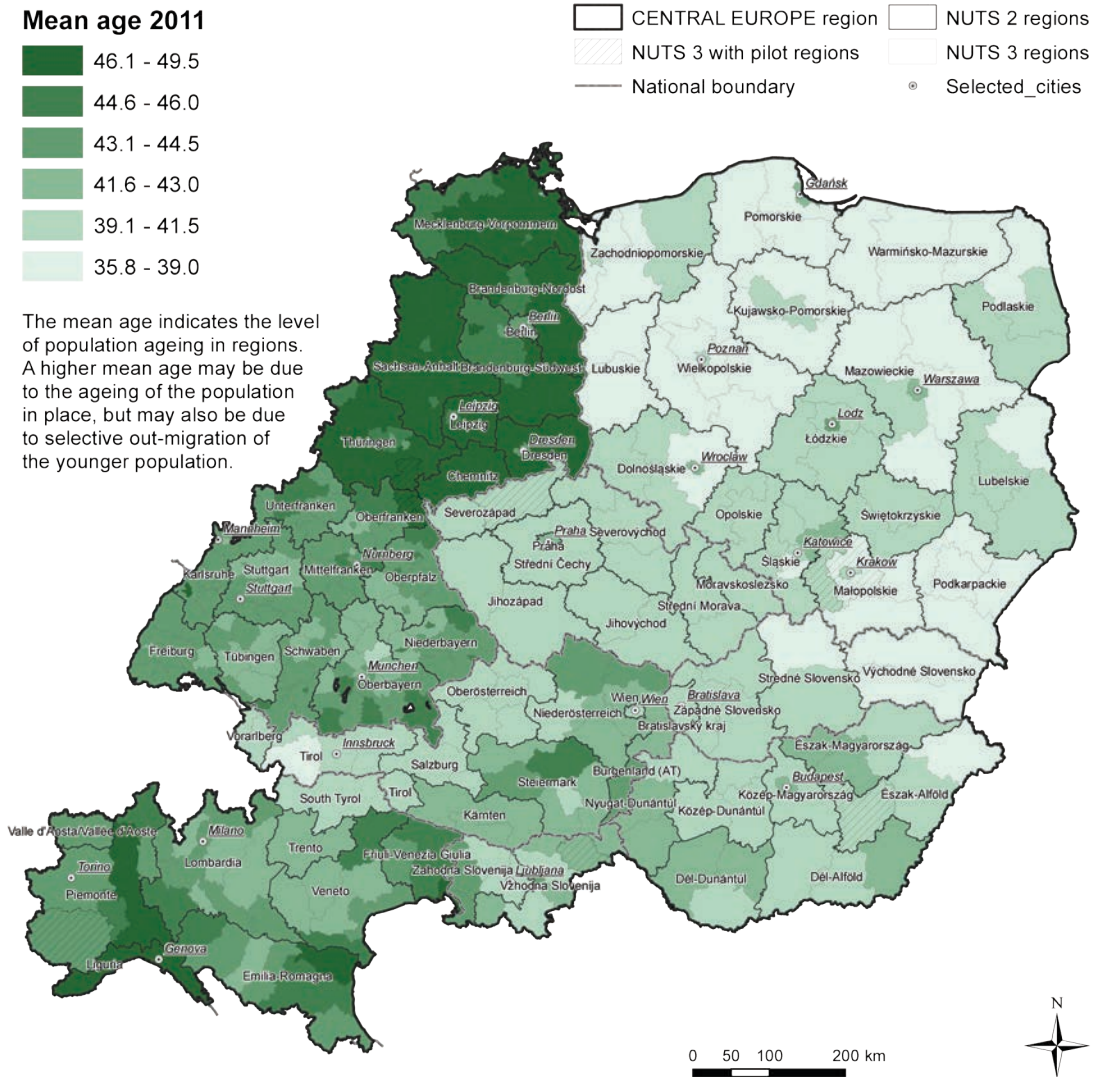
1.3.1.1 Mean age 2001

One of the key indicators for evaluating contemporary demographic changes is the mean age, which measures the level of population ageing. The indicator of mean age is defined as the mean value of the age of a certain population at a certain time.³⁵ A higher mean age indicates older populations. The difference between the youngest and the oldest region is almost 15 years. Map 3 depicts deep differences in mean age between Central Europe countries. At the country level there are three basic types of countries according to experiences with population ageing. The first group consists of Poland, Czechia, and Slovakia, which have fewer experiences with population ageing and their population age structures do not have a high number of elderly people. The difference in the mean age in this group of countries is largely the result of demographic and migration history. The urban-rural difference is not clearly visible due to the delimitation of NUTS 3 regions as an urban core together with its surrounding rural areas, although some Polish urban regions are slightly older in comparison with their hinterland. In the second group are Austria, Slovenia and Hungary, which can be characterised as medium-aged societies. Their mean age is higher and they also have bigger differences between younger and older regions. In the third group are Italy and Germany. Those countries have older populations and also some regions with very old populations (the mean age is higher than 45 years; e.g. Savona, Genoa, and Alessandria in Italy, or the majority of regions in former East Germany). Whereas in north Italy and in south Germany the high values of the mean age are the result of long-term ageing processes, the situation in former East Germany has been significantly shaped by extensive out-migration since the German Wiedervereinigung (re-unification).

At the regional level there are several noteworthy differences within countries. Polish, Czech, and Hungarian urban regions tend to be older than their surrounding regions due to the residential decentralisation of younger generations from cities to their hinterland. The metropolitan hinterland in such regions tends therefore to be relatively younger than in non-metropolitan areas. A similar situation is in Slovenia, where central regions close to Ljubljana also tend to have younger populations. The situation in Germany is different. In the eastern part the cities are relatively younger than the rural areas around them, but they are still relatively old compared to the Central European average. In the western part of Germany there is a more complex patchwork of younger and older regions. In general, urban and more peripheral regions tend to be older than average. In Austria mountain regions and rural regions have younger populations; only Steiermark, with exception of Graz Region and peripheral Burgenland, have older populations. To sum up, there are significant differences between countries in the level of population ageing. The level of population ageing within national borders is significantly shaped not only by migrations between regions but also by different urban-rural migration streams. It is assumed that the further advancement of population ageing could markedly change contemporary migration patterns.

³⁵ Mean age data were acquired from official demographic statistics. In the case where mean age data are not directly published in official statistics they were calculated from particular regional age structures. Mean age in a region is the sum of middle age values multiplied by the population sizes of respective age categories subsequently divided by the total population of a region. The middle age value is a theoretical middle value of a certain age group. For example, the middle age value for people aged 15 is 15.5; for people aged 30-34 it is 32.5.

Map 3: The level of population ageing in Central Europe in 2011



1.3.1.2 Changing mean age 2001-2011

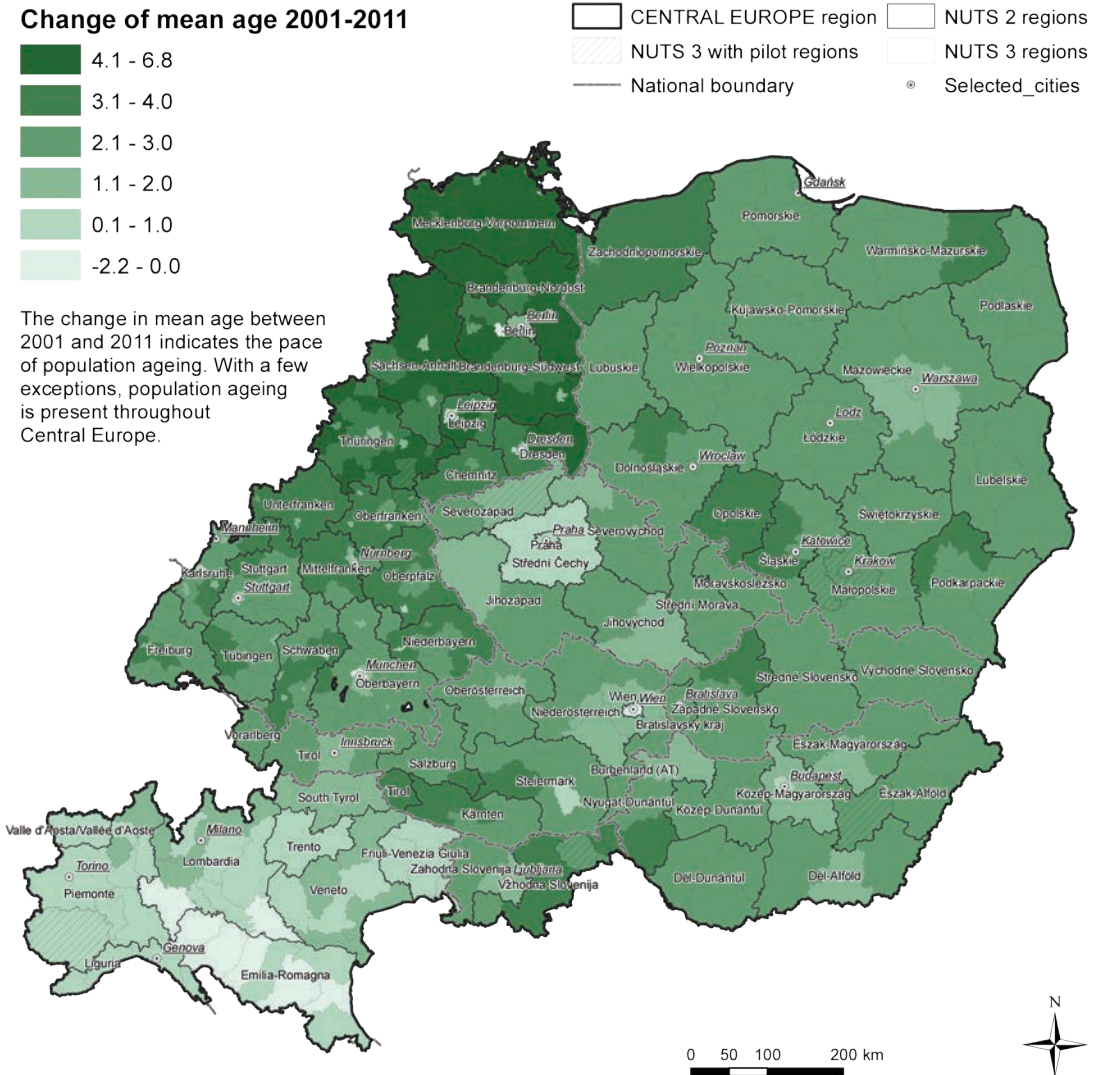
A supplementary indicator for evaluating contemporary demographic ageing is the changing mean age (2001-2011), which measures the pace of population ageing. The indicator of a changing mean age shows how quickly a relative share of older population cohorts grows or declines in relation to a relative share of younger population cohorts. Map 4 clearly shows that population ageing is a widespread phenomenon in Central Europe and the pace of ageing is fast. There are two exceptions to this pattern that need to be mentioned. At the country level there is a faster pace of ageing in eastern Germany, which is caused by the extremely high out-migration of the working-age population in the 1990s. A clear spatial division between former East and West Germany, as depicted in the map of the mean age in 2011, is more or less blurred and the pace of ageing is similar in Chemnitz Region, Thüringen, Unterfranken, Oberfranken or Oberpfalz. At the country level there is a slower pace of ageing in northern Italy, which is

the result of the positive net migration of working-age populations from other parts of the country.³⁶ Northern Italy is also one of the oldest regions in Central Europe, therefore the pace of ageing tends to be slower.

At the regional level the effect of ageing is lower in the metropolitan regions of national capitals and in some other second-tier metropolitan regions (e.g. Stuttgart, Innsbruck) due to their attractiveness for the younger labour force and for migrants. On the other hand, there are second-tier metropolitan regions which are ageing at an average level (e.g. Bratislava, Poznan, and Krakow) or at a higher than average level (e.g. Gliwicki, Bytomski and Tyski around Katowice), which might be indicative of a poor economic performance, making them less attractive to the younger labour force. To sum up, the pace of ageing is fast in almost all the regions in Central Europe and the differences between countries and regions are small. The only exceptions to this pattern are regions with long-term migration gains (e.g. northern Italy) and metropolitan regions significant at the European level. Second-tier metropolitan regions and non-metropolitan regions seem to follow the average pace of population ageing.

³⁶ Etzo, I. (2011): 'The determinants of the recent interregional migration flows in Italy: a panel data analysis.' *Journal of Regional Science* 51(5): 948–966.

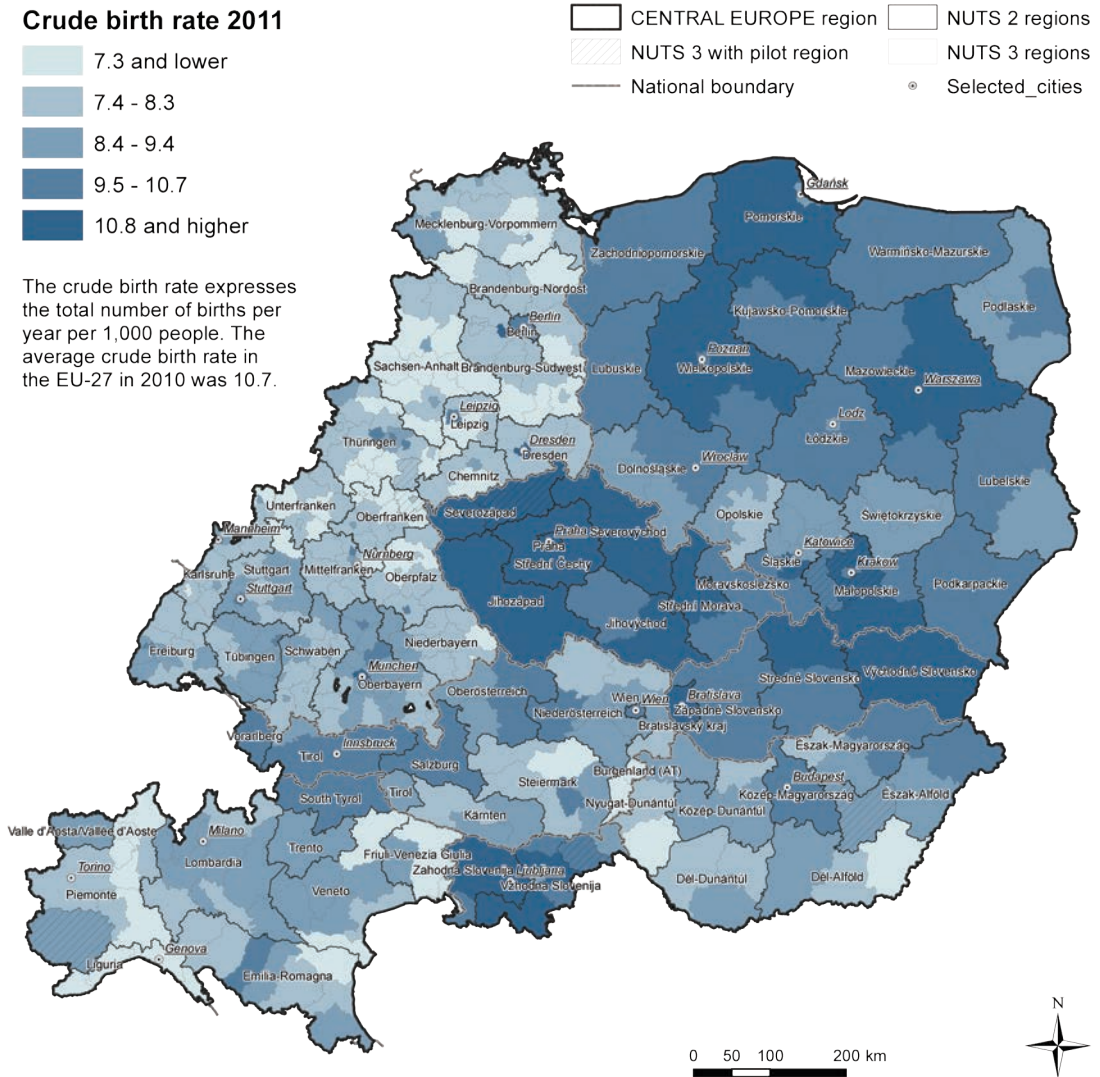
Map 4: The pace of population ageing in Central Europe 2001-2011



1.3.1.3 Crude birth rate 2011

A birth is a basic demographic event that is represented by natality. The number of births is an indicator from which other indicators can be calculated, e.g. age-specific values or relative demographic rates. Map 5 shows the crude birth rate in 2011. The crude birth rate expresses the total number of births per year per 1000 people. This indicator is relatively sensitive to short-term demographic fluctuations (e.g. changing number of women of fertile age). In the majority of regions the crude birth rate is not only below the EU-27 average (value 10.7), but it is low per se. Regions above the average are located in Poland, Czechia, Slovakia and Slovenia. The higher values in these regions are largely the result of past demographic development, as the populous cohorts born in the 1980s are now of child-bearing age.

Map 5: Crude birth rate in Central Europe in 2011

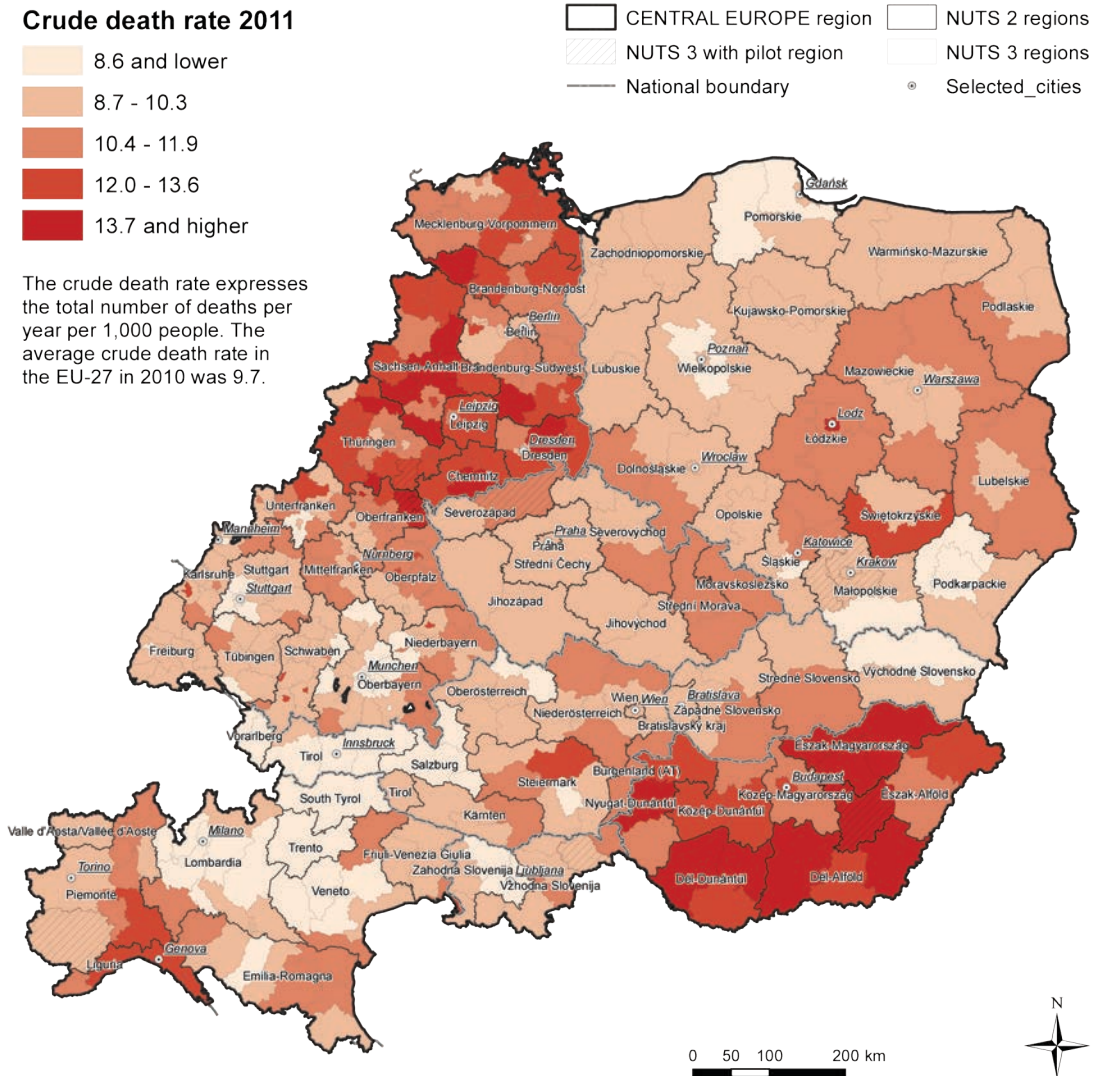


1.3.1.4 Crude death rate 2011

A death is a basic demographic event that is represented by mortality. The crude death rate expresses the total number of deaths per year per 1000 people. This indicator is also relatively sensitive to short-term demographic fluctuations. Map 6 shows the crude death rate in 2011. A higher crude death rate signals a higher share of older people in the population, who have a significantly higher probability of dying at a certain age or experienced the worse living conditions of population cohorts in the past, which increases the probability of dying at a certain age. The regional differences in crude death rate largely reflect the age structure of populations in regions. There is one special exception concerning former post-socialist countries and especially Hungary that warrants an explanation. In former socialist countries there was

'excess male mortality'.³⁷ It is well known from genetics and demography that the average length of life of males and females differs – females live on average a few years more. In former socialist countries this difference between males and females was much larger than in other developed countries. Hungary was one of the countries with very high excess male mortality and this pattern is still visible in the contemporary crude death rate.³⁸ The higher male mortality in former socialist countries is usually explained as being the result of unhealthy lifestyle habits and bad socio-economic and working conditions.³⁹

Map 6: Crude death rate in Central Europe in 2011



³⁷ Carlson, E., Hoffmann, R. (2011): 'The State Socialist Mortality Syndrome.' *Popul Res Policy Rev* 30: 355-379.

³⁸ Botev, N. (2012): 'Population ageing in Central and Eastern Europe and its demographic and social context.' *Eur J Ageing* 9:69-79.

³⁹ Cockerham, W.C. (1997): 'The social determinants of the decline of life expectancy in Russia and Eastern Europe: a lifestyle explanation.' *Journal of Health and Social Behavior* 38(2): 117-130.

1.3.1.5 Life expectancy 2011

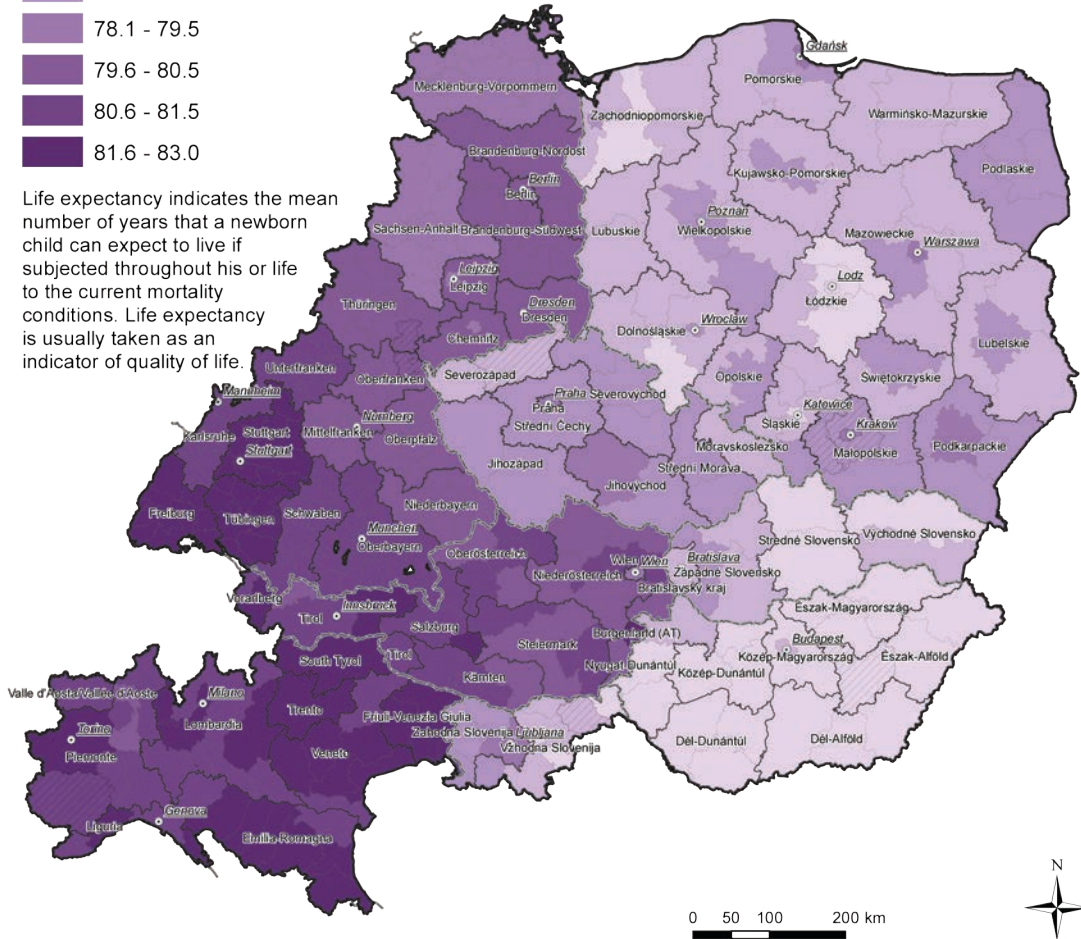
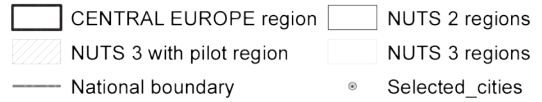
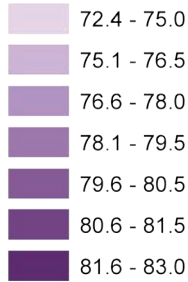
Life expectancy at birth is a synthetic indicator of quality of life which reflects past and current living conditions (the nature of jobs, quality of healthcare, economic and environmental conditions, etc.) and habits (consumption and eating habits, lifestyle, social conditions, etc.). Life expectancy is defined as the mean number of years that a new-born child can expect to live if subjected throughout his life to the current mortality conditions (age-specific probabilities of dying).⁴⁰ Life expectancy is a complex indicator which suggests the future prospects of certain populations if mortality conditions remain the same. The level of life expectancy is significantly shaped by various past and contemporary conditions in regions. From a demographic perspective a higher life expectancy means a longer period of healthy active life but also a longer period of life with a need for health-care services. It is important to note that rising life expectancy is often related to population ageing. More people living longer lives results in an increase in both the mean age of the population and life expectancy. Similarly, lower values of life expectancy also mean that the mean age of the population will also be lower (see the map 'Mean age 2011' for comparison).

Map 7 shows life expectancy at birth in 2011. The difference between the region with the highest and the region with the lowest life expectancy is ten years. At the country level the map shows a clear division between former western (four highest categories) and eastern countries (four lowest categories). In western countries (Germany, Austria, Italy) the level of life expectancy is very high with small regional differences. Less populated regions (Sachsen-Anhalt, Mecklenburg-Verpommern) have lower life expectancy, probably due to less accessible health services. In eastern countries (Poland, Czechia, Slovakia, Hungary, Slovenia) the level of life expectancy is lower and has a different spatial pattern. In general, urban regions tend to have higher levels of life expectancy (e.g. Prague, Budapest, Krakow, Gdansk, Ljubljana), but there are several exceptions with a lower level of life expectancy covering regions with heavy industry or mining (Severozápad and Moravskoslezsko in Czechia, Slaskie and Lodskie in Poland, Stredné a Východné Slovensko). Higher levels of life expectancy are also found in some traditionally rural regions (Podlaskie, Podkarpackie in Poland, and Vysočina in Czechia). In Slovenia higher levels of life expectancy are in urban regions, whereas lower levels of life expectancy are in remote rural areas. In Hungary life expectancy is generally low in all regions.

⁴⁰ Manton, K.G., Stallard, E., Tolley, D.H. (1991): 'Limits to human life expectancy: evidence, prospects, and implications.' *Population and Development Review* 17(4): 603-637.

Map 7: Life expectancy at birth in Central Europe in 2011

Life expectancy 2011



Life expectancy indicates the mean number of years that a newborn child can expect to live if subjected throughout his or life to the current mortality conditions. Life expectancy is usually taken as an indicator of quality of life.

1.3.2 Indicators of shrinking

The shrinking regions in Central Europe are briefly introduced in this chapter and further focused on in chapter 2. Population change between 1991 and 2011 shows spatial patterns of population distribution in a longer-term perspective. The key role of nationally significant metropolitan regions and spaces of concentration at the European level is highlighted. The extent of population shrinkage is depicted by using absolute as well as relative indicators of population change. The values of the total fertility rate show serious risks for future population development,⁴¹ as all the regions in Central Europe have a fertility level significantly below that required for natural population replacement. The additional indicator of regional differentiation of unemployment illustrates the economically more and less advanced regions. It is assumed that migration streams are usually motivated by the economic considerations of migrants.⁴² Therefore, migration is more likely to flow from peripheral to metropolitan regions. (It is known, however, that every migration current has its opposite current. The migration of younger cohorts to urban areas is partly offset by the migration of older cohorts to rural areas.⁴³) It should also be noted that not all metropolitan regions are growth poles and attract a surplus labour force.

1.3.2.1 Population change 2011/1991

The map 'Population change 2011/1991' shows the basic pattern of population growth and decline in the last two decades. It can be compared to the map presenting shrinking regions (see chapter 2), which shows the 2011/2001 period and thus visualises a shorter-term perspective. The use of a longer time period in this map might draw our attention to generational effects and help us to interpret changes in population distribution. By comparing the population change between 1991 and 2011 with the population change between 2001 and 2011 the relative stability of macro-regional patterns of population growth and shrinkage can be seen. Although this does not mean that there are no changes in population distribution within NUTS 3 regions. Examples of sub-regional variations of demographic change are visualised on maps defining shrinking regions at the sub-regional level (see chapter 2). At the regional level population decline has advanced mostly in East German, Polish, and Hungarian regions. There are also smaller areas of population decline in other countries. It is important to note that population decline occurred in all types of regions – in rural, intermediate, and urban regions.⁴⁴ The spatial distribution of regions with a growing population can be described as follows: At the macro level, there is a belt of growing regions from the Italian north through Austria to south Germany. These regions rank among regions with a higher GDP per capita and higher disposable income in comparison with other Central European regions. In Poland, Czechia, Slovenia and Hungary the regions surrounding national and bigger regional urban cores are growing, whereas the urban cores itself might be experiencing population decline. In Slovakia there are growing regions in north and east due to younger population structures and higher levels of fertility.

⁴¹ Morgan, S.P. (2003): 'Is low fertility a twenty-first-century demographic crisis?' *Demography* 40(4): 589-603.

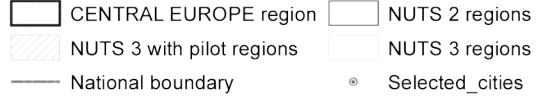
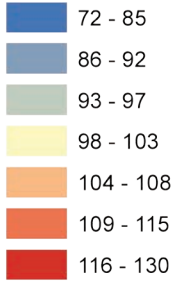
⁴² Zelinsky, W. (1971): 'The hypothesis of the mobility transition.' *Geographical Review* 61(2): 219-249

⁴³ Brown, D. L., Glasgow, N. (2008): 'Rural retirement migration.' *Series: The Springer Series on Demographic Methods and Population Analysis* 21(XII), 222 pp.

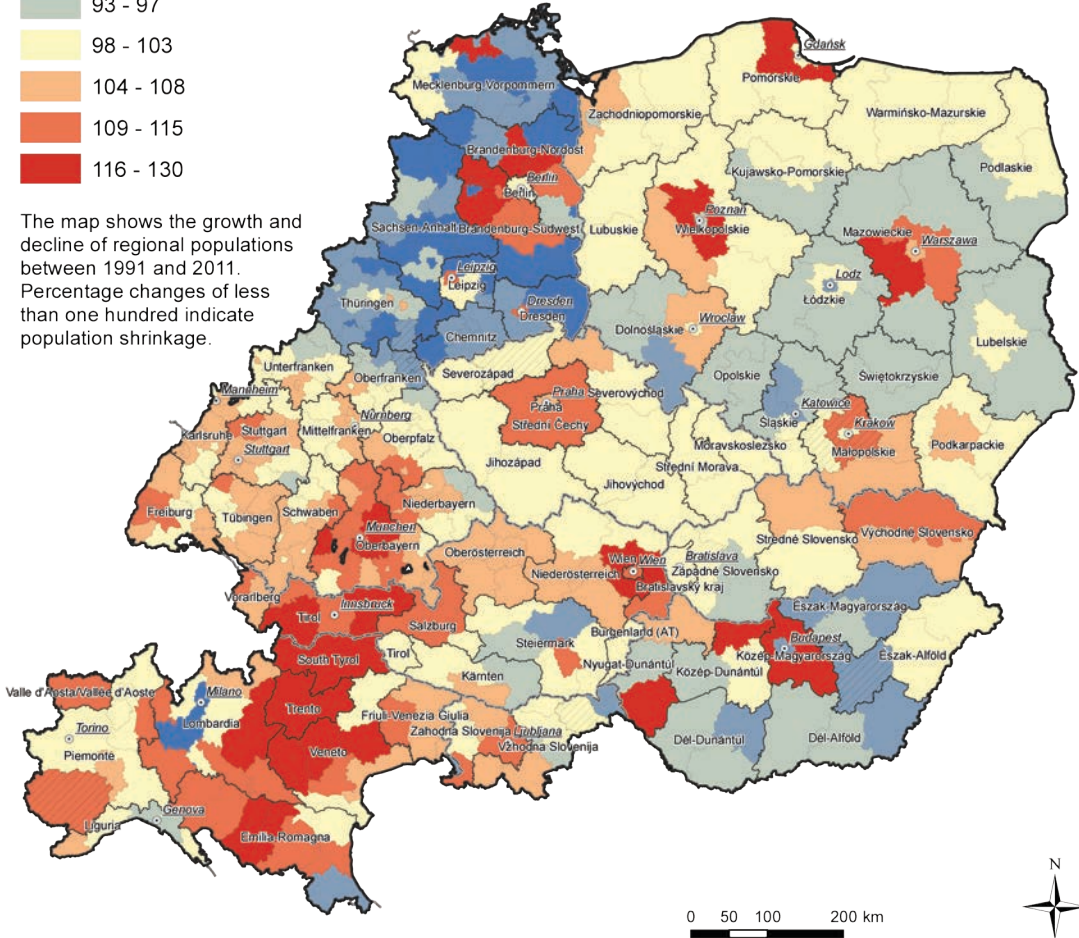
⁴⁴ See ESPON 2013 typologies in the Annex.

Map 8: Population development in Central Europe 1991-2011

Population change 1991-2011 (%)



The map shows the growth and decline of regional populations between 1991 and 2011. Percentage changes of less than one hundred indicate population shrinkage.



1.3.2.2 Total fertility rate

The map of the total fertility rate provides a rather pessimistic picture of contemporary and future population development in Central Europe (Map 9). The total fertility level indicates the mean number of children that would be born alive to a woman during her lifetime if she were to pass through her childbearing years conforming to the fertility rates by age in a given year. The total fertility rate is also used to indicate replacement level fertility. In developed countries a rate of 2.1 is considered to be replacement level.⁴⁵ The development of the total fertility rate indicates the future prospect of possible population changes. Total fertility rates below replacement level mean that the current population is not sufficiently reproducing itself, i.e. it is prone to a decline in total population size. The impact of foreign migration is not taken into account in this case. Regions with a low total fertility rate (that is a rate less than 2.1), which is the case of all NUTS 3 regions in Central Europe, are more prone to population shrinking and ageing. The total fertility rate map presents the average rates in 2001 and 2011. The reason for this adjustment is the development of total fertility levels in former socialist countries. After the fall of the socialist regimes fertility levels declined rapidly to extremely low values.⁴⁶ Uncertain expectations about the future and insecure economic conditions led people to delay starting a family. The average age of a woman having her first child rose significantly.⁴⁷ After this initial decline the total fertility rate increased and stabilised at the average level, which is close to the average in former western countries, but still markedly below replacement level. The regional differences in total fertility rate reflect differences in demographic behaviour. In principle, urban regions tend to have lower fertility levels whereas rural regions tend to have higher fertility levels (e.g. Východné Slovensko, north east Poland), but the current situation in Central Europe shows a more complex pattern. The slight increase in the total fertility rate observed in recent years may, in part, be attributed to a catch-up process following on the general pattern of postponing having children.⁴⁸ The highest mean age of women at childbirth is in Italy (31.4), Germany (30.4) and in Slovenia (30.1) (Eurostat 2011).

⁴⁵ Lesthaeghe, R., Willems, P. (1999): 'Is low fertility a temporary phenomenon in the European Union?' *Population and Development Review* 25(2): 211–228.

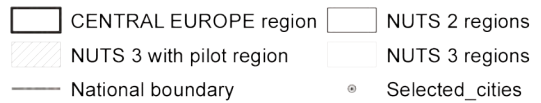
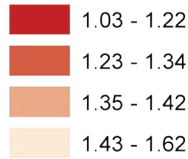
⁴⁶ Frejka, T., Sobotka, T. (2008): 'Overview chapter 1: fertility in Europe: diverse, delayed and below replacement.' *Demographic Research*, 19(3): 15-46.

⁴⁷ Matthews, T. J., Hamilton, B. E. (2009): 'Delayed childbearing: more women are having their first child later in life.' NCHS data brief, (21), pp. 1-8.

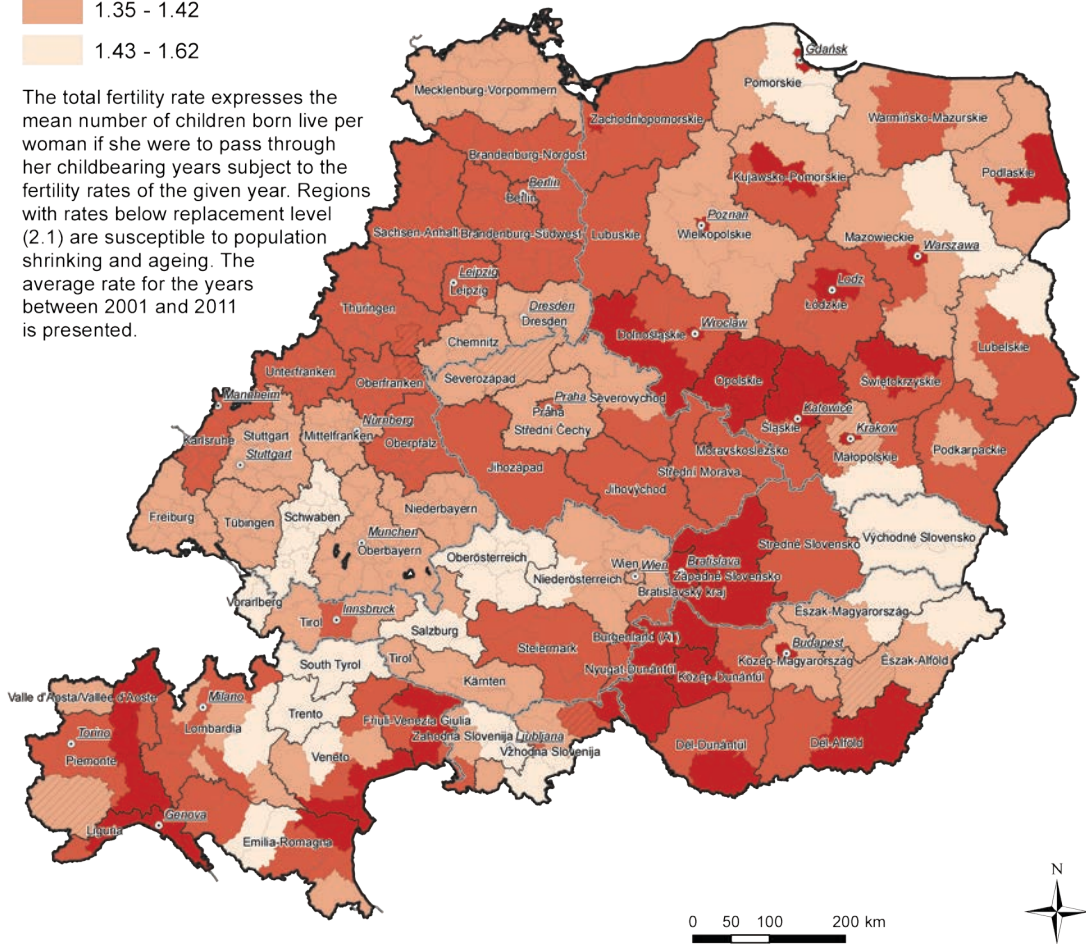
⁴⁸ Lutz, W., Skirbekk, V., Testa, M. R. (2006): 'The low-fertility trap hypothesis: Forces that may lead to further postponement and fewer births in Europe.' *Vienna Yearbook of Population Research*, 167-192.

Map 9: Total fertility rate in Central Europe in 2011

Total fertility rate



The total fertility rate expresses the mean number of children born live per woman if she were to pass through her childbearing years subject to the fertility rates of the given year. Regions with rates below replacement level (2.1) are susceptible to population shrinking and ageing. The average rate for the years between 2001 and 2011 is presented.



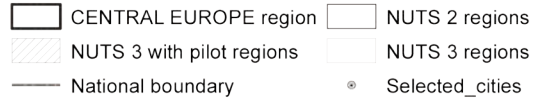
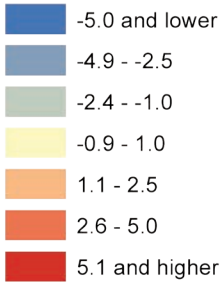
1.3.2.3 Crude rate of population change

The crude rate of population change is calculated as the difference between the crude birth rate and the crude death rate. The crude birth rate is defined as the number of live births in the population of a given geographical area during a given year per 1,000 inhabitants of the same region. The crude death rate is defined as the number of deaths in the population of a given geographical area during a given year per 1,000 inhabitants of the same region. The average value of the crude rate of population change in the years 2001 and 2011 is presented. A positive crude rate of population change means that natural change in the region produces additional population and these regions have growth potential. A negative crude rate of population change means that natural change in the region is not sufficient to reproduce the current total

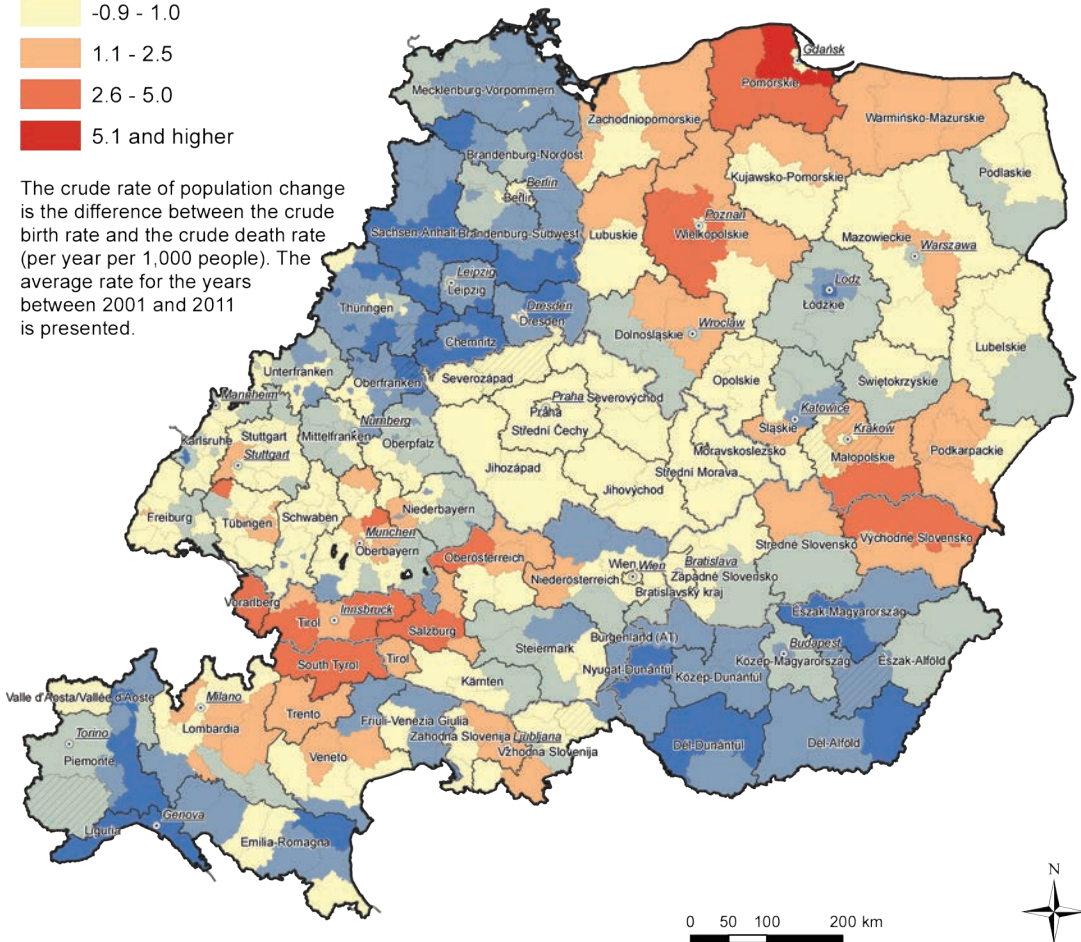
population and the region is susceptible to population shrinkage. It is important to note that the crude rate of population change does not take into consideration migration per se, only the impact of past migration on current rates of natural change. By comparing this map with the map depicting population change in 2001-2011 (see chapter 2) the effect of migration on demographic change in regions can be seen; see Map 11.

Map 10: Relative rate of population change in Central Europe in 2011

Crude rate of population change



The crude rate of population change is the difference between the crude birth rate and the crude death rate (per year per 1,000 people). The average rate for the years between 2001 and 2011 is presented.



1.3.2.4 Components of population change

The map of components of population change below classifies all regions into nine different categories according to their population development and their natural change (Map 11). It allows us to distinguish whether the region is shrinking (growing) due to natural change or due to migration (regions with population growth, but with negative natural change). Three categories of change in the total population between 2001 and 2011 measured in relative terms can be distinguished (left-right axis): population decline (less than minus two per cent), a stable population (more than minus two per cent and less than two per cent), and population growth (more than two per cent). Similarly, the average value of the crude rate of natural change in the years 2001 and 2011 is divided into three groups on the top-bottom axis: negative natural change (less than minus one per cent), stable natural change (from minus one to one per cent), and positive natural change (more than one per cent). The number of regions in certain categories is noted in the component matrix. From a regional perspective the map shows that a large number of Italian regions experienced population growth despite their negative natural change. This is due to migration from other parts of the country and from abroad. A similar situation is in the north-western regions of Hungary and the metropolitan hinterland of Berlin. Shrinking regions with a negative natural change cover most of the eastern German and Hungarian regions; a large share of non-metropolitan regions in Poland, middle-south Austria and south-west Slovakia. It is worth noting that none of the shrinking regions had a positive crude rate of natural change.

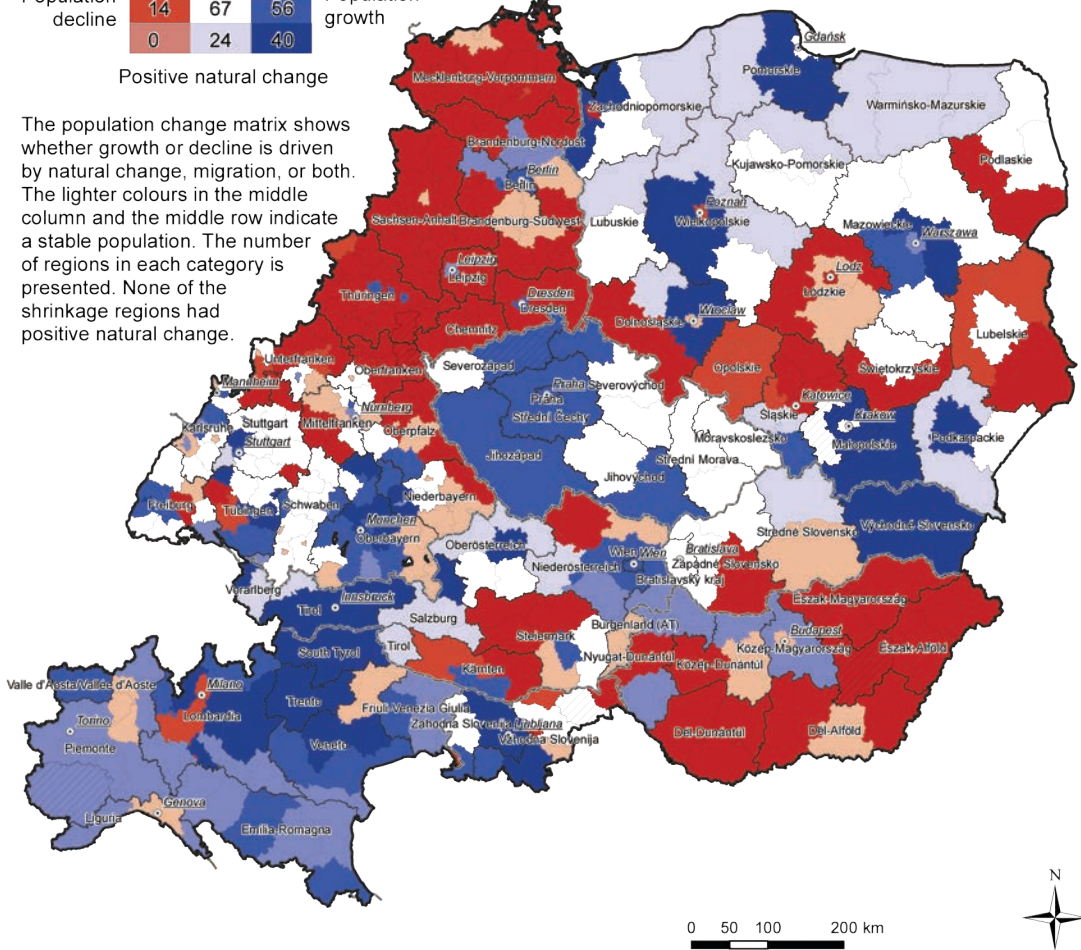
Map 11: Natural change and migration as components of population change in Central Europe 2001-2011

Components of population change (2001-2011)

		Negative natural change			Population growth		
Population decline	132	49	42				
	14	67	56				
	0	24	40				
		Positive natural change					

- CENTRAL EUROPE region
- NUTS 3 with pilot regions
- NUTS 2 regions
- NUTS 3 regions
- National boundary
- Selected cities

The population change matrix shows whether growth or decline is driven by natural change, migration, or both. The lighter colours in the middle column and the middle row indicate a stable population. The number of regions in each category is presented. None of the shrinkage regions had positive natural change.

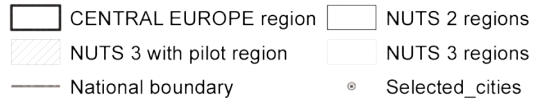
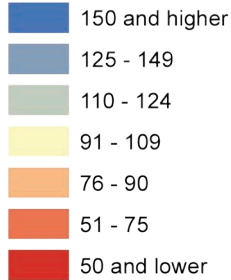


1.3.2.5 Relative rate of unemployment

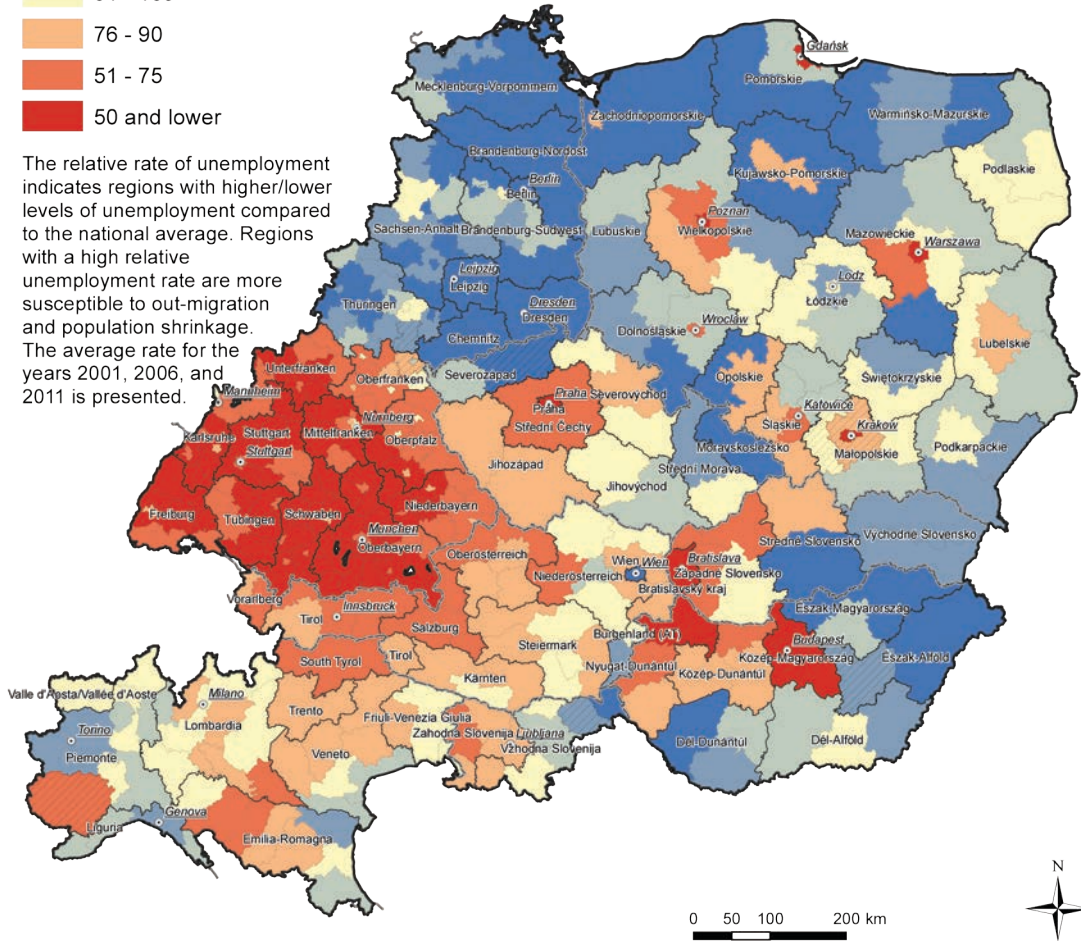
The unemployment rate can be interpreted as an indicator of the economic performance of a region. Regions with low economic performance and high unemployment are prone to out-migration of working-age people and therefore are more vulnerable to demographic shrinkage. Accordingly, regions with low unemployment and a low supply of jobs are predisposed to attract further work-related migrants. Regions with high unemployment of young people are particularly prone to out-migration and shrinkage. In most regions that were already defined as shrinking regions the unemployment of young people is the highest in the country. The indicator displayed in the map requires a brief methodological comment. In the first step we collected three-year average data for the years 2001, 2006 and 2011 (average value in every year) in order to eliminate annual effects. In the second step we decided to calculate the average value of the unemployment rate from longer-term data (2001, 2006 and 2011) in order to have one number characterising the unemployment level in a longer perspective in each region. Because national definitions of the unemployment rate differ and methodological changes in the measurement of unemployment occurred, the level of unemployment in regions was related to the national average value and deviations from this value were expressed in relative terms. Therefore, only differences within countries are displayed in the map. From all countries only regions included in the Central European area were taken into account. The map 'Relative rate of unemployment' shows a marked difference between the former East and parts of West Germany and relatively small differences between regions in Italy and Austria. In Slovakia, Hungary, and Slovenia an east-west gradient in unemployment levels is visible. In Czechia peripheral regions and regions with former mining areas shows higher levels of unemployment. In Poland the division between urban and rural regions seems to be a key variable influencing unemployment levels.

Map 12: Average value of the relative rate of unemployment in countries in Central Europe 2001-2011

Relative rate of unemployment (%)



The relative rate of unemployment indicates regions with higher/lower levels of unemployment compared to the national average. Regions with a high relative unemployment rate are more susceptible to out-migration and population shrinkage. The average rate for the years 2001, 2006, and 2011 is presented.



1.3.3 Age group indicators

A more detailed analysis of particular age groups and cohorts shed further light on population shrinkage and population ageing in regions and their dynamics. The old-age-dependency ratio and young-age-dependency ratio indicate the current level of economic dependency. Knowledge of the distribution of the population into different age subgroups is very important for economic reasons.⁴⁹ The major state/regional government redistributive mechanisms like the pension system or the health-care system are significantly affected by the number of people contributing to the system via taxes and the number of people benefiting from the system via various subsidies. The development of young and old age cohorts gives us a clear picture of changes to age-related infrastructure like schools or nursing homes. Not only the number of such facilities is at stake, but so too are their regional distribution, accessibility and affordability for users.

1.3.3.1 Old-age-dependency ratio 2011

The close linkage between the economy and demography is expressed in age-dependency ratios. In principle, the old-age-dependency ratio shows how many older people are in a region in relation to the working-age population in that region (Map 13). In our case the old-age-dependency ratio is defined as the share of people aged 65 and over in relation to people aged 20 to 65. The age groups selected approximately express the transitions from pre-productive age⁵⁰ (aged less than 20 years) to productive age (aged 20 to 65 years) and to post-productive age⁵¹ (aged 65 and over). Such an assumption is justifiable in the case of the Central European area, although national and regional differences in average age when people join the labour market or leave for retirement exist.⁵² Alternatively, data about the economically active population might be used instead of the 20 to 65 age group. Such data are available but they are not readily comparable across countries due to methodological differences. The regional patterns of the old-age-dependency ratio in 2011 are very clear. Countries with a younger population and lower life expectancy such as Poland and Slovakia have a low old-age-dependency ratio. Slovenia, Czechia and Hungary have a medium old-age-dependency ratio, but as in the two previous countries it is expected that the value of the old-age-dependency indicator will rise in the next decade. The highest levels of the old-age-dependency ratio are in the East part of Germany. In general, the differences in the old-age-dependency ratio between regions in Central Europe are high. In the youngest regions there are one or two post-productive persons (aged 65 and over) to ten people of working age (aged 20 to 65), whereas in the oldest regions there are three or four post-productive persons to ten people of working age. This finding poses a high risk for the welfare redistribution system in less economically advanced countries, but, on the other hand, they can learn from countries which are currently a few steps ahead in the process of demographic ageing and population shrinking.

⁴⁹ Weber, L. (2010): *Demographic Change and Economic Growth: Simulations on Growth Models*. Physica Verlag - Springer, Heidelberg, 270 pp.

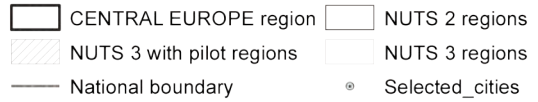
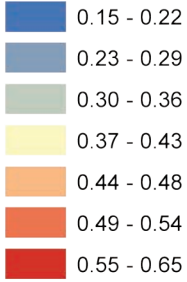
⁵⁰ The term 'pre-productive' means before entering the labour market.

⁵¹ The term 'post-productive' means after leaving the labour market.

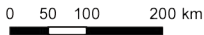
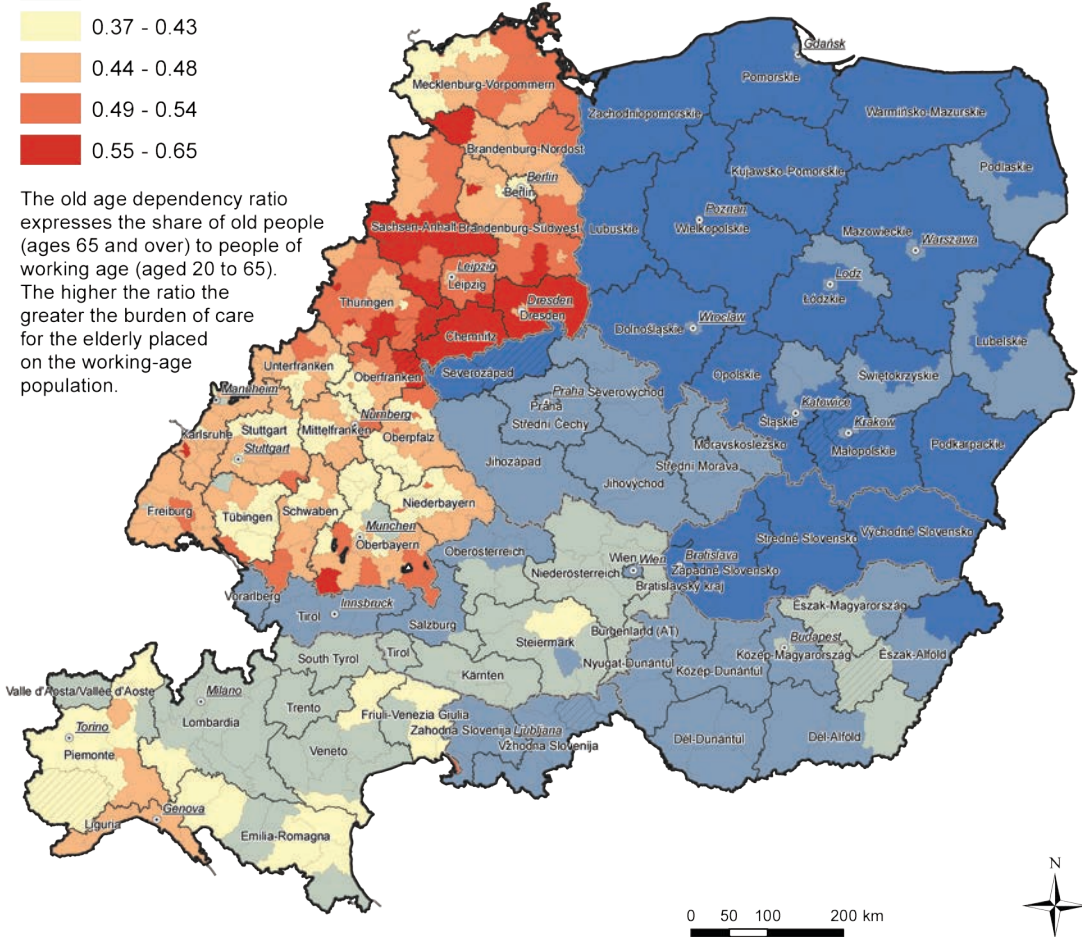
⁵² Siegrist, J., Wahrendorf, M., Von dem Knesebeck, O., Jürges, H., Börsch-Supan, A. (2007): 'Quality of work, well-being, and intended early retirement of older employees—baseline results from the SHARE Study.' *The European Journal of Public Health*, 17(1) 62-68.

Map 13: Old-age-dependency ratio in Central Europe in 2011

Old age dependency ratio 2011



The old age dependency ratio expresses the share of old people (ages 65 and over) to people of working age (aged 20 to 65). The higher the ratio the greater the burden of care on the elderly placed on the working-age population.



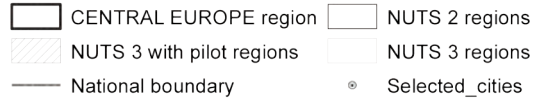
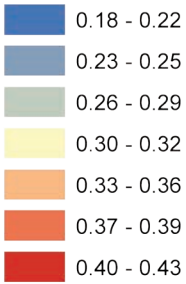
1.3.3.2 Young-age-dependency ratio 2011

Like the old-age-dependency ratio, the young-age-dependency ratio is defined as the share of people aged less than 20 in relation to people aged 20 to 65 (Map 14). The age groups selected approximately express the transitions from pre-productive age (aged less than 20 years) to productive age (aged 20 to 65 years). A low young-age-dependency ratio suggests that a region might have problems with its labour force supply in the future. A higher young-age-dependency ratio indicates positive perspectives for future demographic development. Whereas the border between former Eastern and Western Europe was clearly visible in the old-age-dependency map, in the map of the young-age-dependency ratio it is not that clear. The average ratio of young people (aged less than 20 years) to the working-age population (aged 20 to 65) in regions is around 30 to 35 per cent. The exceptions from this pattern are East German regions where the young-age-dependency ratio is under 25 per cent. Another exception are the cores of metropolitan regions (München, Poznan, Bratislava), which tend to have an above average level of working-age populations and therefore also have a lower young-age-dependency ratio. The north Italian regions rank among regions with a low young-age-dependency ratio and a relatively small change in mean age 2001-2011, which is the result of positive net migration of working-age populations from other parts of the country.⁵³ Evaluation of the young-age-dependency ratio reveals the risk of a possible shortage of labour force in the coming years and also the risk of a mismatch between the education of the young population and the structure of jobs available and demanded in regions.

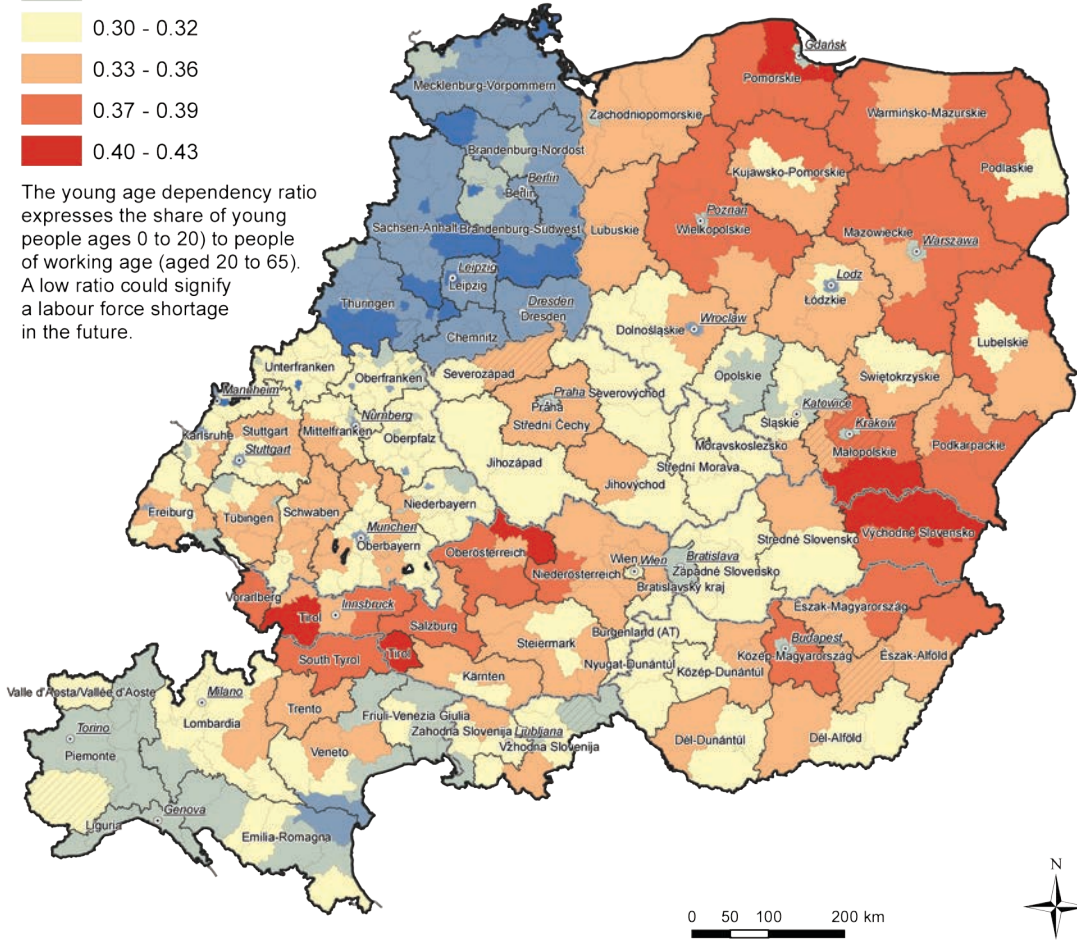
⁵³ Etzo, I. (2011): 'The determinants of the recent interregional migration flows in Italy: a panel data analysis.' *Journal of Regional Science* 51(5): 948–966.

Map 14: Young-age-dependency ratio in Central Europe in 2011

Young age dependency ratio 2011



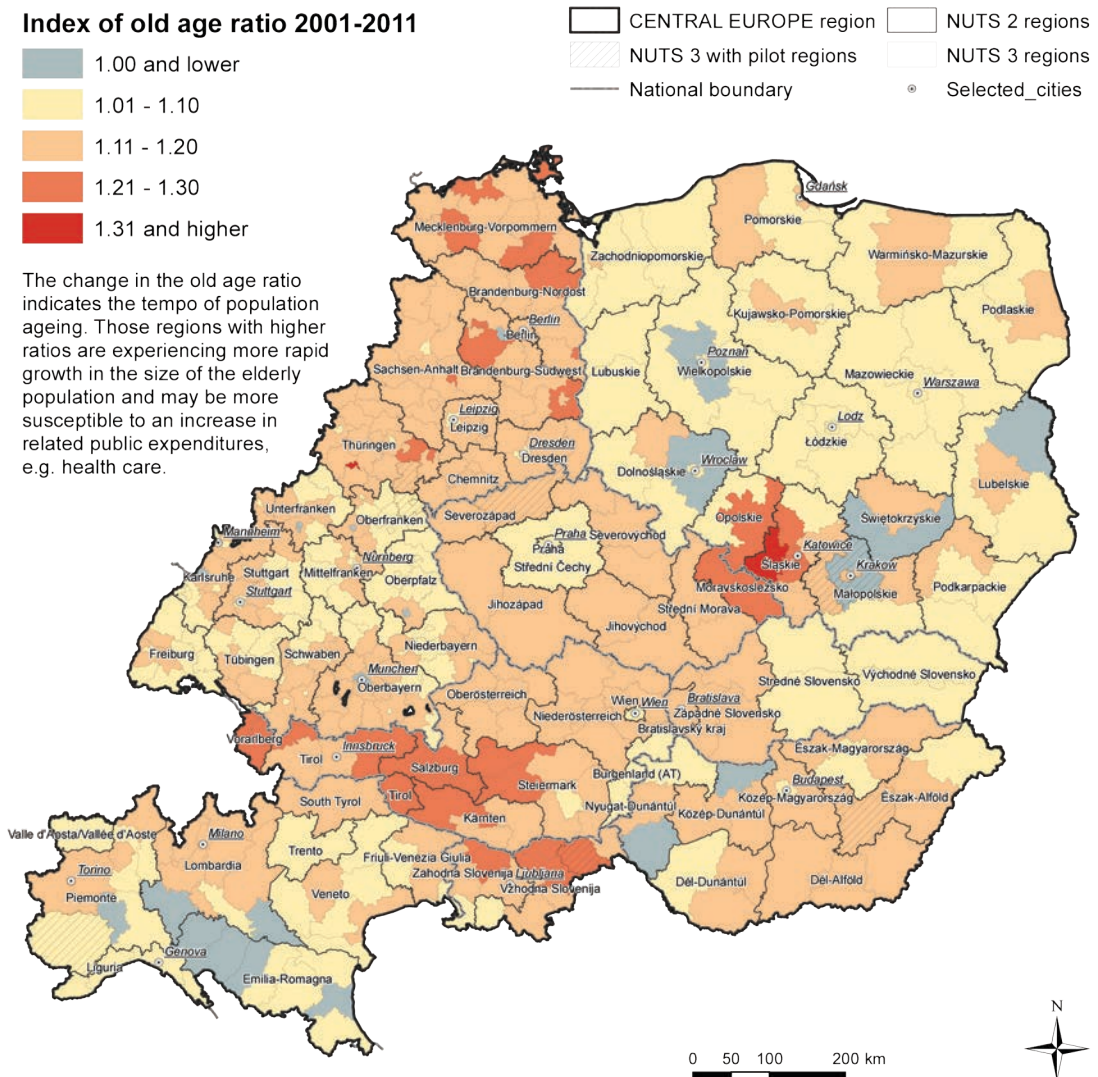
The young age dependency ratio expresses the share of young people ages 0 to 20) to people of working age (aged 20 to 65). A low ratio could signify a labour force shortage in the future.



1.3.3.3 Index of the old-age ratio 2001-2011

The index of the old-age ratio shows a change in the share of old people aged 65 and over between 2001 and 2011 (Map 15). There has been more than ten per cent growth in the number of old-aged people in the majority of Central European regions in the decennial period, which indicates a fast pace of population ageing. From a regional perspective the growth has been slightly slower in the Polish and Slovak regions due to the younger age structure there, and also in the north Italian and south German regions, which already had a relatively old age structure in 2001. Regions in which the old-age ratio increased more rapidly experienced faster growth of older population cohorts and may be more susceptible to an increase in age-related public expenditures, e.g. health-care expenditures, pension systems, etc.

Map 15: Development of the old-age ratio in Central Europe in 2001-2011



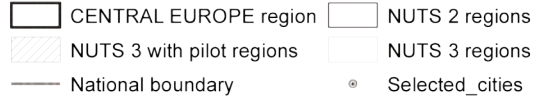
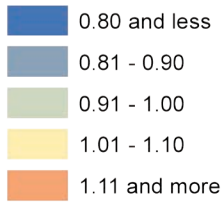
1.3.3.4 Index of the young-age ratio 2001-2011

The index of the young-age ratio shows a change in the share of young people aged less than 20 years between 2001 and 2011 (Map 16). All the regions in Central Europe except the Italian ones experienced a decrease in the number of young people in relation to the working-age population. Therefore, a shortage of new labour is to be expected in the majority of regions in Central Europe. Decreasing numbers of young people cannot be fully replaced by migration from third countries;⁵⁴ migration from neighbouring regions is also not a viable alternative since they face similar problems with a shortage of young population entering the labour force. On the macro-regional level there is a clear north to south gradient, and the Polish, East German and Slovak regions experienced the biggest decrease. Specific positions in this macro-regional pattern are occupied by the metropolitan regions, which tend to attract younger populations and thus experience a smaller decrease in the share of young people. Although this is not true for all metropolitan regions, some smaller metropolitan regions do not differ in terms of the index of the young-age ratio from their surrounding regions.

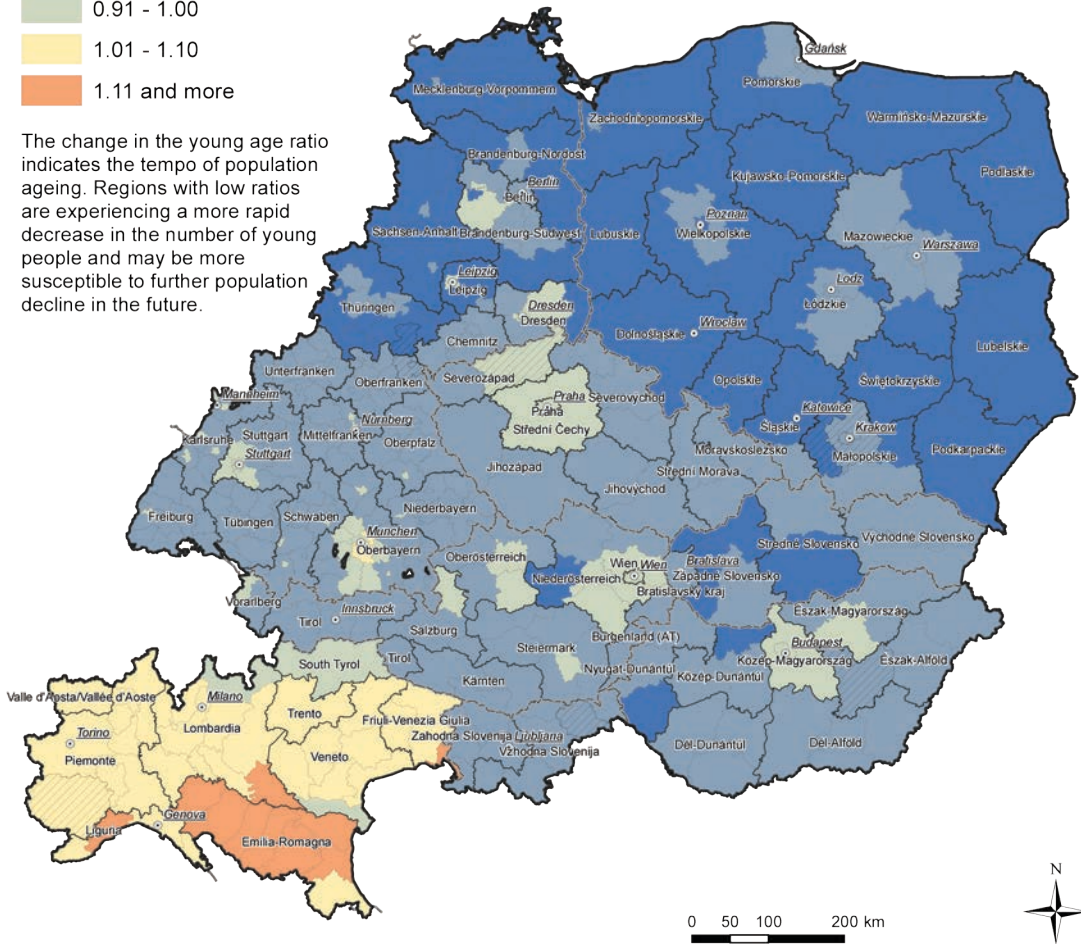
⁵⁴ Bijak, J., Kupiszewska, D., Kupiszewski, M. (2008): 'Replacement migration revisited: Simulations of the effects of selected population and labour market strategies for the aging Europe, 2002–2052.' *Population Research and Policy Review*, 27(3): 321-342.

Map 16: Development of the young-age ratio in Central Europe in 2001-2011

Index of young age ratio 2001-2011



The change in the young age ratio indicates the tempo of population ageing. Regions with low ratios are experiencing a more rapid decrease in the number of young people and may be more susceptible to further population decline in the future.

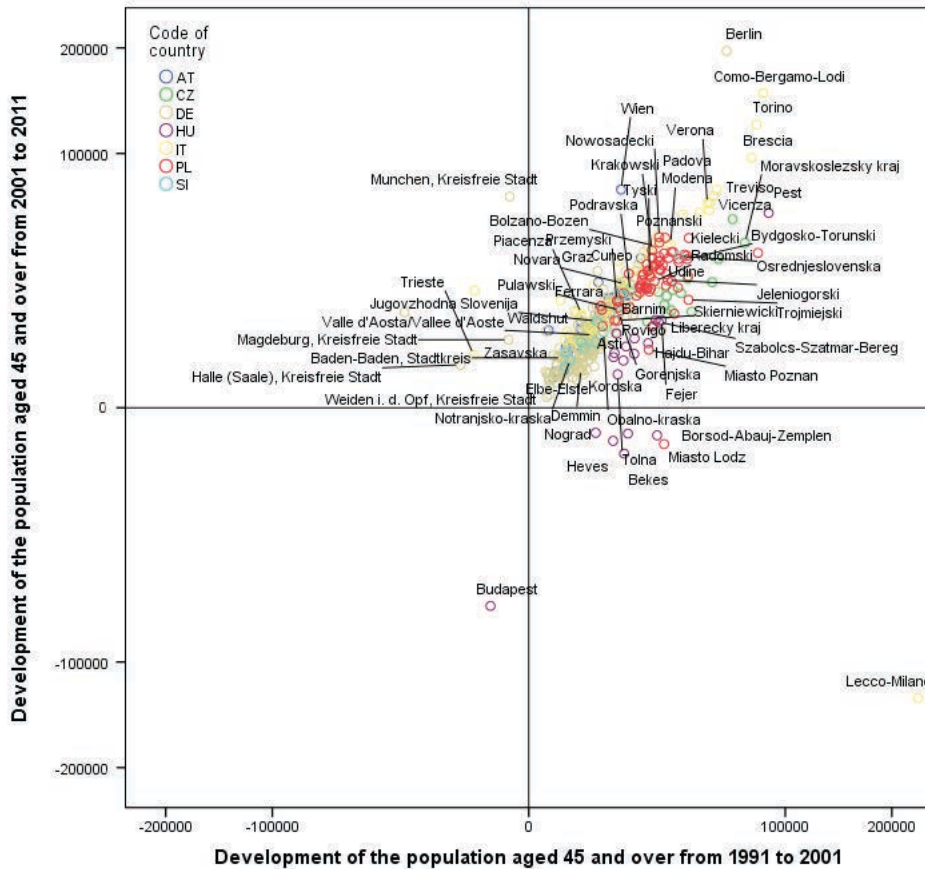


1.3.4 Future prospects of population development

The chapter focusing on demographic analysis concludes with a short look at the expected population development in Central Europe in the future. For this purpose three figures are presented. Firstly, the development of the population aged 45 years and over is shown in order to illustrate the progress of population ageing and its uniformity and universality in regions in Central Europe. Secondly, the development of the population aged 0 to 45 years is presented. It reveals a continuous decline in the younger population cohorts in the majority of regions and indicates the future expansion of shrinking regions, with all the positive and negative consequences this entails. Thirdly, a map depicting the population outlook for the years 2011-2030 based on a simple demographic model is presented.

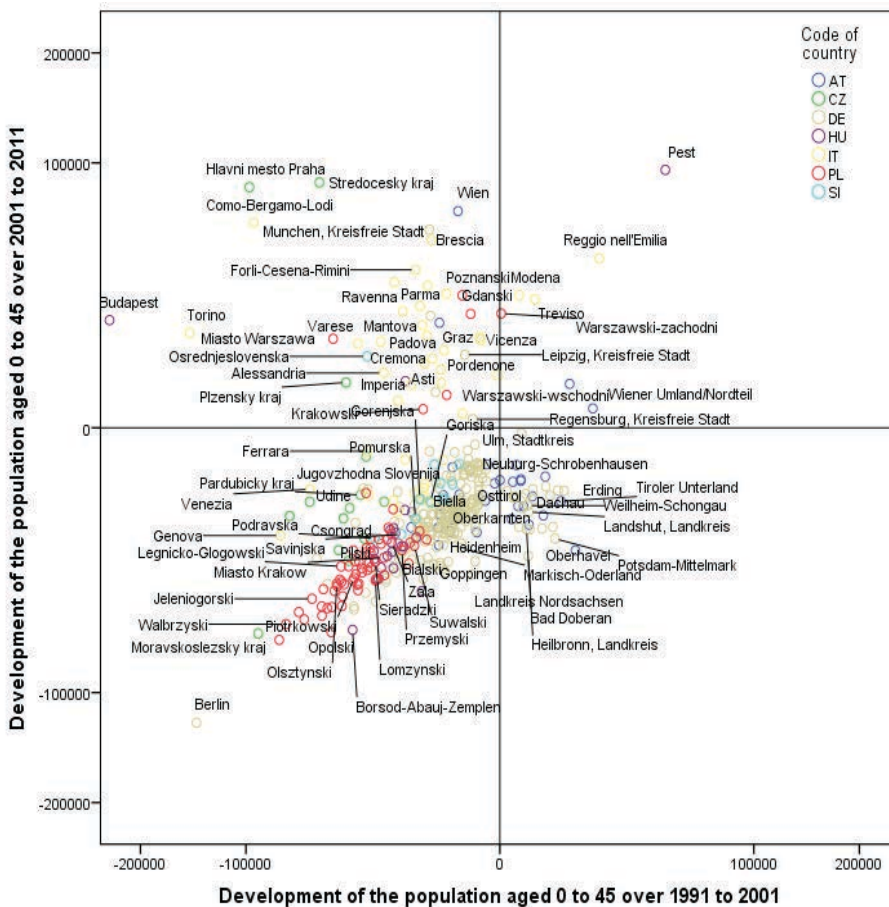
The scatter plot graph 'Development of the population aged 45 and over in the period 1991-2011' provides a clear picture of the progress of population ageing in Central Europe in the past two decades (Figure 1). Almost all the regions with the exception of a few untypical outliers experienced stable growth of the population aged 45 and over in both the 1991-2001 and 2001-2011 periods. A minor exception from this general trend are some Hungarian regions (Bekes, Heves, Nograd; bottom right part), which experienced a decline in the population aged 45 and over in the last decade. This is caused by low life expectancy in Hungary and longer-term depopulation in those regions. Another exception is represented by a few German regions (see top left part), which lost population aged 45 and over in the 1990s due to extensive out-migration. It is important to stress that growth of the older population delays the potential onset of population shrinkage, but does not change the general demographic trend.

Figure 1: Development of the population aged 45 and over in the period 1991-2011



The second scatter plot graph, ‘Development of the population aged 0 to 45 in the period 1991-2011’ (Figure 2), provides an important insight into the population shrinkage process. The graph clearly shows that the majority of regions have experienced a decline in younger population cohorts (see bottom left part). This suggests that such regions will be more vulnerable to population shrinkage in the coming decades. Exceptions from this pattern are mostly metropolitan cores or regions in the metropolitan hinterland and the north Italian regions (see the top part of graph). The changing spatial pattern of regions with growing younger population cohorts shows that whereas only a small number of metropolitan regions were growing between 1991 and 2001 the trend changed in the decade that followed. Thus, in the period from 2001 to 2011 a larger share of metropolitan regions grew. This development indicates the increasing role of metropolitan regions as spaces of concentration for younger population cohorts and also suggests the demographic profile of these regions will be better in the coming decades.

Figure 2: Development of the population aged 0 to 45 in the 1991-2011 period



The future prospects of shrinking regions in 2030 are presented in Map 17. The map shows the expected relative change in the total population in the regions between 2011 and 2030, which is expressed as average values per decennial period. The model is based on data on population structures in regions and on data characterising population development in the past ten years.⁵⁵ A number of births stable in relation to the last 20 years are presumed. The model does not directly take foreign migration into account. The detailed formula used is described in a note below. It has to be stressed that the model presented is an estimation of population development based on currently available data and should be read and interpreted accordingly. The regional dimension of population change shows the prevalence of shrinking over growing regions in Central Europe (compare with Map 18 - Shrinking regions in Central Europe in 2001-2011). The metropolitan hinterlands around the metropolitan cores (Budapest, München, Poznan, etc.) have the best prospects for future demographic development, although the metropolitan cores could lose population and therefore be considered as shrinking cities. Macro-regional patterns

⁵⁵ The standard demographic projection was not calculated due to the too small size of NUTS 3 regions in Central Europe; such a projection would not be reliable. A demographic projection at the NUTS 2 level is available from ESPON 2013 project DEMIFER.

of population change are relatively stable due to the iterative development of generations. Rural regions with contemporary younger population structures will have positive demographic development also in the medium-term outlook (e.g. eastern Slovakia, western Austria, and north-western Poland).

The parameters of the demographic model⁵⁶

The model has two main parts which are summed together. The first part uses weighted ratios between main population cohorts, which shifted the population structure 19 years forward.

Formula, first part: $\{(2 * [\text{pop11_0020} / \text{pop01_0020} * \text{pop11_0020}] + [\text{pop11_2045} / \text{pop01_2045} * \text{pop11_2045}] + [\text{pop11_4565} / \text{pop01_4565} * \text{pop11_4565}] + [\text{pop11_65m} / \text{pop01_65m} * \text{pop11_65m}] +) * 4 / 5 * 19 / 20\}$

The resulting value is further adjusted by a simple indicator using population development in the last ten years. This adjustment is necessary because the model does not include foreign migration and we know from empirical data analysis that the processes of population spatial distribution tend to be relatively stable in time. Therefore, the difference in total population numbers in 2001 and 2011 is weighted into a decennial perspective and divided by invariable three.

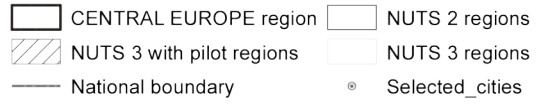
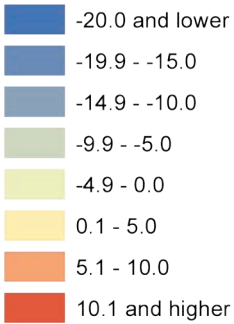
Formula, second part: $\{[\text{tpop11} - \text{tpop01}] * 2 / 3\}$

The variable 'pop11_0020' is read as the population in the age category 0 to 20 years in a region in 2011; the variable 'tpop01' is read as the total population in a region in 2001.

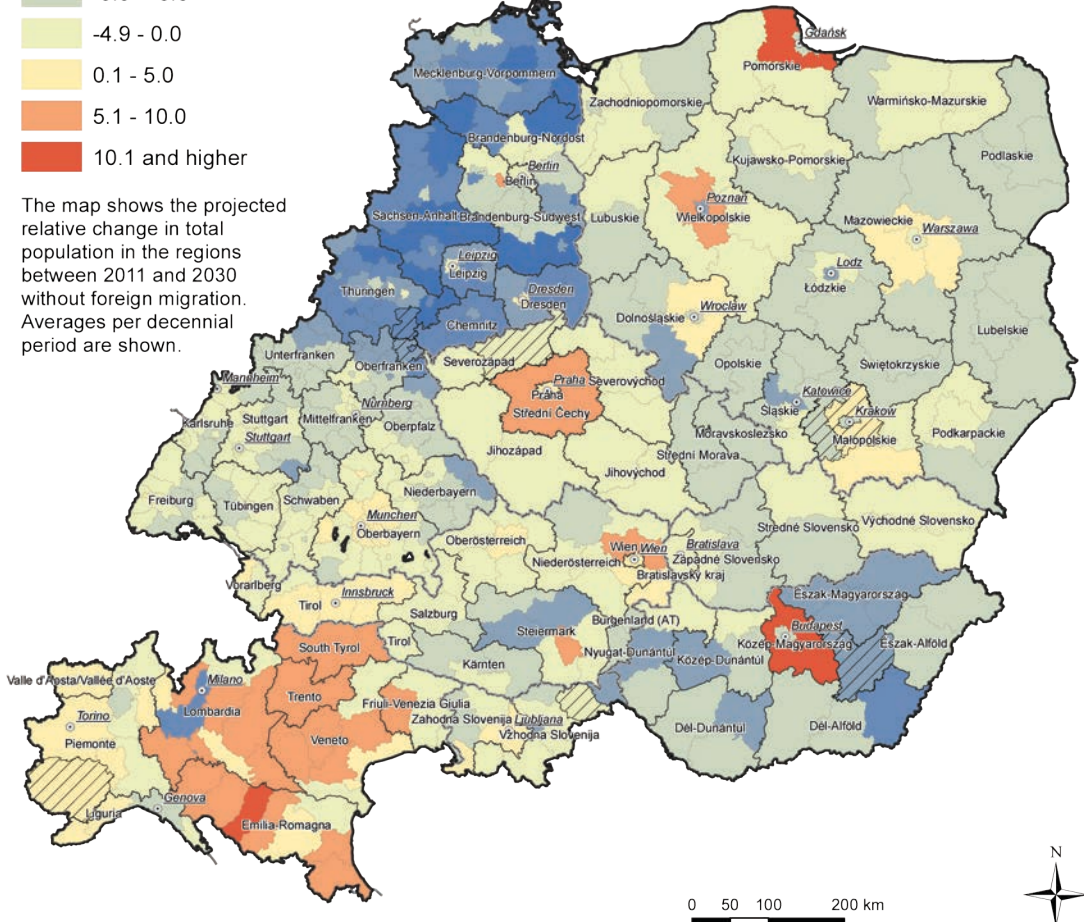
⁵⁶ A simple method for calculating population change was chosen on purpose because it can be easily explained and shown with some examples to the reader who is not advanced in modelling and population projection development.

Map 17: Future prospects of shrinking regions in 2030

Population change 2011-2030 (%)



The map shows the projected relative change in total population in the regions between 2011 and 2030 without foreign migration. Averages per decennial period are shown.



1.3.5 Main results from related studies

This chapter summarises the main empirical findings and key policy messages developed in basic and applied research projects focused on different aspects of demographic change in Central Europe and their impact on cities and regions. In recent years there have been several projects dealing with shrinking cities, the impact of demographic changes on regional development, migration and fertility, local development and service provision, etc., which are related to each other and as a whole provide more coherent and holistic picture about current demographic change in Central Europe. A short summary of selected projects is provided.

DEMIFER (ESPON)⁵⁷

The project analysed demography and migratory flows affecting European cities and regions. It came to the conclusion that if the demographic regime stays the same there will be mostly a decrease in the total population size in Central Europe. Migration from third countries is not considered as a solution for demographic change in Central Europe. Based on extensive analysis the Demifer project shows that migration from third countries cannot fully replace a missing labour force. If immigration grows in a currently unprecedented way the integration of migrants can cause social problems because the current systems are not prepared for large-scale immigration. Member states with a higher share of regions with a population decrease and lower financial capacity might be challenged by decreasing public budgets. Migration between regions in Central Europe may be expected to increase regional disparities, reducing ageing and population decreases in affluent regions and increasing ageing and population decreases in poor regions. The project claims that components of population change such as fertility, mortality and migration may be affected by policy bundles, but a more detailed insight into shrinking cities and regions is necessary in order to tackle the issues they face.

DART (INTERREG IVC)⁵⁸

Population decline, ageing and regional transformation are at the core of the DART project. Within the project specific regional strategies was developed. DART focused on the identification and development of new products and services which help to maintain the quality of life and social inclusion in regions under demographic change. These regional strategies focused on new business fields for SMEs education institutions and life-long learning, health care and social services. 'Life-cycle-proof neighbourhood' and 'social inclusion' were introduced as instruments for an integrated strategy for demographic change. The project argues for a new regional approach: 'dynamic adjustments of the public services provision systems to anticipate the effects of the population trends and territorial imbalance and thus counteract the future risks as well as to exploit the opportunities. Those strategies must be flexible and tailored for each region as the process features are diverse in timing, speed, intensity and effects'.⁵⁹

⁵⁷ DEMIFER - Demographic and Migratory Flows Affecting European Regions and Cities, ESPON 2013 project.

⁵⁸ DART (2010): DART - Declining, Ageing and Regional Transformation, Final Report.

⁵⁹ DART (2010): DART - Declining, Ageing and Regional Transformation, Final Report, page 31.

Shrink Smart (FP7)⁶⁰

The project is focused on governance of shrinkage within a European context. It highlights the importance of studying urban shrinkage as a very common path of urban development of medium-sized European cities, especially in Eastern Europe. Shrinkage can be caused by negative natural change, migration to suburbs or economic decline. The impact of population loss is seen, among other things, in the following areas: declining population densities, increasing vacancy and derelict land, a growing imbalance between the supply of and demand for housing, social infrastructure, transport and utility infrastructures due to an unbalanced age structure, declining demand for local commercial services and declining tax returns from local budgets. The differences in institutional settings between Western and Eastern countries and also between ‘experienced’ and ‘new’ shrinking cities should be taken into account in policy-making. At the local level it is recommended that regeneration and planning policies and agencies be established. Wider stakeholder involvement and development scenarios are useful tools. The discussion about shrinking cities (as a part of demographic change) should be included in public debate. Coordination and cross-sector policies dealing with shrinkage should be introduced at the national level. Tools and funding streams to support policy development for shrinking cities should help to make small and medium-sized cities more sustainable and competitive.

Hungarian presidency⁶¹

This synthesis report on the impact of European demographic trends on regional and urban development is a rich information source for European and national policy-makers. It describes changing demographic conditions as well as their impact on the economy, society and policy development. Population shrinkage per se is not considered as a problem unless it has a significant effect on the local economy and service and infrastructure provision. The oversupply of certain infrastructures results in the fixed cost of infrastructure provision having to be covered by a smaller number of users which consequently causes the price per unit to rise and it is less affordable for users. The reduction of service and infrastructure provision is more complicated than building new ones, and it can also create strong NIMBY oppositions and lead to ineffective fund allocation. The difference between ‘Southern Europe and German-speaking countries’, ‘Eastern and Central Europe’ and ‘Northern and Western Europe’ is highlighted. It is expected that migration in Europe and migration from third countries will support population development in Europe, but EU-10 countries will be migration losers. Harmonisation of immigration policies at the EU level is suggested, since this is one of the strongest EU tools for supporting balanced demographic development in regions and thus helping to achieve economic convergence and social cohesion in Europe.

LEED (OECD)⁶²

The OECD study within the Local Economic and Employment Development (LEED) initiative provides insight into the topic of population shrinkage. It presents a wide set of different country case studies focusing on shrinkage and sustainability, regeneration strategies

⁶⁰ Bernt, Matthias, et al. (2012): ‘Shrink Smart. The Governance of Shrinkage within a European Context’, Research Brief No. 2, Policy Response, Governance and Future Directions.

⁶¹ Geróházi, Éva., et al. (2011): ‘The impact of European demographic trends on regional and urban development’, Synthesis Report (Hungarian Presidency of the Council of the European Union).

⁶² Martinez-Fernandez, C., et al. (2012): *Demographic Change and Local Development: Shrinkage, Regeneration and Social Dynamics* (OECD and LEED).

and community development, social dynamics and demographic change. The countries of Central Europe are also covered. The study offers a plethora of examples of how population shrinkage effects occur, what consequences it can entail, and what policies have been implemented to offset or mitigate it. Among other things, the study recommended diversifying the local economic base and using local resources to become more resilient. It also recommended developing policy tools and instruments for better management of changing demographic conditions. Wider inclusion of stakeholders in the process of policy-making and also the appropriate allocation of funding for service and infrastructure are recommended. It also highlights the role of social innovation as a tool to improve the quality of life in shrinking areas where various social groups are more vulnerable. In conclusion demographic change is one of the key challenges for local development in many OECD countries and should be dealt with using holistic policies aimed at delivering sustainable solutions.

SeGI (ESPON)⁶³

The report is focused on the perspectives of services of general interest (SGI) as they can be used in territorial cohesion and development. A key tool for effective policy design is to have a full understanding of national and regional policy systems and modes of governance of SGI provision. The SeGI report notes that the current system of SGI provision is not sustainable in conditions of economic and financial crisis. The economy and the demographic situation are seen as two primary drivers of SGI provision. Thus, SGI provision in regions experiencing population shrinkage or population ageing will be challenged and measures changing the form and extent of SGI provision will be implemented. This might fundamentally change the availability, affordability and accessibility of SGI for inhabitants in general and vulnerable population subgroups in particular. To deal with the impact of demographic change on SGI provision strategies are required that promote equity and fairness in access to SGI and thus build territorial cohesion.

URBACT I., II.⁶⁴

For the URBACT programme demographic decline is one of key challenges for territorial cohesion in the EU. Cities under shrinking conditions are less capable of providing necessary services; therefore, the development of a realistic vision and a set of sustainable strategic choices is essential. Citizen engagement can help to mobilise resources necessary to deal with demographic change, but a policy shift that takes the reality of population shrinking and demographic ageing into account is necessary. Policy frameworks, policy tools and instruments at various levels should be adapted to reflect the reality of population shrinkage in cities and regions. Current mainstream policies are growth-oriented and support shrinking cities only in a minor way or even harm them. The same applies to all territorial budgets: less population means less tax income and therefore a lower capacity to deal with changing demographic situation. The studies also accentuate the social and economic dimensions of demographic change, which are considered as important as demographic change per se, which doubles the relevance of and potential risks to urban development.

⁶³ ESPON (2013): SeGI - Indicators and perspectives for services of general interest in territorial cohesion and development, Final Report.

⁶⁴ European Commission - DG for Regional Policy, ed. (2011): 'Cities of tomorrow - Challenges, visions, ways forward', Final Report (URBACT programme). ; Schlappa, H., Neill, W.J.V. (2013): 'Cities of Tomorrow - Action Today. URBACT II Capitalisation. From crisis to choice: re-imagining the future in shrinking cities' (URBACT programme).



2 Definitions of ‘shrinking regions’

Martin Šimon, Renáta Mikešová

A key component of this book is the definition of shrinking regions. The following chapters provide a short methodological background for the definition of shrinking regions at two spatial levels: a) NUTS 3 regions, b) the sub-regional level. In principle, the methodology for delimitation of shrinking regions is the same at the NUTS 3 level and the sub-regional level, but the interpretation of figures at distinct spatial levels is different. **Population shrinkage is defined as the relative decline in the total population size in a region in a ten-year period.** Further methodological details and remarks are described below.

According to the information available to the authors, there are no officially accepted definitions of population shrinkage in Central European countries. The project partners of the ADAPT2DC consortium⁶⁵ agreed that in principle population shrinkage occurs when death rates are higher than birth rates and when migration cannot balance this gap between the birth and death rates in a region.⁶⁶ But, on the other hand, the issue of defining thresholds for delimiting shrinking regions comes up. Population shrinkage can be measured in absolute as well as in relative terms. From the perspective of the authors it is more meaningful to define population shrinkage in relative terms as a relative decline in the absolute size of the population in a region in ten-year time period. Such a definition is relatively simple in statistical terms, but it captures the core message of the population shrinkage process. The definition of population shrinkage in absolute terms can be misleading due to the different population sizes of regions. A decrease of a certain number of the population poses a more serious challenge for local and regional stakeholders in sparsely populated rural areas than in high density urban regions. The project partners of the ADAPT2DC consortium agreed that the definition of shrinkage in relative terms better captures the pace of shrinkage and its relevance for policy makers. It should be noted, however, that **the relative decline of the total population size in a region in a ten-year period** also depends on the population size of the region. Different methods and approaches to the measurement of shrinkage might be applied when analysing cities⁶⁷ or city parts⁶⁸ or planning urban areas.⁶⁹

Additionally, it is stressed that different services and infrastructures are influenced by decreasing number of population in a different way.. The key question that should be asked when planning infrastructure and service provision is whether it depends on the number of inhabitants of an administrative unit (e.g. population of a municipality) or whether it depends on the number of inhabitants of a functional area related to this administrative unit (e.g. urban

⁶⁵ It is important to note that if the definition of shrinking regions and the ways of measuring it is accepted by important stakeholders and codified in policy praxis, it can be further used in planning and policy development.

⁶⁶ Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR) im Bundesamt für Bauwesen und Raumordnung (2009) (Hrsg.): *Raumordnungsprognose 2025/2050*, Bonn, p. 14; Gans, Paul; Leibert, Tim (2007): ‘Grundzüge der demographischen Entwicklung in Europa’, in: Michael Horn, Bernhard Köppken (Hrsg.): *Demographischer Wandel in Deutschland - die lokale und regionale Perspektive*, Berlin: Logos Verlag, p. 15-16.

⁶⁷ Steinführer, A., Haase, A. (2007): ‘Demographic change as a future challenge for cities in East Central Europe.’ *Geografiska Annaler: Series B, Human Geography* 89(2): 183-195.

⁶⁸ Haase, A., Eds. (2011): *Residential Change and Demographic Challenge: the Inner City of East Central Europe in the 21st century*. Ashgate Publishing, London.

⁶⁹ Piro, R., Ganser, R., Eds. (2012): *Parallel Patterns of Shrinking Cities and Urban Growth: Spatial Planning for Sustainable Development of City Regions and Rural Areas*. Ashgate, Farnham.

metropolitan area which includes a city and its surrounding area), who are all users of services located in the city. Thus in a shrinking city with a growing hinterland the services that depend on the size of the urban population (such as waste management or water supply) are more likely to be affected by demographic change than the services that depend on the number of inhabitants in the whole metropolitan area (such as health care). Therefore, in planning it should be distinguished whether the city is decreasing or growing, whether the hinterland is decreasing or growing and whether the whole region is decreasing or growing.

At the European level a study titled 'Shrinking Regions: a Paradigm Shift in Demography and Territorial Development' (Shrinking Regions Study) was developed⁷⁰ as part of the 'Green Paper "Confronting demographical change: a new solidarity between generations"'.⁷¹ It states that population shrinkage is a relatively new concept and that declines in total population size occur in urban as well as rural areas. Like in the ADAPT2DC project the authors of the 'Shrinking Regions Study' chose a simple and practical definition of a shrinking region. Population shrinkage is defined as a reduction in the number of inhabitants in a particular region over the course of a generation. The analysis presented in the study is done for the whole of Europe, but only at the NUTS 2 level. Our analysis from the ADAPT2DC project is different; we provide a more detailed picture of demographic change at the NUTS 3 level, but just for the Central European area. A shift from NUTS 2 to NUTS 3 regions allows us to see a more detailed picture of growing and shrinking regions in Central Europe. In principle the use of a more detailed spatial scale will reveal bigger differences in population growth/shrinkage between regions.

Key points from the study '**Shrinking Regions: a Paradigm Shift in Demography and Territorial Development**' that are relevant to the present study can be summarised as follows:

- the problem of demographic decline must be met by means of a multilevel approach within the EU and must be included in various parts of the EU cohesion policy;
- population decline has come to affect entire regions, including urban areas; the nature of regions in demographic decline is diverse;
- shrinking regions are poorer in general, but various interregional transfers are changing the situation and reducing the revenue gap between different demographic types of regions;
- isolated and sparsely populated rural areas are most vulnerable to demographic change due to low densities;
- population decline reduces the capacity of a region to adapt to demographic change;
- population ageing accelerates the disintegration of certain services, but also ushers in a new set of needs;
- wealth redistribution at the national level is crucial, but other redistributive schemes also apply;
- two 'trouble spots' in Central and Eastern Europe are: the shortage of public resources and the crisis of inter-territorial solidarity;
- the impact of demographic change at the national level and at the local/regional level is very different; the impact of demographic change

⁷⁰ Shrinking regions: a Paradigm Shift in Demography and Territorial Development. IP/B/REGI/IC/2007-044, version 11. 7. 2008, available at: www.europarl.europa.eu/meetdocs/2004_2009/documents/dv/pe408928_ex_/pe408928_ex_en.pdf

⁷¹ Commission Green Paper, March 2005.

in localities and regions requires new approaches and policy tools;

- demographic decline and ageing form a complex system of interactions involving economic, social, political and environmental aspects and has to be dealt with accordingly.

One particularly important part of the 'Shrinking Regions Study' focuses on multi-scalar governance and shrinking regions. It suggests a preliminary framework of ways to deal with the statistical evidence of shrinking regions and how to include them in policy documents and tools on various spatial scales. This framework and recommendations can be used to develop strategies and governance models for shrinking regions.⁷² From the current state-of-the-art knowledge we can confirm or extend some of the recommendations presented in the 'Shrinking Regions Study'. At the European Union level we agree with the use of simple and reliable indicators describing and anticipating demographic trends as a marker for policy evaluation. On the other hand, we are sceptical of the uncritical use of more complicated indicators. The same values of one indicator may be the result of different demographic processes and may lead to misleading interpretations and policy conclusions. The use of more complicated indicators of demographic change would require detailed scrutiny among experts in spatial demography, population geography, and other relevant fields. According to the study the regional patterns of wealth redistribution will be challenged at the national level. A new situation could occur in countries experiencing a total population decrease, where shrinking regions will be more common and typical than in regions with a stable population or population growth. At the regional level it should be stressed that the reorganisation or downsizing of services and facilities will necessarily be spatially selective. As aptly noted in the 'Shrinking Regions Study': 'The question here is to know whether the regional policy for the reorganization of the spatial framework for the local population and the provision of facilities would be better directed by giving priority to economic efficiency or by seeking to protect social equity and sustainable development' (2008 : 10). The changing extent of population shrinkage in regions could shape very core questions concerning the main redistributive channels between regions and thus be a crucial political issue for regional and national governments. At the local level (and also the regional level in some countries) successful adaptation to the negative effects of population decline requires communication and cooperation among various stakeholders and local authorities at the intercommunal or regional level. The 'Shrinking Regions Study' points out several risks resulting from insufficient cooperation between local authorities in shrinking regions. The adaptation of infrastructure to demographic shrinking, for instance through the reduction of facilities (e.g. the closure of a school)⁷³ or downsizing, creates a NIMBY (Not In My Backyard) effect,⁷⁴ which could not only hinder a cost-saving policy, but could even result in the opposite effect.

⁷² Dorogi, Z., et al. (2014) 'European Strategy for regional responses to demographic changes.' ADAPT2DC project output, 50 pp.

⁷³ Haartsen, T., Van Wissen, L. (2012): 'Causes and consequences of regional population decline for primary schools.' *Tijdschrift voor economische en sociale geografie* 103(4): 487-496.

⁷⁴ Dear, M. (1992): 'Understanding and overcoming the NIMBY syndrome.' *Journal of the American Planning Association* 58(3): 288-300.

2.1 Shrinking regions at the NUTS 3 level

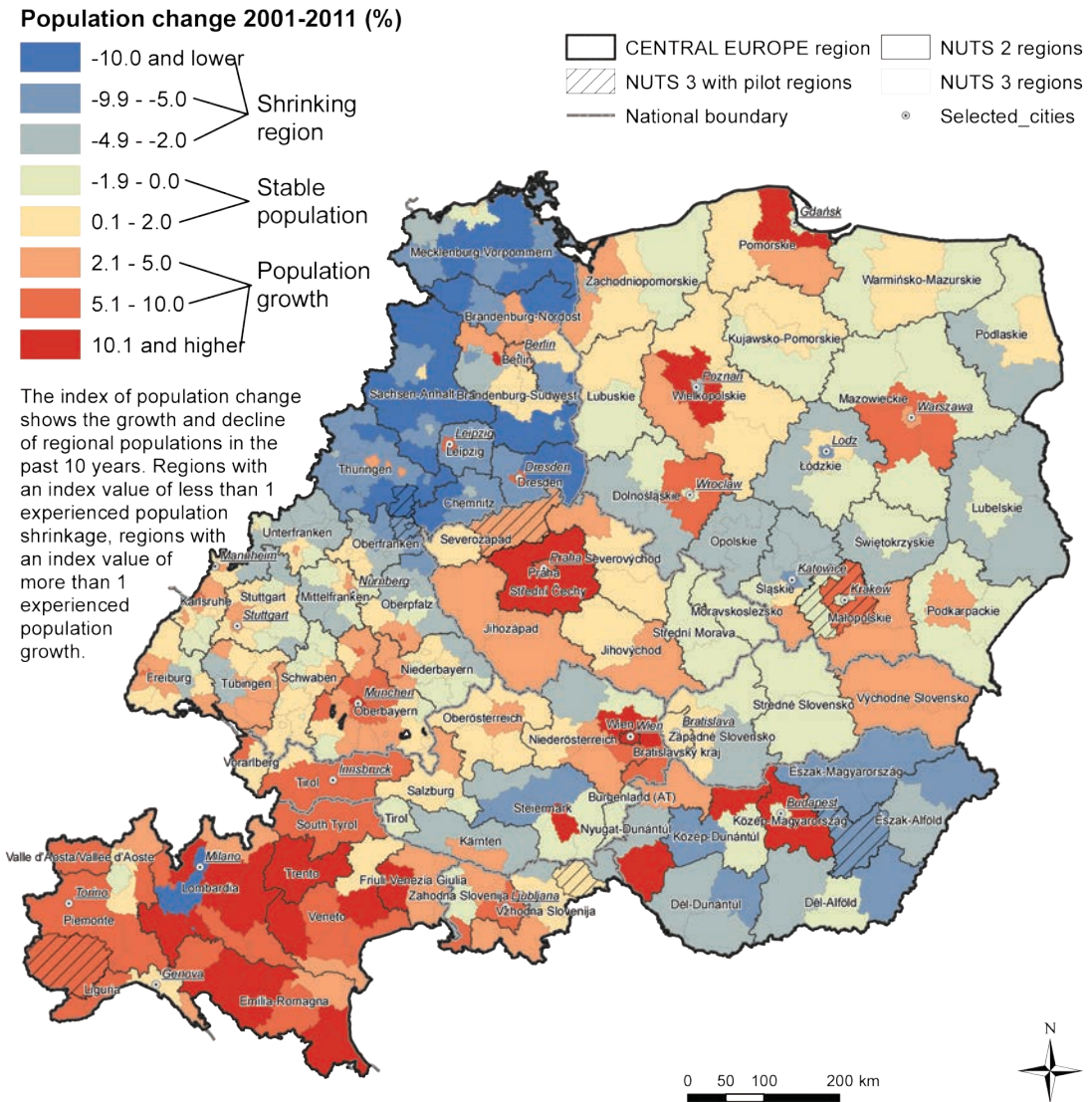
Population change in regions in Central Europe is diverse; there are both shrinking and growing regions. Population shrinkage in a NUTS 3 region is measured as the relative decline in the total population size in a region in a ten-year period, in our case between the year 2001 and the year 2011. Three main types of population development are distinguished. **Shrinking regions** have experienced a decline in the total size of the population higher than two per cent. These include the majority of East German and Hungarian regions and a large share of Polish regions. **Stable population** regions have experienced either small relative growth up to two per cent or small relative decline up to two per cent. Examples of these are a large share of Polish, Czech, Slovak, Austrian, Slovenian, and West German regions. The regions with **Growing population** have experienced relative population growth and are not imminently vulnerable to population shrinkage. Examples of those are Italian regions and metropolitan regions from all other countries.

From a future perspective it might be expected that **Shrinking regions** and regions with **Stable population** will be prone to population shrinkage in the next decade. The reason why there will be more shrinking regions is based on the following rationale. The total fertility level is markedly below replacement level in all regions in the Central European area, the population in almost all regions in Central Europe is experiencing population ageing, therefore it is probable that the majority of regions in Central Europe will experience milder or sharper population decline in the next decade. Because of this, the regions with small relative growth or decline in the last decade will shift towards population shrinkage. A geographical interpretation of the map of shrinking regions at the NUTS 3 level should be sensitive to differences in the population size of regions and to the settlement structure within regions. Several examples of sub-regional patterns of population change are presented in the next section.

From a methodological point of view, there are ideas that could be useful for future research on population shrinkage and for elaborating definitions of shrinking regions. Firstly, functional regions instead of administrative regions⁷⁵ might be better for the evaluation of population shrinkage. Such an approach would allow us to see whether population shrinkage is a result of the redistribution of the population within a functional region or whether it is part of a broader pattern of shrinkage. Secondly, an analysis of change in population distribution at the municipal level or with the use of a population grid would allow us to see whether there is a trend of rural-to-urban migration, urban-to-rural migration or migration to the metropolitan hinterlands.

⁷⁵ Administrative regions are usually used for statistical purposes for various levels of governance and tend to have broadly similar territorial/population size. Functional regions reflect spatial functional relations in a territory such as commuting and accessibility of services. Functional regions tend to have different sizes according to the size of regional cores and a core's hinterland.

Map 18: Shrinking regions in Central Europe in 2001-2011



2.2 Shrinking regions at the sub-regional level

The maps of shrinking regions at the sub-regional level display two types of indicators. First, the relative level of total population change in a ten-year period (2001-2011) indicates the pace of population shrinkage in spatial units. Like on the NUTS 3 level, three main types of development are distinguished (Shrinking regions, regions with Stable population, regions with Growing population) based on the same criteria. It should be noted that relative population change directly depends on total population size, in particular in the case of LAU 2 units, and also on the way regions are delimited (administrative versus functional regions).

Quite obviously, smaller units might easily show higher degrees of growth or decline. Second, the total size of the population in a LAU 2 unit characterises the level of urbanisation in the region. It also shows whether population decline is more typical for rural or urban or all LAU 2 units. Population change in the NUTS 3 regions in which the Pilot regions⁷⁶ are located exhibits big differences in the nature and extent of population shrinkage. In Germany the rural Saale-Orla-Kreis Region is located on the inner-country border between Thüringen and Bayern. It has undergone rapid depopulation, occurring in all the municipalities and towns. The impact of shrinkage is profound, with a population decline of more than 20 per cent between 2001 and 2011. A slightly less rapid population decline is occurring in Jász-Nagykun-Szolnok Region in Hungary, and further shrinkage and convergence with the German pattern is to be expected. In Cuneo Region (Po Valley) in Italy, population decline seems to be significant only in the sparsely populated high mountains regions. The more densely populated lowlands are experiencing population growth. A different situation can be observed in the last three NUTS 3 regions. Krakowski and Oswiecimski Regions in Poland (north-western Małopolska) are decreasing in total population number only in their peripheral parts; the municipalities closer to Krakow are influenced by suburbanisation and are showing population growth. A similar situation is in the municipalities around Maribor in Slovenia, but Maribor as a city itself is losing population. The same case is the Ústí Region (Vejprty region), where the population in big cities is quickly decreasing, while their hinterlands are experiencing population growth. Smaller rural municipalities in the region's periphery are vulnerable to population shrinkage, too. From policy development point of view it is crucial to highlight that the local governments of all these regions perceive that they have problems with a decreasing population size in their territory or a part of it. But when comparable data on the urbanisation level and population change in the last ten years are collected and displayed in the form of maps it becomes evident that the pace, extent, and spatial pattern of shrinkage differ in a considerable way. This comparison offers a direct link for policy learning opportunities. Regions that are less advanced in the process of population shrinkage can learn from the experiences and policies applied in regions that are more advanced in that process.

Definition of shrinkage at the sub-regional level – Pilot regions:

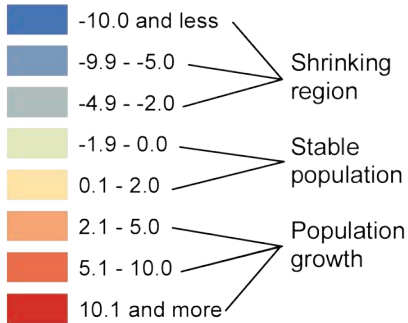
- Saale-Orla-District (Thuringia, Germany)
- Jász-Nagykun-Szolnok County (Hungary)
- Vejprty Region (Czechia)
- Po Valley (Italy)
- North-western Małopolska - Poviats: Miechowski, Chrzanowski, Olkuski, Proszowicki (Poland)
- Podravje Region and Maribor (Slovenia)

⁷⁶ Pilot regions are selected regions at NUTS 3 or LAU 2 level where more detailed analyses were conducted. The regions were selected by project partners as their regions of interest with regard to the impact of demographic changes.

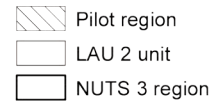
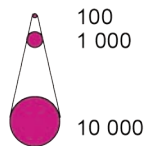
2.2.1 Saale-Orla-District (Thuringia, Germany)

Map 19: Population shrinkage in Saale-Orla-District 2001-2011

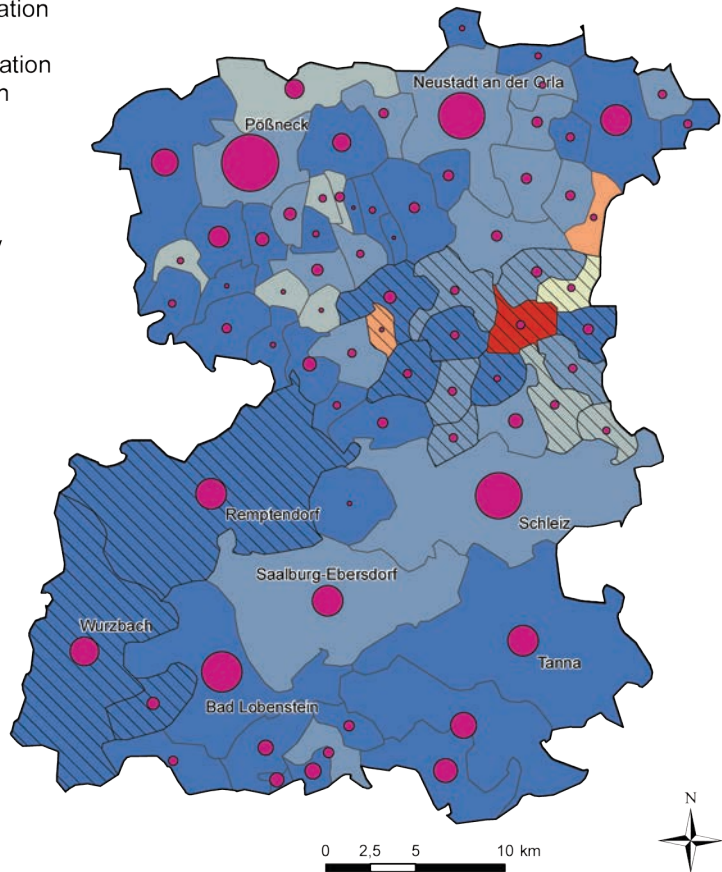
Population change 2001-2011 (%)



Population 2011 (Inh.)

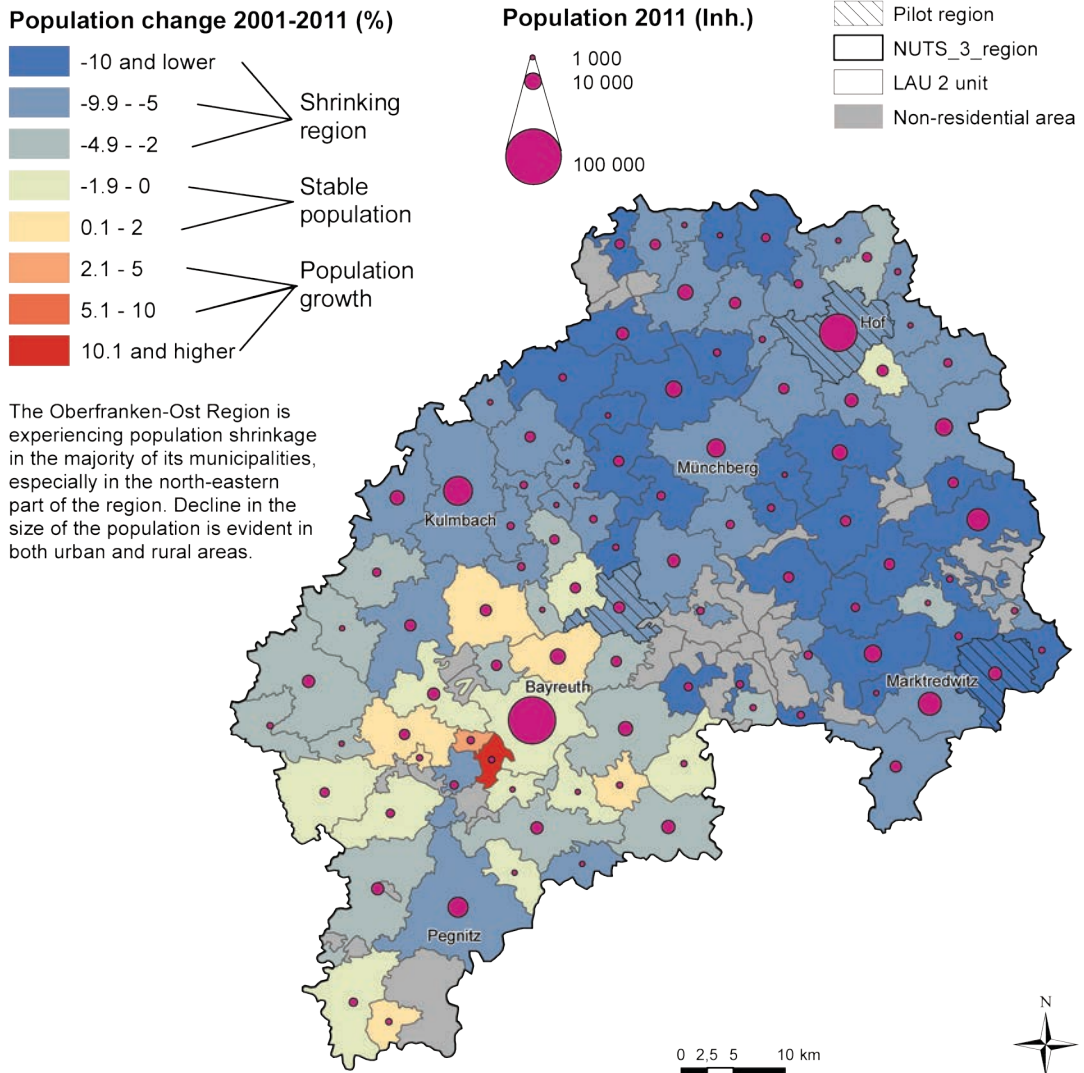


The Saale-Orla-Kreis Region is heavily affected by rapid depopulation. Both large and small settlements are losing population. Depopulation is a significant process on a regional scale and further depopulation is expected.



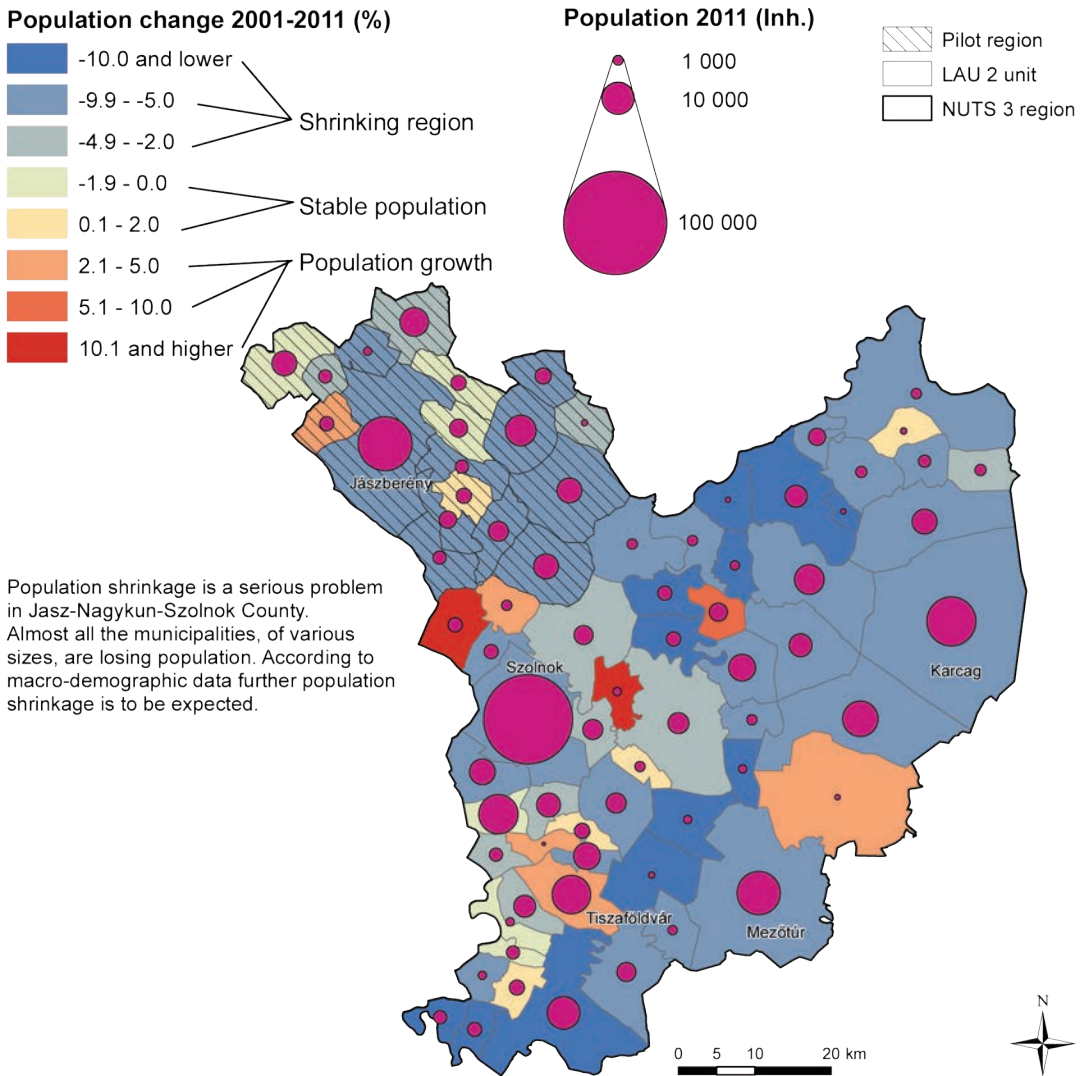
2.2.2 Oberfranken-Ost Region (Bavaria, Germany)

Map 20: Population shrinkage in Oberfranken-Ost Region 2001-2011



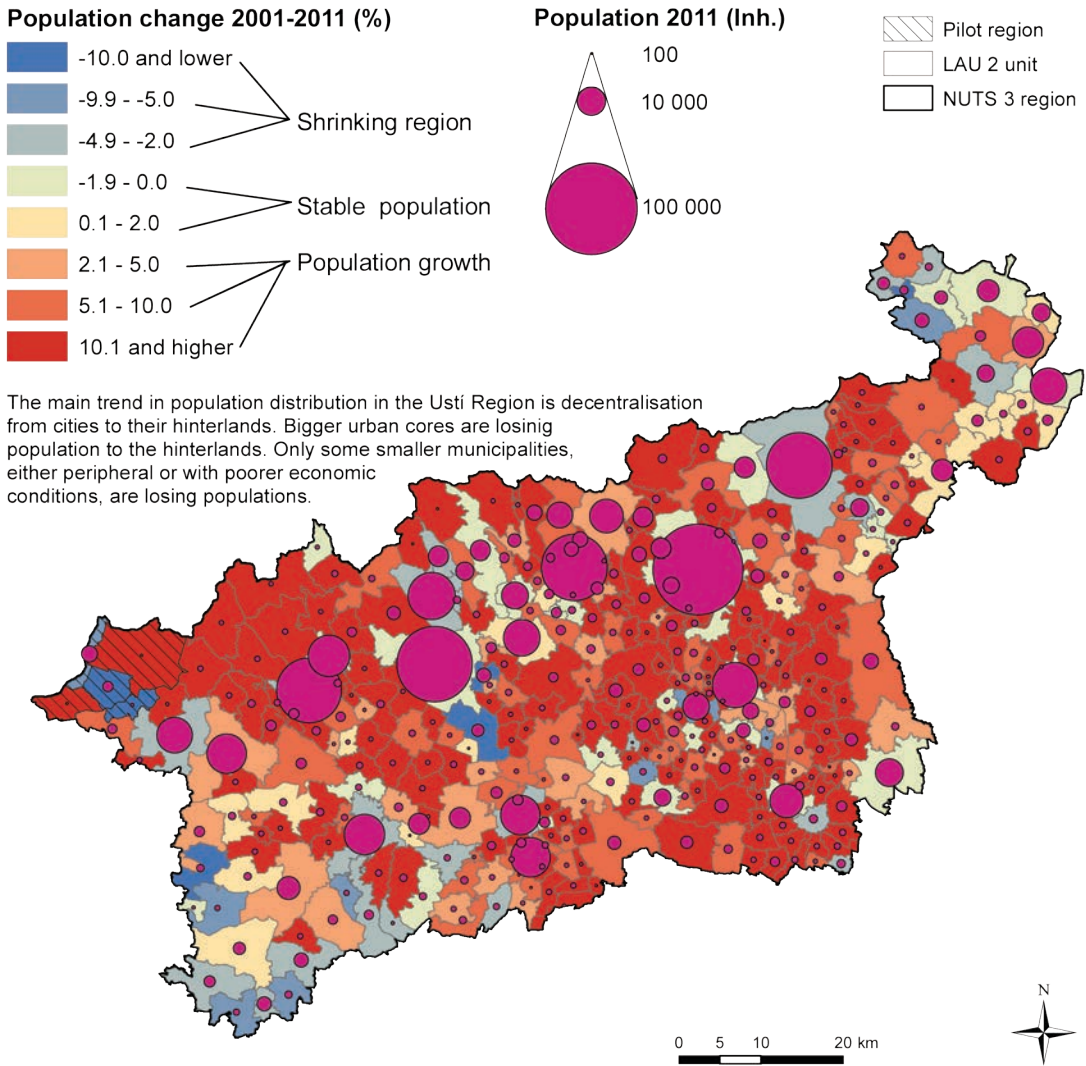
2.2.3 Jász-Nagykun-Szolnok County (Hungary)

Map 21: Population shrinkage in Jász-Nagykun-Szolnok County 2001-2011



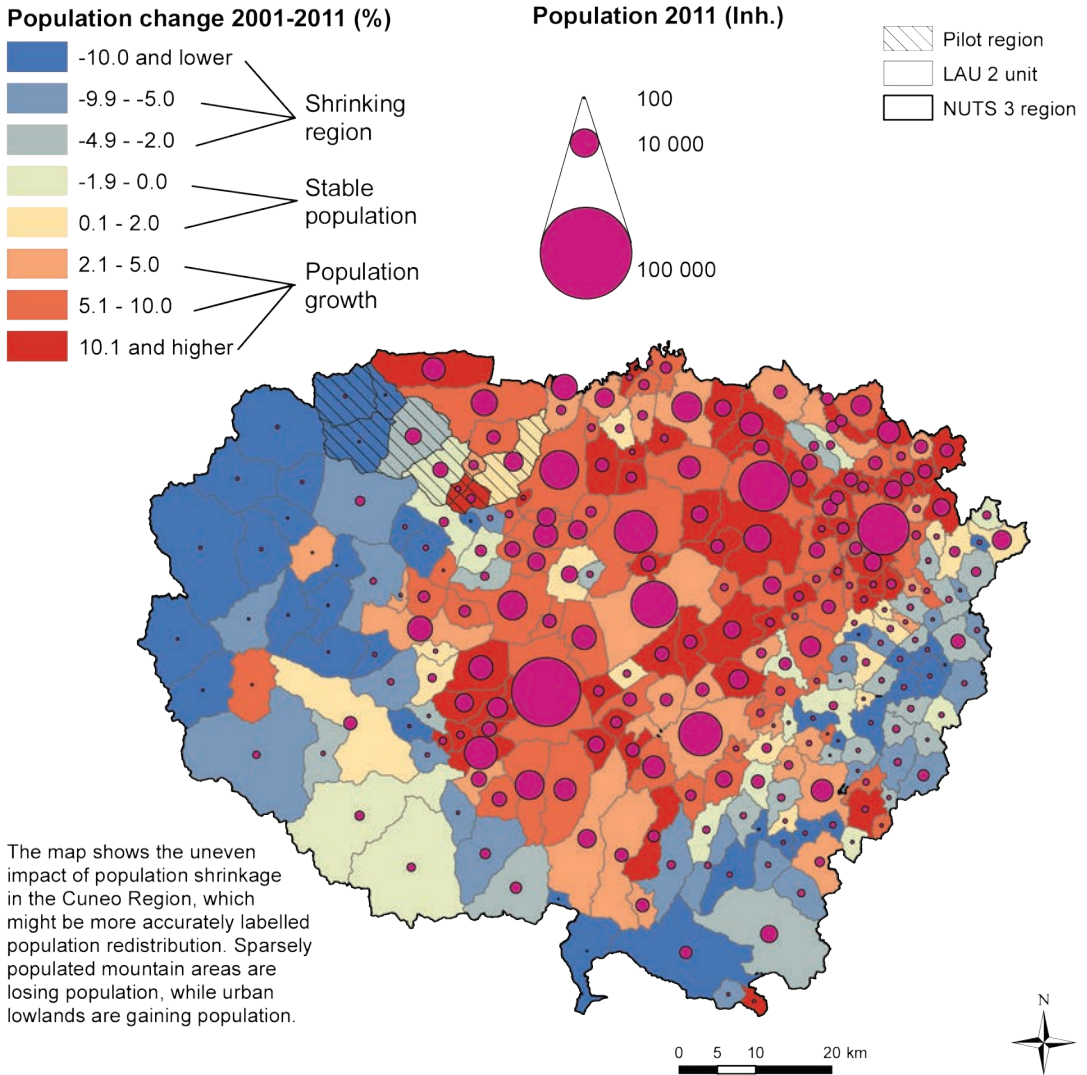
2.2.4 Vejprty Region (Czechia)

Map 22: Population shrinkage in Ústí Region 2001-2011



2.2.5 Po Valley (Italy)

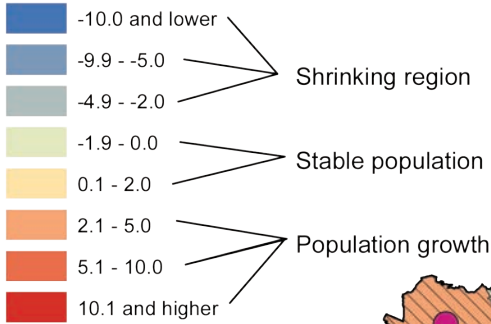
Map 23: Population shrinkage in Cuneo Region 2001-2011



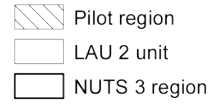
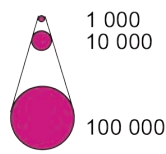
2.2.6 North-western Małopolska (Poland)

Map 24: Population shrinkage in Małopolska Region 2001-2011

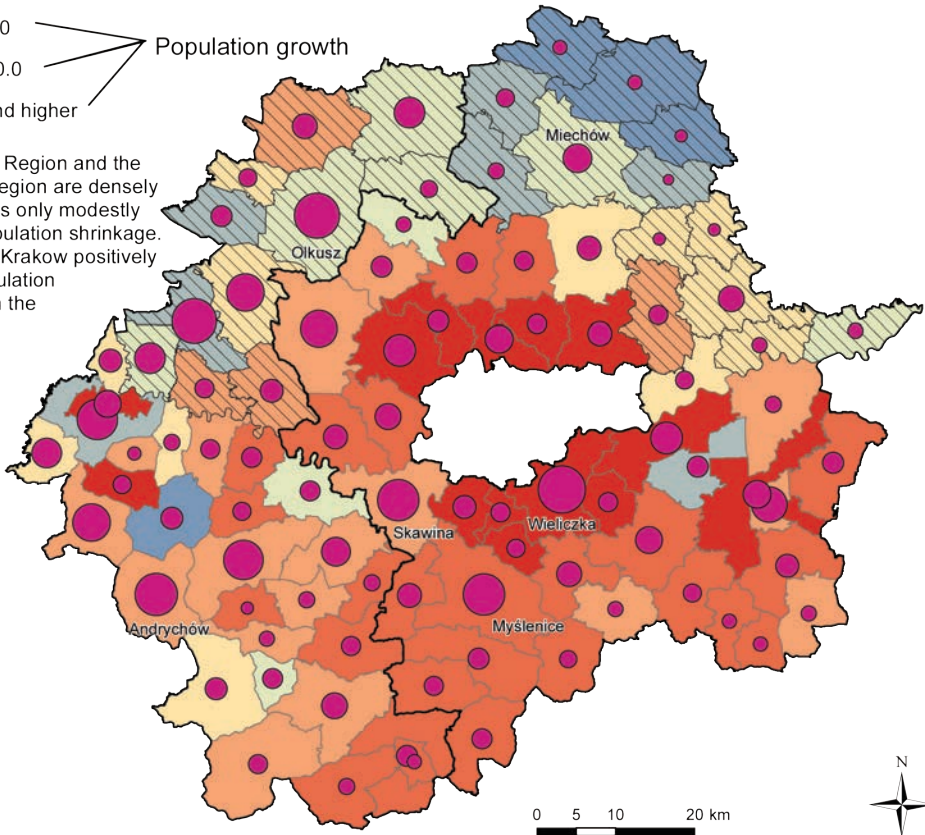
Population change 2001-2011 (%)



Population 2011 (Inh.)

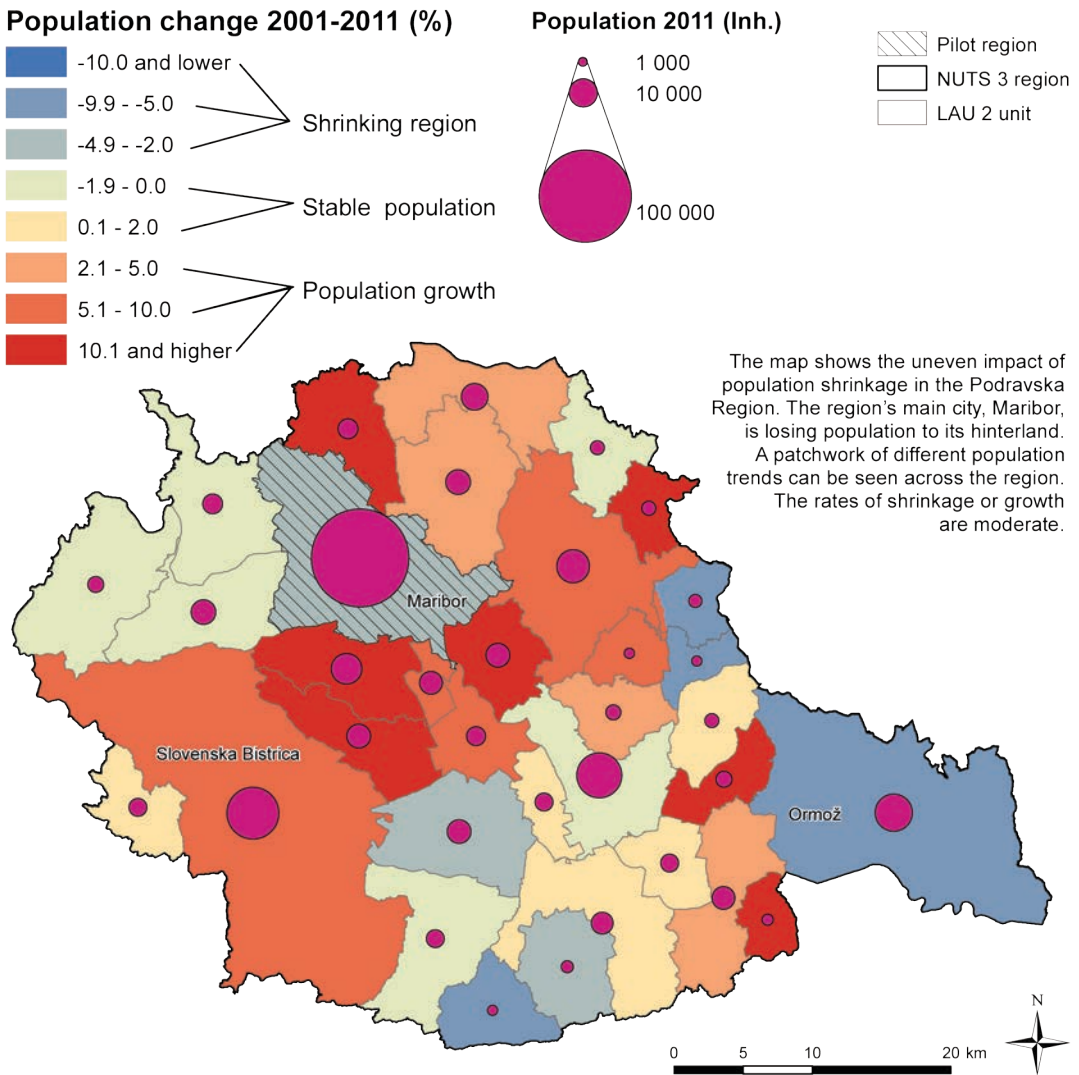


The Krakowski Region and the Oswiecimski Region are densely populated areas only modestly affected by population shrinkage. Migration from Krakow positively influences population development in the municipalities.



2.2.7 Podravje Region and Maribor (Slovenia)

Map 25: Population shrinkage in Podravje Region 2001-2011





3 Policies related to demographic change in Central Europe

Renáta Mikešová, Martin Šimon - 4.1, 4.4, 4.8; Kornelia Ehrlich, Matthias Schaarwächter - 4.2; Zsuzsanna Antal, Zoltan Balogh, Csilla Hoffmann, Lívia Kelenné-Török - 4.3; Fedora Gasparetti, Erich Giordano - 4.5; Artur Ochojski, Marcin Baron - 4.6; Vlasta Vodeb, Franc Zakrajsek - 4.7⁷⁷

The comparative analysis of shrinking regions and cities in Central Europe in this book consists not only of data analysis but also of policy analysis. In the policy analysis relevant policy documents which are in some way related to demographic change and to adaptation to or mitigation of demographic changes (e.g. shrinking cities, shrinking regions, depopulation, population ageing, rural/urban out-migration, demographic transition) were reviewed and analysed according to common instructions.⁷⁸ Only those policy documents that at least partly touch on issues related to demographic changes were taken into account. The aim of the policy analysis is to provide a broad overview focused on how demographic change and its related epiphenomenon are implemented in contemporary policy documents in countries and regions in Central Europe.

The review was conducted at two levels: national and regional. At the national level national policy documents, e.g. the National Development Strategy, Government Priorities 2012, strategic documents of particular ministries, etc., were reviewed. At the regional level documents at different levels of administration (territorial governments at the NUTS 2, LAU 1, and LAU 2 levels) below the national level, e.g. regional government development priorities, Regional Development Strategy, Municipal Cooperatives Strategy, etc., were analysed. This regionally focused analysis deals mainly with different levels of regions in which there is a pilot region. A short policy review focusing on the EU level is also included.

The following sub-chapters are summaries with a thick description of policies at a) the national and b) the regional level. This includes a structured description of policies sorted according to different bodies of government/governance. The authors were encouraged to write not only whether processes of demographic change were mentioned in a policy document, but also how they were dealt with, how important they were perceived to be, how they were related to other policy documents and their implementation.

⁷⁷ Renáta Mikešová, Martin Šimon (Institute of Sociology of the Academy of Sciences of the Czech Republic), Kornelia Ehrlich, Matthias Schaarwächter (Leibniz Institute for Regional Geography) Zsuzsanna Antal, Zoltan Balogh (Észak-alföld Regional Development Agency Non-profit Limited Company), Csilla Hoffmann, Lívia Kelenné-Török (Office for National Economic Planning), Fedora Gasparetti, Erich Giordano (National Union of Mountain Municipalities, Communities and Authorities – Piedmont Delegation), Artur Ochojski, Marcin Baron (University of Economics Katowice), Vlasta Vodeb, Franc Zakrajsek (Urban Planning Institute of the Republic of Slovenia)

⁷⁸ The review of policy documents focused on documents valid at the time of policy analysis and the selection of policy documents was done by the particular authors responsible for national and regional case studies.

3.1 Policy review: European Union⁷⁹

There are many documents created by the European Union concerning the ageing of the European population and future trends in society, but not many of them deal with possible solutions, especially specific solutions to these problems in regions. In the Green Paper 'Confronting Demographic Change: a New Solidarity between Generations', a policy document of the European Commission, it is said that the combination of ageing and low fertility will lead to crucial economic, budgetary and social problems.⁸⁰ Population ageing also poses significant challenges for the economies of European states and for their welfare systems. The European Commission warns that without making the necessary institutional and conceptual changes these demographic trends will considerably affect our society, eat away at intergenerational solidarity and burden future generations.⁸¹ Moreover, demographic changes are expected to have substantial consequences on public finances in the EU. On the basis of current policies, age-related public expenditures (pensions, health-care and long-term care) are projected to increase by 4.1 percentage points to around 29 per cent of GDP between 2010 and 2060. Public pension expenditure alone is projected to rise by 1.5 percentage points to nearly 13 per cent of GDP by 2060. Demographic changes will also influence potential development and will lead to strong pressure to increase public expenditures not only in the areas of health care and retirement pensions but also in the areas of infrastructure, housing and education.

Accelerating demographic ageing was exposed as Europe's structural weakness in a European Strategy for smart, sustainable and inclusive growth (Europe 2020).⁸² The increase in the employment rate of the population aged 20-64 from the current 69 per cent to at least 75 per cent, including through the greater involvement of women, older workers and the better integration of migrants into the work force is one of the headline targets of Europe 2020. At national level it is necessary to promote new forms of work-life balance and active aging policies and to increase gender equality. The Innovation Union that belongs to the flagship strategies within Europe 2020 comprises the European Innovation Partnership on Active and Healthy Aging, which has been selected as a pilot to tackle the challenges of an ageing population.

The particular goals set by the European Commission aim to create better conditions for families and for demographic restoration, mostly improving the conditions for work-life balance, e.g. by decreasing the taxes of the second-wage earner in a partnership or by making investments into high-quality care for children. Other goals are increasing participation in the labour market and increasing employment: in particular increasing the employment rate among older people, reforming the tax system and the social benefits system with the goal of improving the use of labour, and investing into a healthier older population so that it can continue working to a later age and with greater productivity. One of the main goals is to increase the productivity, recruitment and integration of migrants and ensure the sustainability of public finances. The European Commission says that coordination on the European level could simplify the adoption of best practises, foster cooperation and decrease negative impacts.

⁷⁹ For a more detailed account about policies related to demographic change, see: Dorogi, Z., et al. (2014) 'European Strategy for regional responses to demographic changes.' ADAPT2DC project output, 50 pp.

⁸⁰ Green Paper 'Confronting demographic change: a new solidarity between generations', COM/2005/0094 final.

⁸¹ 'Dealing with the impact of an aging population in the EU' (2009 Report) COM 2009/180/4.

⁸² 'European strategy for smart, sustainable and inclusive growth COM 2010/2020.

One of the main documents concerning the problems of ageing is the Lisbon strategy which provides the general frame for other strategies.⁸³ The Lisbon strategy notes that, given the projected budgetary impact of ageing populations, ensuring the long-term sustainability of public finances has become a key policy objective. The expected impact of population ageing and shrinkage in regions might be further exacerbated by an economic or other crisis. A three-pronged strategy has been pursued to ensure fiscal sustainability, consisting of faster debt reduction, pension and health-care reform, and labour market reforms (in particular the extension of working lives).

The European strategy for active ageing strives to create more opportunities for older people to continue working, to stay healthy longer and to continue to contribute to society in other ways.⁸⁴ The challenges associated with ageing need to be turned into opportunities for increased labour participation and productivity, job creation in health and social services, and the creation of new markets, generating a 'silver economy' that encompasses a broad range of economic activities, from health and care products to services, mobility and ambient assisted living. Five main policy areas are employment, access to social services, mobility and accessibility of transport, adapted housing for the ageing population and social inclusion.

Ageing is a problem for states per se. On the regional level problems of depopulation concern mainly the migration of young and educated people from the countryside to urban regions. Differences in the economic and social sphere are regulated to a certain extent on the European and national level through regional policies. In the regions the basic goal is to reorganise services and the utilisation of buildings to accommodate demographic changes but without altering the quality and variability of services, e.g. the consolidation of schools or the supplying of health care or social services. It is also necessary to appeal to the regions and municipalities to cooperate and to solve their problems concerning demographic change together and therefore more effectively.

3.2 Policy review: German policies on the national, federal and regional level

Summary policies dealing with demographic change in Germany at the national government level:

The issue of demographic change is being addressed widely by the Federal Government of Germany. Several policy and strategic documents have been published and/or adopted (e.g. *Regionalstrategie Daseinsvorsorge - Denkanstöße für die Praxis*, *Daseinsvorsorge im demografischen Wandel zukunftsfähig gestalten*, *Demografiebericht der Bundesregierung*). The Federal Government and its Ministries also initiated a number of model projects in regions that are already experiencing the consequences of demographic change (e.g. Stettiner Haff and Südharz-Kyffhäuser). Here, innovative solutions are being tested in order to adapt the different infrastructures, services, administration and others to the consequences of demographic change. The experiences and results of such model projects are then integrated into policy and strategic documents.

⁸³ The Lisbon Strategy 2000-2010. An analysis and evaluation of the methods used and results achieved. IP/A/EMPL/ST/2008-07 www.europarl.europa.eu/document/activities/cont/201107/20110718ATT24270/20110718ATT24270EN.pdf.

⁸⁴ 'Active aging: local and regional solutions.' 2011. Available at: cor.europa.eu/en/documentation/studies/Documents/Active%20ageing%20-%20local%20and%20regional%20solutions/EN.pdf.

The latest publication of the Federal Government related to the aspect of demographic change is the *Demografiestrategie der Bundesregierung* (National Demography Strategy) (2012). On the one hand, it bundles the measures that have already been introduced on different levels; on the other hand, it presents further possibilities for adapting to demographic change. In the above-mentioned documents mainly the following areas of social and technical infrastructure and services are being addressed: schools, public transport, mobility, health care, care for the elderly and the disabled, sewage water treatment, water provision and waste treatment.

In the documents the issue of dealing with demographic change is described as very important for the future development of the country. Hence, the issue is linked also to other (policy) fields that need to be addressed. Amongst them is the promotion of life-long learning, adaptation to climate change and support for resource efficiency, the further extension of health protection and adaptation to the skilled worker shortage.

The documents describe several possible innovative solutions in different infrastructure and service fields. They include:

(A) Water, waste and energy:

- The development of decentralised concepts
- The creation of new income sources (linkage of energy generation and sewage water treatment)
- Flexible technical solutions
- The establishment of a central waste collection system in rural areas
- The introduction of efficient management and optimised technologies

(B) Mobility:

- Demand-based public transport provision
- Merging private and public mobility forms (public transport and car-sharing, call busses)
- Access to public transport as the central criterion for planning social infrastructure
- Increased profitability of public transport: the combination of goods traffic and passenger services
- The development of new offers for new consumer groups (e.g. tourists)
- The development and application of modern communication instruments

(C) Health care:

- Supporting health prevention and personal responsibility
- Stronger networking between medical care and nursing care
- Counterbalancing the expected shortage of doctors (funding programmes, flexible working models)

(D) Communication:

- Extensive broad-band provision
- Maintenance of post services through the development of new organising models

The suggestions also go beyond single infrastructure areas and present solutions that need to be applied in the public administration; for example:

1. The introduction of a demographic check for planning new infrastructure
2. Alternative finance and organisation models
(e.g. revolving funds, time banks, cooperatives)
3. Demographic coaching: professional support for those responsible in communes and for citizens relating to the problems and opportunities arising from demographic change; the development of new ideas for the provision of infrastructure
4. Support for voluntary engagement in the organisation and financing of infrastructures and services
5. The development of small and middle-sized towns as anchors of infrastructural provision

The majority of the aforementioned documents and strategies do not directly deal with the problem of decreasing public funds for the provision with infrastructures and services. In the *Demografiestrategie der Bundesregierung* the consolidation of public budgets is being recommended.

Summary policies dealing with demographic changes in Germany at the Federal State level:

There are several policies on the federal state level of Thuringia and Bavaria dealing with demographic change, most of them published by the Federal Ministries. Besides analysing the development, the current status and projections of demographic data, practical recommendations on how to adapt different infrastructures and services and administration to demographic change are given. The focus is not only put on specific infrastructure and service fields but also on the consequences demographic change might have for other fields like economy and employment, finances, climate change, administration and education.

The broadest publication on the federal level is *Daseinsvorsorge im demografischen Wandel zukunftsfähig gestalten*, which is the result of cooperation between the Federal Government and the Federal States of Eastern Germany. Like the national level, suggestions, measures and guidelines are formulated on how to adapt fields like employment, education, health services and administration to demographic change. Furthermore strategic aims are formulated on the basis of guidelines. The recommended procedures address local authorities, companies and the civil society.

The aspect of less and less public finances and thus the application of alternative financing models are addressed in some publications (e.g. *Landesentwicklungsplan 2025 Thüringen, Demografietest Sachsen*).

The following section bundles strategic documents and initiatives that have been introduced in the two Federal States – Thuringia and Bavaria.

Thuringia:

- The Thuringian Ministry for Building, Regional Development and Infrastructure (TMBLV) established a *Coordinating Council* in 2004 that is responsible for demographic change. This group develops projects and initiatives that address the consequences of demographic change.

- The establishment of a *Service Agency of Demographic Change* in 2011 by the TMBLV and the *Foundation Schloss Ettersburg*: a service agency for politicians, the administration, the economy, associations and citizens who are concerned with questions arising from demographic change.

- *The Thuringian Demographic Conference*

- *The Thuringian Strategy for Sustainability* bundles the guiding principles and focal points. These are, amongst others, related to the adaptation of infrastructure to demographic change in Thuringia. Connections to other fields like support for families and employment in order to attract young people to move to Thuringia; support for the integration of migrants coming to Thuringia from abroad and supporting tolerance amongst the population.

- *Reports on Demography* (published since 2006): These reports function as guidelines for practitioners from the economy, administration, politics and associations who are dealing with the provision of technical and social infrastructure and services.

- *Landesentwicklungsplan 2025 Thüringen* (State Development Plan 2025) presents the guiding principles for regional planning. Amongst them are the creation of equal (but not identical) living conditions in all areas of Thuringia; demand-based provision of public infrastructure; the application of alternative financing and organisation models and the decentralised concentration of public infrastructure. A specific focus is put on rural regions that shall be supported as natural-resource and culturally important areas. All measures for regional planning shall consider demographic change and its consequences for the provision of infrastructure. Differentiated solutions for different spatial entities must be developed (small towns, cities, rural regions). The principle of central places that function as anchor points in the regions must be maintained. The plan stresses that these central places must be connected with rural regions which means that the development of a functioning public/private transport system is fundamental.

- *Thuringian Future Prize*: Since 2012 this prize is awarded every second year to initiatives and projects that are dealing in an innovative way with demographic change.

- *The development of qualified employees needed in Thuringia*: Published since 2008 every second year, the studies inform about the number of employees required in different sectors and give recommendations for the improvement of the situation.

- *Representative for the Coexistence of Generations* (since 2010): He/she shall support dialogue between generations and give advice concerning demographic change and the coexistence of generations and political stakeholders.

Bavaria:

- *Aktionsplan demografischer Wandel* (action plan): The plan presents measures that must be taken in different fields in order to tackle the issue of demographic change in Bavaria. Amongst them is financial support for the economy and communes through reform of the income redistribution between the national, Federal State and communal level; the strengthening of inter-communal cooperation and regional economic promotion; support for education, families and infrastructure through research funding; extended child-care services in rural areas; support for multi-generational projects; promoting the settling of family doctors in rural areas; the development of innovative solutions for reducing the costs of providing water and sewage water treatment and broad-band in all rural areas.

- *Landesentwicklungsprogramm 2006* (State Development Programme): This is the central document for the spatial development of Bavaria, with a special focus on the development of rural regions. It is a guideline for the spatial development of the Free State of Bavaria. Pivotal stipulations are formulated as aims, and they include: maintaining/preserving and establishing living and working conditions of equal value in all parts of the country, devoting special attention

to rural areas and the introduction of primacy principles for rural areas lacking in infrastructure, and the provision of basic infrastructure, such as day-care facilities for children or schools, even during a decrease in capacity utilisation. The primacy principle in support of rural areas which are lacking in infrastructure is unique nationwide. It is essential for the supply of infrastructure, as well as for the classification of assisted areas, the implementation of assistance measures and the allocation of funds.

- *Generationenfreundliche Zukunft* (Generation-friendly Future): The brochure bundles relevant issues for planning and policy practice that are related to demographic change in the form of questions. It shows how the issue of demographic change is related to other policy fields like family policy (the issue of child- and family-friendly communes), senior policy (care for the elderly, living at home), education and employment (the integration of employees with different backgrounds, like migrants and lone parents; life-long learning), civic participation (a framework in communes for the support of civic participation), inter-generational cooperation (which networks and projects are available in communes) and gender equality (which measures have been introduced in order to tackle this issue). The brochure also mentions cross-cutting issues for coping with demographic change like inter-communal cooperation, public transport and support for socially disadvantaged families.

Summary policies dealing with demographic changes in Germany at the regional level:

The level below the Federal States level, the regional level, also addresses the issue of demographic change. An important institution in Germany on the regional level is the regional planning association. Due to the involvement of two pilot regions in the ADAPT2DC project, the regional planning associations of Oberfranken-Ost (Bavaria) and Ostthüringen (Thuringia) are particularly relevant. They formulated *Regionalpläne* (Regional Development Plans) that present central aims and measures for the planning region.

The Regional Development Plan Oberfranken-Ost widely addresses the aspect of demographic change: the formulated aims and measures refer to the consequences that demographic change (already) has for the region. The plan is divided into two sections: the first is interdisciplinary and refers to general aims (the creation and securing of equal living and working conditions), aims concerning the population and the economy (maintaining population numbers, attracting new inhabitants) and the spatial structure (improving public transport). The second section bundles aims and measures for single infrastructures like water and energy provision or health care. In general the focus is on improving the provision of infrastructures and services and the creation of equal living conditions comparable to other Bavarian regions. The aspect of cost-saving is mentioned, but no concrete or direct options are presented.

The mentioned planning documents refer to two aspects: the creation of equal living conditions in the regions and the concept of central places. The first has been integrated into the constitution of Germany (article 72) and has thus shaped national, federal and regional policies. However, different authors (Back 2006, Maretzke 2011) have stressed the need to introduce a new paradigm within regional planning that does not follow the aim of equal living conditions but rather the provision of basic supplies. The latter relates to the concept of central places, a system of spatial planning which, based on the size groups of inhabitants, determines which tasks the communes have to fulfil (Bartl 2011: 86). It functions as an instrument for regional stabilisation and directs the (de)-concentration of infrastructures and services. The concept is neither directed towards growth nor shrinkage; it enables adaptation in both directions. Zeck stresses that it is a question whether this concept needs to be adapted to the new demographic context (Zeck 2003).

3.3 Policy review: Hungary and Észak-Alföld Region

Summary policies dealing with demographic change in Hungary at the national government level

In Hungary, the birth rate is typically low and decreasing, the mortality rate is high. The number of inhabitants has diminished for more than two decades; in the past 20 years, the population has diminished by approximately 5 per cent. Forecasts assert that this tendency will continue, which highlights the importance of demographic issues. Even so, Hungary has a lack of exclusively demography-related policy papers or strategies. On the national level there are several operative policy documents and strategies that have demographic relevance but the issue is usually connected to other policy fields.

The Hungarian National Strategic Reference Framework/the New Hungary Development Plan (NHDP), 2007-2013 (2007) – The Plan has just indirect relevance to demographic changes. The NHDP focuses on raising the level of employment and establishing conditions underpinning permanent growth. The Plan highlights initiatives focusing on targeting social renewal.

New Széchenyi Plan (2011) – The economic development programme of the Hungarian government responds to the demographic challenges Hungary is facing, and ensures a growth scenario that can be sustained over the long term. The main objectives are improving Hungary's competitiveness by creating one million new jobs within ten years.

Social Renewal OP (SROP/TÁMOP) – The purpose of the SROP is to implement interventions in the programming period 2007-2013 that affect the entire population of the country. The specific objectives of the SROP are: improving the alignment of labour market demand and supply; reducing regional differences in activity; promoting adaptability to changes; promoting lifelong learning; improving the state of health and ability to work; strengthening social inclusion, promoting equal opportunities.

Social Infrastructure OP (SIOP/TIOP) – SIOP focuses on the development of the physical infrastructural background of human public services. Accordingly, it involves developing the infrastructure of education and training, the health-care system, the labour market and social services.

The Széll Kálmán Plan (2011), containing Hungary's Structural Reform Programme (2011-2014) – On the basis of political decisions concerning structural reforms, a detailed action plan has been prepared with the relevant schedule and legislation in order to maintain secure fiscal positions in 2013/2014 in Hungary. The described structural changes indirectly affected the demographic situation of the country. For example: The Programme contains strategic directions, or reform conceptions, in which some critical areas (such as the system of self-governments, pensions in kind, social services, affairs of public finance, community traffic) can be improved.

Széll Kálmán 2.0 Plan (2012), containing the National Reform Programme of Hungary 2012 and the Convergence Programme of Hungary 2012 – Continuing the above-mentioned Structural Reform Programme 2011-2014/ Széll Kálmán Plan, the Széll Kálmán Plan 2.0 implements further steps to secure fiscal sustainability for Hungary. The Programme focuses on tackling unemployment and the social consequences of the crisis, such as making significant efforts to increase the employment of disadvantaged groups. The following reform proposals of the document have indirect demographic relevance:

- Reforming the health-care system (reorganisation of health care according to the Semmelweis Plan – among others to make specialised outpatient and inpatient care a state responsibility (instead of local governments), to coordinate the developments planned in the health sector and the social sector).

- Reforming the education system (among others to strengthen a practice-oriented learning and training, to organise public education better adjusted for actual labour market needs; in higher education, government roles will be reconsidered in size and nature with a view to a smaller share to be undertaken, reduction of the number of student posts with public financing).

- Reforming the labour market (the main goal is to channel people who are able to work but are presently inactive back into the labour market by means of more efficient labour market incentives and regulations as well as a more targeted labour market, training or social subsidies).

- Reforming elderly care and active ageing (efforts are made to push back various forms of early retirement in addition to the separation of insurance, solidarity and social elements of the existing system from one another; the main goal of realigning the social protection system is to offer working opportunities rather than social aid to people long-term out of work).

- Modernisation of public administration.

The National Spatial Development Concept (NSDC/Országos Területfejlesztési Konceptió) (2005) – The NSDC defines Hungary’s spatial vision, the comprehensive, long-term spatial policy objectives necessary for achieving that vision, and medium-term spatial objectives, outlines spatial policy priorities, sets out the conditions for institutions and instruments of policy implementation, and contains conceptual objectives for the individual regions. The Concept has a strong focus on the socio-economic perspective. Next to other things it deals with: attracting investment to ensure a high level of job creation in regions struggling with concerns about employment; and improving the ability of hamlets and geographically peripheral areas to retain their populations and attract new residents. The document highlights the importance for the successful implementation of decentralisation that the developmental resources of the towns/villages are also increased so that they control their own developmental resources.

National Development 2020 (under public consultation till 31 Jan 2013, expected approval around April 2013) / National Development and Territorial Development Concept of Hungary – Renewal of the above-mentioned National Spatial Development Concept (2005). The new strategy also meets the challenges of the programming period of 2014-2020. The Concept analyses the current demographic situation of Hungary in an international context and projects the national demographic scenario till 2021. It also deals with the expected demographic effects of the above-mentioned structural reforms. The Concept defines integrated actions to solve demography-related problems on the national level. For example, it emphasises the importance of strengthening local communities.

New baby-boom discussion paper (2012)

The discussion paper was implemented by the so-called 'Population Roundtable', which is an important platform for demographic issues in Hungary. The Roundtable was founded in 2009 by the Hungarian Academy of Science in order to advance the demographic situation in Hungary. Eight working groups from different spheres (scientific, NGOs, church, business, etc.) are working monthly together to elaborate proposals to increase the number of births in Hungary. The proposals are sent to the Hungarian Government, where the preparation process of family-related legislation is based. The most important proposals of the Roundtable were published under the title 'The New Baby-boom – the Parenting Revolution of the Hungarian Middle Class'. The main topics of the documents are the following: flexible working hours, the creation of a flexible childcare system, transferability between subsidies given by cash and services supporting child-raising, family-friendly workplaces, local governments, higher education, housing allowances for youth, etc.

The National Rural Development Strategy 2012-2020/ Darányi Ignác Plan (2011)

The Strategy sets out the objectives and basic principles of rural development's focus on sustainability and the values of rural life. One of the five strategic objectives of the Strategy is 'The Strengthening of Rural Communities, Improving the Quality of Life of the Rural Population'. Among others it defines actions to stop migration out of rural areas and contains incentives for young people to take up farming, undertake a rural life and remain in rural settlements (in the framework of the 'Demographic Land Programme' [Demográfiai földprogram] it supports young farmers with preferential, permanent [25 to 50-year] leases of rural infields), and it restores the close relationship between the city and its rural surroundings.

Summary policies dealing with demographic change at the regional level - Észak-Alföld Region

In the Észak-Alföld Region there are several regional development documents that have relevancy in the field of demographic change. The **Észak-Alföld Regional Development Strategy** has five specific aims, and some of its priorities are relevant to the field of demographic changes. The most important goal according to social issues is the fifth specific aim of the development strategy, which endeavours to decrease regional differences, strengthen social cohesion and increase employment in the region.

According to the **Észak-Alföld Region Operational Programme** regarding the issue of human resources, one of the priorities of the operational programme is the development of human infrastructure. Human resources development requires the consistent education conforming to the appropriate standards, starting from the nursery-school level. In this field the regional optimisation and development of public services of a personal nature plays a special role. The priority axis favours supporting the development of nursery and lower levels of primary education near the home. One of the operational objectives of the priority axis is the improvement of the quality of public services in settlements within the region.

All three counties in the Észak-Alföld Region have their own Regional Development Concept. All these concepts are currently being restructured but the preliminary assessments of the current situation are available for public consultation. The **Regional Development Concept of Jász-Nagykun-Szolnok County** presents potential development possibilities in reference to demographic figures and with a focus on improving the situation of the local population and among other things it supports innovative cooperative initiatives between municipalities, institutions, and NGOs. The assessment of the current situation in the Regional

Development Concept of Hajdú-Bihar County states that to improve human capital in the county the development of education is planned and the population-retention of the county will be increased by focusing on employment centres in rural areas. In the **Regional Development Concept of Szabolcs-Szatmár-Bereg County** however the expansion of employment is one of the planned interventions, while the role of and thus support of day-care services is neglected.

Besides the aforementioned documents on regional development there is also the **Semigra Case Study Report of the Észak-Alföld Region**, which was elaborated within the framework of the ESPON 2013 Programme. This case study report concluded that, without a dramatic rethinking of national demographic policy, the negative effects of the migration being experienced today cannot be overcome. The most important fields of development are job creation, education, youth policy, and village and rural development, and among the latter the importance of the early development of skills, starting with kindergarten-age children, is emphasised.

3.4 Policy review: Czechia and the Ústí Region

Policies at the national level

On the national level the main authority concerning ageing is the Government Council for Seniors and Ageing of the Population, which was created in 2006 as a government advisory board for this topic. The Council tries to create conditions for a healthy, active and dignified old age in Czechia and for the active engagement of older people in the economic and social development of society. The Council suggests conceptual and legislative solutions of significant questions concerning the life of older people and the ageing of the population and initiates partnership between public authorities, social partners and civil society organisations. It also reviews and evaluates EU documents and documents created by other international institutions dealing with this topic and consequently the Council submits suggestions for their implementation in specific policies to the government. The Council has 28 members and it falls under the Ministry of Labour and Social Affairs.

The Government Council for Seniors and the Ageing of the Population initiated the creation and ratification of the National Programme of Preparation for Ageing (Quality of Life in Old Age) for years 2003-2007 and 2008-2012 and National Action Plan Supporting the Positive Aging in 2013-2017.⁸⁵ The National Programme of Preparation for Ageing posits that it is necessary to focus on these strategic themes and priorities to improve the quality of life in older age and to successfully address the challenges connected with demographic change – active ageing, an atmosphere and community open to old age, the improvement of health and health care in old age, support for the family and social workers, and support for the participation of older people in society, and human rights protection. These priorities must be supported horizontally across sectors and at all levels of public administration. One of the goals specifically mentioned is to decrease social and regional differences in access to public services. The National Action Plan underlines also lifelong education, employment of older people and seniors, volunteering and intergenerational cooperation.

⁸⁵ Národní akční plan podporující aktivní stárnutí pro období let 2013 až 2017. Available at: www.mpsv.cz/files/clanky/14540/NAP_2013-2017_070114.pdf.

The Ministry of Agriculture has a Rural Development Programme which also tackles ageing and population shrinking. It aims among others to support farmers in disadvantaged areas but also to promote the restoration and development of villages, public infrastructure and services; it promotes establishing new companies in the countryside and their development, and promotes the preservation and development of village heritage and tourism. The other goal is to implement regional development strategies. The promotion of projects is mentioned in the Green Paper 2010. Czech government approved in July 2014 Rural Development Programme for years 2014-2020.

The Ministry of Regional Development's strategy of regional development defines decreasing unfavourable regional differences and the development of specific problematic regions as its main goals. Financial resources should target the modernisation and diversification of the economic structure of these regions hit hard by economic restructuring, the improvement of economic efficiency of economically weak regions, the development of the labour market in regions with high unemployment, and the economic diversification of rural regions and peripheral regions lying outside development axes. The strategy also defines which regions can gain support from certain development programmes. One of the main goals is to halt tendencies towards economic underdevelopment and the shrinking and depopulating of small municipalities.

Policies at the regional level

All 13 regional governments in the Czech Republic have their own programme documents concerning the future development of the region and strategies for this development. Most regions are aware of demographic trends connected with population ageing and depopulation, mostly in remote areas. However, only some regional governments consider ageing a significant problem that needs to be tackled with specific policies. In the programme documents in several of the regions selective out-migration from rural areas related to the transformation of their economic base and problems with civic amenities and public services in smaller municipalities are mentioned.

The main goal of policies at the regional level is stabilisation of the population in the countryside, maintaining housing in smaller municipalities and maintaining the network of elementary schools in rural areas. Among activities designed to stop the depopulation of remote areas the following priorities are mentioned: improving transport infrastructure and above all transport services to nearby centres where services and jobs are concentrated, promoting housing and projects for the revitalisation and modernisation of buildings used for public services in smaller municipalities. Other significant aims commonly include the promotion of employment and job creation in the countryside, the development of IT infrastructure for enterprises in the countryside, the promotion of rural tourism and the use of active employment policies. Another aim is to broaden the portfolio of economic activities for decreasing the level of countryside's dependence on cities and suburban zones. The need to increase the competitiveness of agriculture and landscape management as a stabilising element of rural areas is also included in the policy options. It is necessary in all areas to ensure the provision of good-quality health care and social services accommodating demographic changes as well as promoting local communities and civic initiatives helping to adapt to the changing demographic situation.

Policies in the Ústí Region and the Vejprty Region pilot area

All the programmes and analytical documents concerning the development of the Ústí Region mention the demographic changes in the region but population decrease is not yet

considered as a significant problem. The Ústí Region is at present one of the youngest regions in Czechia, as is noted in the Problem Analysis of the Ústí Region, but even there it is possible to witness the impact of population ageing. The trend of population ageing will continue according to the analysis. It is expected that population ageing will be more dynamic in Ústí region than in other parts of Czechia due to the young age structure the region inherited from resettlement of the region after World War II. All the documents also point out large differences among various parts of the region. While in the big cities of the Ústí Region the decrease in the population is on a smaller scale than in other regions in Czechia, population shrinking is already observed in remote municipalities in the Ore Mountains area. Until recently the population of the region was decreasing due to natural decrease, but this has been offset by significant immigration (mainly international immigration). During the economic crisis several factories closed and the level of unemployment rose. This led to an increase in out-migration from the region. Mostly young and educated people from small municipalities leave for bigger cities in search for jobs.

The Development Programme of the Ústí Region mentions deepening regional differences in the quality of living conditions and poorer access to jobs and services in remote areas. One of the main priorities for the region is the development of public transport on the micro-regional level with the goal of modernising it and consequently attracting more users. Another priority is the promotion of regional development, which in practice means projects for the embellishment of villages and for the restoration and development of village housing, and also projects aimed at the development of information and communication technologies. The goal is to decrease unemployment through the creation of new jobs based mostly on local and regional production, the promotion of small and mid-sized enterprises, especially in the service sector, handcrafts, tourism and social services.

3.5 Policy review: Italy, the Piedmonte Region

Policies at the national level

In Italy, at the national level, the basic relevant documents related to demographic changes and adaptation to them are the National Operational Programmes (NOP) edited by the Italian Ministry of Labour and Welfare, the Ministry of Education and the Ministry of University and Research jointly with the Ministry of Economic Development.

As indicated in the National Strategic Framework, the Ministry of Labour and Welfare is responsible for two National Operational Programmes (NOP): **'System Actions - Regional Competitiveness and Employment'** and **'Governance and System Actions - Convergence'**. The objectives of these NOP are three. The first objective is to contribute to a balanced relationship between the regional dimension of the strategy and operations and to ensure a 'national system' of necessary actions in terms of capacity-building guidance and the monitoring and evaluation of the overall process of creating standard devices and common ties with European processes. This will involve the implementation of measures such as defining standards, developing nationally important tools, monitoring, evaluation, analysis, and knowledge on a national scale, aimed at guiding the choice of specific topics and, more generally, policies. The second objective is to play an active role in educational reform, training, work and public administration, adapting systems to European standards and to recommendations addressed at Italy for the implementation of the Lisbon Strategy, in particular in the area of the European strategy for employment and the construction of a system of lifelong learning. The third is to take particular care of Convergence Regions, whose systems require special attention, and provide effective and appropriate assistance and support.

The NOP strategic priorities are:

1. **Adaptability:** to help increase the adaptability of workers, enterprises and entrepreneurs and to promote organisational innovation in the workplace;
2. **Employability:** to support policies for improving access to employment, preventing unemployment, and in support of sustainable inclusion and increased participation in the labour market;
3. **Human capital:** to strengthen human capital in support of reform processes, improving the quality and interaction of education, training and work;
4. **Equal Opportunity and Non-discrimination:** to promote and to strengthen policies in support of gender equality and to combat all forms of discrimination;
5. **Institutional Capacity:** to promote and to strengthen the skills of public administration;
6. **Transnationalism:** to develop the European dimension of education, training and work;
7. **Technical Assistance:** to improve the efficiency and overall effectiveness of the ESF programme, to further operational implementation and integration with the other funds and enhance the effects on regional operational programmes and systems.

The Ministry of University and Research and the Ministry of Economic Development are responsible for the National Operational Programme (NOP) '**Competitiveness and Research**'. The general objective of the NOP is to contribute to the promotion of convergence towards the EU average for development through the regional advancement of the ability to produce and use research and innovation to trigger a lasting and sustainable development. The NOP priorities are: support for structural changes (including actions that, through highly selective interventions at the structural level, pursue the goal of changing production specialisations); support for innovation (through actions that tend to enhance the focus on innovation and development by companies and to change the factors of the entrepreneurial impulse to action); and technical assistance and support for activities - including all actions which increase the efficiency and effectiveness of the interventions planned and the optimisation of the strategic management of the NOP.

The Education Ministry is responsible for one National Operational Programme (NOP) '**Competences for Development**'. The three objectives of the NOP strategy are: to raise the levels of learning and key competences; to increase access to vocational education and training; to increase participation in educational opportunities throughout life; to strengthen, integrate and improve the quality of education, training and work and their connection to the given territory.

Policies at the regional level – the Piedmonte Region

At the Piedmonte regional level, where demographic analysis and studies on occupations suggest that the Piedmonte population is changing, it should be stressed that demographic change, in particular in relation to the ageing of the population and in relation to the Alpine space (with an increase in polycentric organisation instead of the previous model with Torino at the centre of every spatial relation), will represent one of the most important challenges that Piedmonte will face in the next few years. This is what is expressed in the Strategic

Preliminary Regional Paper 2007-2013 edited by the Regional Council (2005). According to this document, the specific objectives pertaining to demographic change concern the employment axis (increasing job market participation among the young and elderly people and among women; sustaining lifelong learning; the valorisation of elderly people, job mobility and professional careers to prevent unemployment and job precariousness) and cooperation (overcoming the problems of periphery; defining common projects of spatial management; sustaining innovative knowledge-pooling, job market integration, the exchange of experiences and competences, the creation of an integrated trans-border system). Similarly oriented is the Rural Development Programme 2007-2013 edited by the Piedmonte Regional Board. In this document, four types of areas in the region are identified: 1) urban centres, including urban and peri-urban areas: 17.6 per cent of the land, 61.8 per cent of the population; 2) rural areas with intensive agriculture: 17.3 per cent of the land, 13 per cent of the population; 3) intermediate rural areas: 22 per cent of the land, 14.4 per cent of the population; 4) rural areas with development problems (particularly mountain areas): 43.1 per cent of the land, 10.8 per cent of the population. Additionally, according to EU Council Regulation 1698/2005, LFA (Less Favourite Areas) in the Piedmonte Region are localised mostly in mountain territories. Nearly the same territory can be identified using indicators suggested by IRENA in point number 17 (Marginalisation), according to which marginal areas are those in which more than 40 per cent of agricultural enterprises have a household head over the age of 55 and gross income equal to less than half of the regional average. In the document, four strategic axes are identified: improving the competitiveness of the agricultural and forestry sectors; improving environment and rural areas; quality of life and rural economy diversification; the Leader Programme. The related objectives are the following: economically supporting the settlement of young farmers and the structural adequacy of their enterprises (the funds are given to people under the age of 40 who are the owners of an enterprise, who have adequate professional knowledge and a strategic business plan); allowances for mountain farmers (the funds are given to farmers who operate in a disadvantaged area for at least five years from the time of the first payment); sustaining the creation and development of micro-enterprises; incentives for tourist activities connected to the sustainable use of rural territory.

The Piedmonte Region, after the promulgation of the Italian Act on Local Autonomies (L.142/90, afterwards converged in D.Lgs 267/00), passed its previous Urbanism Act in 1997, which contained the first Regional Territorial Plan. The new Regional Territorial Plan replaces the previous one and was approved by the Regional Council and adopted in DCR 122-29783 in 2011. In this document, five strategies for the Piedmonte Region were identified: 1) territorial re-qualification and landscape valorisation; 2) environmental sustainability, energy efficiency; 3) territorial integration of mobility, logistic and communication infrastructures; 4) research, innovation and economic-productive transition; and 5) human resources and institutional knowledge valorisation. In relation to demographic change, the most important objectives are: the promotion of quality and the accessibility of health benefits, and bringing regional services and healthcare services to citizens; the promotion of social policies for vulnerable people, families and children and reducing social conflict; the improvement of regional education; the development of systems for training and supporting the adaptability of workers and of policies and services to promote competitiveness and entrepreneurship; increased efficiency, effectiveness, quality and inclusiveness of labour market institutions; the implementation of active and preventive labour market policies, with particular regard to the integration of migrants into the labour market; active ageing, self-employment and business starts; the integration of disadvantaged people into employment and fighting all forms of discrimination in the labour market; the improvement of women's access to employment and reducing

gender disparities; increased participation in learning opportunities throughout life, raising the levels of learning and knowledge and increasing networking between universities, research centres, and the technological, institutional and productive world, with particular attention to the promotion of research and innovation.

It is also important to mention the Regional Landscape Plan, which was prepared to disseminate knowledge about the strategic role of the Piedmonte landscape and was officially adopted in DGR 53-11975 in 2009. This focuses mainly on territorial cohesion, polycentric development and co-planning and it has five main goals: the redevelopment of environmental protection and the enhancement of the landscape; environmental sustainability; energy efficiency; the regional integration of infrastructures of mobility, communication and logistics; research, innovation and economic restructuring; human resources and institutional skills.

3.6 Policy review: Poland and Małopolska Region

Policies at the national level

Poland 2030

'**Poland 2030**' is a governmental initiative aimed at detecting and discussing the main challenges of socio-economic growth in Poland to the year 2030. It is promoted as a key report and think-tank based activity for the strategic planning of state and regional policies. The report identifies ten key challenges; challenge no. 2 addresses the demographic situation. According to the report – as of 2009 – the Polish population was still relatively young. Demographic trends identified within the report however indicate that this situation is changing. A visible decrease in the total fertility rate after 1990 is considered the key factor of the long-term negative demographic trend in Poland. Social attitudes towards starting a family and having children have directly influenced this factor. Other conditions are described as indirect.

In further analyses the report targets the issues of:

- family models, the economic behaviour of families and family fertility,
- women's employment and employability,
- the demographic and age structure of the female population in urban and rural areas,
- life expectancy and the increasing elderly population,
- migration,
- the impact of ageing and depopulation on the economy, labour market, health care and social insurance schemes.

Challenge no. 7 identified in the report addresses solidarity and cohesion. One of the key issues identified there is the strong threat of increased depopulation in the eastern regions of the country, caused by international and domestic migration, especially of women aged 20-35 years.

Poland 2030 – the Long-term Development Strategy of Poland

The '**Long-term Development Strategy of Poland**' was based on the diagnoses and assumptions made in the 'Poland 2030' initiative. Therefore, it is very much aligned with the document described above.

Among others, the following strategic and operational objectives were agreed:

Improving the demographic situation (not diminishing the professional activity of parents) and the use of demographic reserves:

- Increasing the total fertility rate,
- A common balanced pension system,
- Longer employment of men and women.

Positive net migrations are indirectly targeted by the strategy. This issue is not, however, clearly linked to specific territories affected by the threat of depopulation.

The Foundations of Population Policy in Poland 2012

The document '**Foundations of Population Policy in Poland 2012**' is a policy project presented by the Governmental Population Board (GPB). The GPB is a support body for the Prime Minister and therefore the document is not a part of official legislation. The document updates former policy (2004) and reflects upon current issues including the European perspective and social trends.

The document aims to set up a strategic agenda to address the societal, economic and political conditions of demographic processes in Poland. It focuses on the national (state) perspective, but it also calls for governance mechanisms such as multi-level public and wide-range private involvement.

The state policy presented in the document can be summed up as follows:

- to target the process of family formation and families' living conditions by focusing on fertility, health and migrations;
- to use any available measures of national social and economic policy to support this;
- to operate at the national and lower territorial levels, hence to involve as many non-governmental (civic, social) actors as possible.

Therefore, the policy pinpoints the following fields of strategic interest:

- labour adaptability and entrepreneurial attitudes;
- social security and insurance;
- real estate;
- health prevention and treatment;
- education.

There are four strategic goals described in the document that can be summed up as follows:

- to create sound conditions for families (support for marriage and procreation);
- to create sound conditions for integration into an ageing society (support for the elderly, the excluded and disabled people);
- to improve health conditions and reduce the death rate;
- to influence migration.

The goals are further translated into operational activities and include practical measures addressing all the above-mentioned strategic fields of interest. Respective actors and sources of funding are presented. The document offers a set of evaluation/monitoring indicators.

Based on national statistic and EUROSTAT data as well as several documents from experts, the document thoroughly diagnoses current and projected demographic changes, labour income, pension schemes, ageing and migration processes in Poland.

Strategy of Human Capital Development

The document '**Strategy of Human Capital Development**' is a governmental project promoted by the Prime Minister's Team of Experts as one of nine supportive strategic documents to facilitate the complex implementation of national development strategies (long- and mid-term strategies). The document naturally refers to the Europe 2020 strategy.

The tools are priority-oriented and therefore they target particular challenges, but their influence should be noticed more horizontally. For example:

- Increased availability and quality of elementary education (kindergartens) in villages. The solutions offered for implementation include new and flexible institutional arrangements and financial support for communities. The economic activity of young parents can thus also be supported.
- Support for territorial mobility by means of a housing policy that focuses on the economic activity of people, parenthood and life-long learning. The residential rental market has been identified as limited in cities. The solutions offered for implementation include new regulation schemes designed to expand the residential rental market, support for rental community housing, and the pursuit of joint development housing formulas.
- The extension of the effective age of economic activity 'reactivation' targeting the elderly. The huge potential of knowledge and experience possessed by early retirees could be lost and the cost of pension schemes could rise dramatically as a result of depopulation. Thus, 50+ programmes and other employment mobilisation schemes can be of significant value with respect to depopulation and the ageing of society.
- Increased availability and quality of medical support for elderly people. The shortage of qualified medical personnel and the increasing number of 60+ people make medical treatment more costly and reduce the potential for activity among the elderly. Higher qualifications and more geriatrists are needed and relevant educational programmes should be implemented into medical studies.

The strategy offers a total of 64 tools with a clear intention to challenge social trends, tools such as flexibility and learning adaptability, job mobility, depopulation and ageing, and various types of migration processes.

National Regional Development Strategy

The '**National Regional Development Strategy**' (201 pages, approved by the government in July 2010) formulates three strategic objectives for state regional policy. Objective no. 2 – strengthening territorial cohesion and countering the marginalisation of problem areas – is partly focused on issues relating to depopulation and demographic change.

To quote the strategy: due to the fact that numerous territories are particularly challenged by depopulation caused by ageing, migrations or negative relations between birth and deaths indexes, it is of critical importance to:

- plan investments in infrastructures and public services in a manner relevant to the expected number of future customers / beneficiaries,

- support urbanisation processes,
- put more efforts into activities related to human capital development.

It is strongly stressed in the strategy that rural areas and eastern regions of the country are ‘locked-in’ in a situation in which economic underdevelopment and poor public service not only influence family models but also prompt young people to migrate outside the area.

There are no direct *expressis verbis* objectives or instruments in the ‘National Regional Development Strategy’ that directly address demographic change and depopulation. These issues seem to be addressed horizontally across the document as a whole under various policy propositions.

Spatial Development Perspective – Poland 2030

The ‘**Spatial Development Perspective of Poland to 2030**’ reflects the findings of the aforementioned documents. Like the ‘National Regional Development Strategy’, demographic change and depopulation seem to be addressed horizontally across the document as a whole in the framework of various recommendations. In other words the ‘Spatial Development Perspective’ proposes indirect actions relating to demographic issues rather than offering a package of policy instruments towards them. The main finding of the ‘Spatial Development Perspective’ pertaining to demography refers to the expected strengthening of metropolitan areas, while surrounding areas (especially rural and nature preservation areas) will lag behind, affected by the migration of young people and a decreasing fertility rate.

Strategy of Social Policy for 2007-2013

The document ‘**Strategy of Social Policy for 2007-2013**’ was adopted by the government as an official document for the National Development Plan 2007-2013. The Ministry of Social Policy was the promoter of the document. The strategy is a response to EU legislation and strategic actions and therefore has been prepared according to the assumptions of the European Social Model, including state responsibility, social and societal human rights, multi-sectorial and multi-level policy, demographic challenges and trends. It also deals with the national policy framework including documents focusing on social integration, civic society, education, culture and youth.

The state policy presented in the document can be summed up as follows:

- to target the process of developing an integrated state policy,
- to uphold the social rights of all citizens, improve the conditions of families and support groups at risk of exclusion,
- to operate via citizens’ governance.

Therefore, the policy pinpoints the following strategic goals/priorities:

- sound conditions for families and support for youth education and development,
- an active social policy enabling social activity and integration,
- the integration of disabled people,
- a support system for people aged 65+,
- the mobilisation of local partners,
- a public-private partnership formula for social services development,
- the social and labour integration of immigrants.

The goals are further translated into operational activities and include practical measures. The document comprehensively diagnoses current and projected demographic changes, social spending for 2005-2020, and the financial consequences and implementation plans for the proposed policy. It diagnoses territorial and social disparities and their influence on education, health, housing, culture and transportation.

Regional level - Challenges of Małopolska in the Context of an Ageing Population

Małopolska Region is strongly focused on issues of demographic change. The regional development strategy calls for an array of activities concerning services dedicated to senior citizens, with the idea of promoting a 'silver economy'. One of the key strategic activities defined for the region is the implementation of a regional strategy relating to an ageing society.

In 2010 Małopolska published a strategic document delivered under the INTERREG IVC project 'PEOPLE Innovation for Societal Change' entitled '**Challenges of Małopolska in the Context of an Ageing Population**'. The starting point of the document is similar to the national-level policy documents, i.e. it states that the current demographic situation is not bad, but prospects for the future are not so optimistic.

The document tackles the issues of:

- needs related to health care and long-term care for elderly people,
- the needs and potential of Małopolska in the area of health and outdoor activities related to tourism,
- the needs of elderly people related to living conditions,
- the educational and social potential of Małopolska,
- the cultural and touristic potential of Małopolska,
- the economic potential of Małopolska.

The final part of the document is devoted to comprehensive policy recommendations towards strengthening the 'silver economy' in Małopolska. The proposed approach focuses on improving regional resources. As a consequence, the recommendations are split according to a typology of 12 kinds of resources and some (1-8) linked policy measures or projects. Altogether 34 policy measures / projects are listed. Moreover, 7 key regional investment projects are proposed as well as a draft dissemination plan.

3.7 Policy review: Slovenia, Podravje Region and Maribor

Summary of policy documents at the national level

Slovenia has been faced with demographic changes that have already affected the functioning of the Slovenian economy. As other European countries the Republic of Slovenia has been adopting several documents in the last years to cope with the negative effects of demographic changes. To combat the undoubted ageing of the population, a strong bias towards the promotion of active ageing can be found. Priority areas in the documents and measures and other activities given special attention and support include: integrating the third generation in employment, assuring adequate pensions, introducing insurance for long-term care and social security programmes in the field of ageing, supporting preventive health programmes, promoting and supporting life-long learning, accessible transport, housing and financing research on ageing.

The Development Strategy of Slovenia (2005) considers demographic changes and the issue of shrinking within five development priorities, such as economic competitiveness and faster economic growth, the creation and use of knowledge for economic development and quality employment, an efficient and less costly state, a modern social state and increased employment, the interconnectivity of measures aimed at achieving sustainable development.

The National Development Plan of Slovenia 2007-2013 (2007) is primarily based on the Development Strategy of Slovenia. Its objectives relating to demographic change are reflected in proposed measures to increase economic, environmental and social capital and to increase efficiency in terms of economic competitiveness and quality of life.

Improving the welfare of Slovenian inhabitants by supporting economic growth and job creation, strengthening human capital, and ensuring balanced regional development is the main goal of the **National Strategic Reference Framework 2007-2013 (2007)**. To achieve these objectives emphasis is also placed on improving institutional and administrative competency, especially in the public sector, which is essential in order to accelerate economic growth in Slovenia.

Population ageing is one of the largest economic and social challenges in Slovenia. The Slovenian government undertakes measures to alleviate the negative consequences of ageing, especially by adopting **active ageing policies** regarding economic growth and productivity.

A comprehensive strategy for dealing with ageing at the national level is the **Strategy for the Protection of Older People by 2010 – Solidarity, Coexistence and Quality Ageing (2006)**. The strategy has been adopted by the Government of the Republic of Slovenia for the purpose of creating conditions conducive to solidarity among generations and quality ageing.

The strategic document **Measures to Promote Active Ageing (2010)** is the action programme, issued to upgrade the Strategy for the Protection of Older People by 2010. The measures aim to increase the activity and employment rate of the older Slovenian population and contain mechanisms in support of the activation of older people in the labour market, education and training options for older employed and unemployed persons, awareness-raising campaigns to dispel stereotypes about ageing, increasing health and safety at work and improving public employment services. Tailor-made job search assistance and social activation as preconditions for the employability of older people take centre stage. A new Strategy for Quality Ageing, Solidarity and Coexistence of Generations in Slovenia by 2020 is under preparation.

Several other national documents indirectly influence demographic policies, such as the Act on Encouraging Harmonised Regional Development (2005), the Programme of Reforms to Implement the Lisbon Strategy in Slovenia (2005), the Regional Development Strategy of Slovenia (2001), the Spatial Development of Slovenia (2004), the National Strategic Plan for Rural Development 2007-2013 (2006), and the Resolution on National Social Services for the Period 2006-2010 (2006).

The National Development Programme for Slovenia 2007-2013 (2007) outlines the basic framework for regional development programmes.

Regional level – Podravje Region and the City of Maribor

The Regional Development Programme for the Podravje Statistical Region 2007-2013 is an essential programme and implementation document and it reveals that demographic trends

in Podravje Region and Maribor are similar to elsewhere in Slovenia. The 41 municipalities included in the Podravska Statistical Region are among those who are experiencing above-average population shrinkage within Slovenia. Policies and national measures are taken into consideration at the municipal level in different areas of intervention, such as the economy, traffic, the environment, education and quality of life.

On the regional level Podravje and Maribor City are mostly covered by the **Regional Development Programme for the Podravje Statistical Region 2007-2013 (2007)**. This programme includes analyses of the region, defines development opportunities, presents a vision, goals and priorities for development, and contains financially valued programmes and projects. It also contains sectorial analyses, changes and development programmes and development forecasts, and an outline of the state's and the municipalities' tasks in the economic, social, spatial, and environmental fields and for cultural development in the region. The Regional Development Programme 2007-2013 for Podravje Region includes an agreement between forty-one municipalities. Analyses done to prepare the programme revealed problems of depopulation, population ageing and rural/urban outmigration. Adaptation to demographic changes is tackled directly and indirectly within three developmental priorities. The first developmental priority concerns the creation of a connected, successful and visible region. The second developmental priority (entrepreneurship, competitiveness and knowledge for rapid development) represents a range of competences in the field of entrepreneurship, including increasing employability, competitiveness and investment in human resources. The third regional developmental priority concerns achieving balanced and sustainable development with a focus on the promotion of the principles and measures of sustainable development, social inclusion, an information society and universal access to public infrastructure.

The Regional Development Programme 2007-2013 for Podravje Region is the base for the **Implementation Plan for Podravje Region**, where feasible public and private projects are prioritised and harmonised with financial resources.

The Development Strategy of Maribor (draft, 2010) aims to improve the situation in Maribor, which is recognised as shrinking. The draft covers important topics such as the economy, traffic, the environment, education and quality of life. These issues are addressed in reference to combating demographic problems and shrinking. It suggests reversing the region's shrinking trend by implementing measures to ensure the creation of new jobs and conditions for a small economy, and by decreasing the amount of migration.

3.8 Summary of Policy Analysis

An overview of policies related to demographic change in Central Europe shows the substantial differences in the importance of demographic change for decision-makers. It is not surprising that policies reflect the history of demographic change in regions. In counties with a significant share of shrinking or/and ageing regions, relevant policy documents are more developed. Policies at the national and also the regional level usually include demographic change as a part of the wider background for policy documents; policies exclusively focused

⁸⁶ This might be due to the fact that most policies and planning documents are growth-oriented and the topic of population shrinkage is often seen as a sign of decline, not development. To avoid such negative connotations, labels like population re-growth are applied instead, or policies dealing with population shrinkage are not included into planning and policy documents in general.

on demographic change are not yet common. In general, policies aimed at tackling the problem of demographic ageing are more common and developed in more detail than policies focused on population shrinkage.⁸⁶ When policies focused on population shrinkage exist, they are mostly targeted at mitigating shrinkage instead of adapting current systems to new or forthcoming demographic conditions. From the perspective of individual countries the main conclusion learned from the policy analysis could be summarised as follows. In Germany demographic change is a widely addressed topic at different levels of governance, at the national, federal and regional level. For key stakeholders demographic ageing and shrinking are also very relevant to the future development of a country. There are research fields focusing on demographic changes and the practical application of projects in pilot regions. Key topics related to demographic shrinking include the cost of infrastructure (social, technical), the consolidation of public budgets and life-long learning. Hungary, despite its long experience with population decline, has a lack of exclusively demography-related policy papers or strategies. On the other hand, policies related to demographic changes are included in other policy documents at the national level and also at the regional level. Policies focused on structural changes such as improving the economic situation are seen as a cure that will lead to a positive change in the demographic situation. In Czechia policies on population ageing exist, mostly as a part of other sectorial policies, but policies focused on population shrinkage at the national level are virtually non-existent. At the regional level there are policies focused on the countryside, where population shrinkage is seen as a part of the depopulation processes occurring in rural peripheries. In a broad view, population change is not a key topic and it is usually dealt with only partially in policies focused on regional development or policies dealing with unemployment issues. In Italy demographic change is included as a part of other policy documents, mostly at the ministry level, and it is considered of secondary importance. At the regional level it is dealt with in policies focused on polycentric development, sustainability, agriculture, or on alpine areas, such as a rural mountain area with specific development problems. In Poland there are several strategic documents at the national level dealing partially with demographic change. Quite often demographic changes are included in documents focused on broader economic development, but there are also specific population policy documents. At the regional level policies are focused on population ageing, health care and the development of a 'silver economy'. In Slovenia population ageing is considered one of the largest economic and social challenges. The policy analysis indicates that the main theme of policies related to demographic change is active ageing and intergenerational solidarity. At the regional level a strategy for coping with urban shrinkage has been developed. At large, policies developed in Western countries utilise wider approaches whereas policies developed in post-socialist countries apply narrower approaches. In sum, policies dealing with population change (and especially with population shrinking) and the subsequent policy implications for practical use in the regions need to be developed further. This task must be done in accordance with other major European policies like cohesion policy, regional development policy, and agricultural policy, as well as in line with the administrative structure of government and related governance levels in particular countries and regions. In general, policies dealing with demographic ageing are more developed and are also often incorporated into relevant policy documents at all levels of governance.



4 Chapters about the ADAPT2DC Pilot Regions

Klaus Bongartz - 5.1; Tanja Simon - 5.2; Zsuzsanna Antal, Zoltan Balogh, Csilla Hoffmann, Livia Kelenné-Török - 5.3; Renáta Mikešová, Martin Šimon, Tomáš Kostecký, Dalibor Špoták, Alexandra Zdeňková - 5.4; Fedora Gasparetti, Erich Giordano - 5.5; Alicja Boryczko, Katarzyna Opoczka - 5.6; Vlasta Vodeb, Franc Zakrajsek - 5.7; Martin Šimon, Renáta Mikešová - 5.8⁸⁷

The background demographic analysis and definition of population shrinkage in regions is further extended by qualitative information about pilot regions per se. The aim of the chapters about pilot regions is to present detailed information about the regions, their demographic development, and pilot actions which have been implemented to adapt infrastructure and service provision to changing demographical situation (see table 4). The different pace and extent of population changes as described in chapter 2, 'Definition of Shrinkage at the Sub-regional Level', should be taken into account. The chapters about the pilot regions are divided into three sections. The first section presents general information about the regions by providing a description of the territory's geographical characteristics, population distribution and economic situation. The second section contains information about the demographic situation in the region and describes current population structure and development and the main demographic processes in the region. Special attention is devoted to current policy challenges related to demographic changes. The third section presents brief information about pilot action implemented in the region, describing the selected problem, the aim of the pilot action, and the results achieved.⁸⁸ The pilot actions are demand-based according to the preferences of particular regions, but in general they deal with the adaptation of service and infrastructure provision to demographic change. The focus of the pilot actions varies. This reflects the variability of the impact of population change in regions and provides a variety of examples and inspirations for other cities and regions.

⁸⁷ Klaus Bongartz (Thuringian Ministry for Building, Regional Development and Infrastructure), Tanja Simon (Bayerisches Staatsministerium für Wirtschaft, Infrastruktur, Verkehr und Technologie), Zsuzsanna Antal), Zoltan Balogh (Észak-alföld Regional Development Agency Non-profit Limited Company), Csilla Hoffmann, Livia Kelenné-Török (Office for National Economic Planning), Renáta Mikešová, Martin Šimon, Tomáš Kostecký (Institute of Sociology of the Academy of Sciences of the Czech Republic), Dalibor Špoták, Alexandra Zdeňková (Regional Authority of Ústí Region), Fedora Gasparetti, Erich Giordano (National Union of Mountain Municipalities, Communities and Authorities – Piedmont Delegation), Alicja Boryczko, Katarzyna Opoczka (The Małopolska Region), Vlasta Vodeb, Franc Zakrajsek (Urban Planning Institute of the Republic of Slovenia).

⁸⁸ Borowski, D. (2014): 'Final Report Pilot Actions.' ADAPT2DC project output, 26 pp.

Table 4: An overview of demographic issues and implemented pilot actions in regions

Pilot region	Demographic issue	Pilot action
Saale-Orla-District (Thuringia, Germany)	Rapid population shrinkage and ageing	Demographic coaching for management/efficient planning of different infrastructure and service areas (multiple sub-actions)
Jászság Microregion Jász-Nagykun-Szolnok County (Hungary)	Mild population shrinkage and ageing	Higher women participation in labour market, rationalisation of child care services.
Vejprty Region (Czechia)	Long-term slow depopulation	Public buildings' maintenance cost (including energy)
Po Valley (Italy)	Depopulation in mountain areas	Multi-service centre as a joint project (local supply provision)
North-western Małopolska (Poland)	Mild population shrinkage and ageing	Telemedical services for senior citizens as a tool for optimising health-care costs
Podravje Region and Maribor (Slovenia)	Population ageing and urban shrinkage	Tools to manage the public infrastructure maintenance costs

4.1 Pilot region: Saale-Orla-District (Thuringia, Germany)

General information about the region

The Saale-Orla-District pilot region occupies a total area of 1,148 square kilometres in the federal republic of Thuringia in the central part of Germany. It is a former border region between GDR and BRD; today the border is between Thuringia and Bavaria. About half of this low mountain region is used for agriculture; another 40 per cent is covered by forest. The Saale-Orla District has 86,906 inhabitants. There are 12 towns and 5 administrative communities. The population density is 106 inhabitants per square kilometre. In 2012, 3,599 inhabitants were unemployed resulting in an unemployment rate of 7.7 per cent, while the Thuringia average at that time was 9.8 per cent.

The Saale-Orla-District has a diverse economy. It is predominantly a rural area, but its inhabitants have managed to combine tourism with industrial settlements in an idyllic landscape. With its more than 5,300 companies in industry, agriculture, small and medium-sized businesses and handcrafts, the Saale-Orla-District is one of the economically strongest in the Free State of Thuringia. East Thuringia has the highest density of jobs in the processing industry. As a result, 99 out of 1,000 inhabitants are employed in a manufacturing firm or an industrial company in the region. That is much more than the average in Thuringia (54 people in 2007). The pre-conditions for new industrial settlements are ideal because of the good infrastructure of the 33 industrial estates with fast access to the A9 motorway.

The spectrum of companies in the Saale-Orla-District includes one of the biggest printing houses in Europe, the Grafischer Großbetrieb GGP Media in Pößneck, which belongs to the Bertelsmann Group, a lumber firm in the Blackenstein/Friesau Region that produces cellulose, vehicle manufacturing and a multisided high-tech supply industry. The Saale-Orla-District is a market leader in East-Thuringia with 50 companies (and more than 50 employees) in the processing industry. Companies in the district work on a high international level. The export rate amounts to 35 per cent whereas the average in Thuringia is 33.7 per cent. There are 369 farming businesses of different sizes in the Saale-Orla-District. They farm 38,708 hectares as agricultural crop land and 11,448 hectares as grassland and they carry out very intensive livestock farming. Modern agriculture employs currently 1,543 people in the district.

The demographic situation in the region

The Saale-Orla-District lost about 16 per cent of its population between 1990 and 2010 (Thuringia: -14 per cent). By 2030 the shrinkage will amount to around 24 per cent (Thuringia: -18 per cent). The average age will rise until 2030 by 6.8 years to 53.4 years (Thuringia: +5.4 / 51.4 years). By 2030 the Saale-Orla-District will lose about 30 per cent of its young population under the age of 20. The population development therefore is very rapid and it is worse than the Thuringia average (-20 per cent). The productive-age population in Thuringia will decrease during the next 20 years, whereas the share of elderly people will increase (see Map 19). The current challenge is how to provide sustainable services in a medium-altitude mountain area with steep topography and with a heterogeneous settlement structure. The concept of central spaces or functional regions will be applied.

Table 5: Population structure in Saale-Orla-Kreis

Age groups	0-6	6-15	15-18	18-25	25-30	30-40	40-50	50-65	65-75	75-85	85 and more
Thüringen	52,529	76,183	21,083	81,965	74,992	134,421	180,890	261,325	130,592	69,949	13,375
Cities	14,331	18,063	4,708	22,994	22,399	36,498	42,731	57,778	31,948	16,702	3,230
Districts	38,198	58,120	16,375	58,971	52,593	97,923	138,159	203,547	98,644	53,247	10,145
Saale-Orla Kreis	1,977	2,982	820	2,970	2,720	5,060	7,078	10,809	4,977	2,875	583

Implemented pilot action – demography coaching

The idea of the project was to establish a ‘demographic coach’ to improve or at least maintain infrastructure provision in Thüringia and Bavaria, which are affected by demographic change. Therefore, several communities in Bavaria and Thuringia were supported by a demographic coach in an effort to identify and implement suitable projects. The overall goal was to maintain or enhance intergenerational services of general interest and mobility. Within this approach small pilot measures were identified via a bottom-up participatory approach which guarantees higher involvement and ownership of pilot implementation. The demographic coach method is meant to be universal and can be easily transferred to other regions.

Implemented pilot sub-actions:

- **KombiBus:** This involves shared passenger transport with goods transport. A legal study, an analysis of market potential and a pilot bus line were implemented. As an output the bus company generates additional profit from transporting goods, so it is possible to secure a particular extent and frequency of public transport service.
- **Cooperation between fire brigades:** The number of voluntary fire-fighters is declining as the number of regional populations. The pilot action focused on synergies in maintenance costs and labour-force sharing in order to maintain the service.

4.2 Pilot region: Oberfranken-Ost Region (Bavaria, Germany)

General information about the region

The Oberfranken-Ost Region is located in the north-east of Bavaria. On the one hand the region includes the county-level cities Bayreuth and Hof and the counties Bayreuth, Hof, Kulmbach and Wunsiedel i. Fichtelgebirge, which are located in Oberfranken District. However, it also includes a small section of Tirschenreuth County, which is part of the neighbouring Oberpfalz District. The region covers an area of 3,615 square kilometres with about 478,000 inhabitants (2011). Its population density of 134 inhabitants per square kilometre is less than the average in Bavaria.

The region is characterised by the contrast between its nationally disproportionately high density of industry and its great agricultural capacity. The expansion and construction of an interregional traffic system has helped to improve regional 'location factors'. At the same time, the technical development of infrastructure, increasing settlement and industrial construction and agriculture has led to conflicts surrounding the protection of nature, landscape, and water and related interests. The characteristic landscape and the ecological function of these natural areas are increasingly being affected by its varied utilisation. The agricultural area of this region covers approximately 175,670 ha. About 50 per cent of the total area is used for agricultural purposes, 36 per cent of the agricultural area is used as fields, 24 per cent for grassland and 39 per cent for mixed purposes. Often there are mixed agricultural uses because of the structure of the landscape.

Demographic change and implemented pilot action

Demographic change represents one of the main fields of action for a 'sustainable space and settlement development'. Local and regional actors in planning have to face difficulties caused by population decrease and ageing in future in order to maintain public services. These problems and difficulties would be the population increase/decrease and the ageing of society. From a regional perspective, decline in the total population size is more pronounced in the north-eastern part of the territory. Population shrinkage is occurring in the majority of urban and rural areas in Oberfranken-Ost (see Map 20). A creative solution needs to be found on the municipal level that can be used across the region. In particular, solutions in the field of social infrastructure are being implemented to adapt infrastructure costs to the demographic decrease and to reduce costs through more effective management in the cities of Arzberg, Bad Berneck, and Hof.

Implemented pilot sub-actions:

- **Ambient Assisted Living:** This involves the adaption of the living space (modernisation) to the needs of the people who are living there. In Arzberg a model apartment was equipped with an ambient assisted living system (AAL). All the visitors to this apartment can try out AAL features for free before deciding whether to install the system in their household. The overall aim of AAL systems is to enable people to remain living in a familiar environment for as long as possible.
- **Vacancy cadastre:** Vacancy management aimed at the preservation and the sustainable use of existing buildings was elaborated with the help of university students.
- **'Integration pilots':** The city of Hof has a very high share of immigrants. An investigation into the age-related problems of foreign inhabitants was conducted. Volunteer-based integration pilots were developed to include people with a migrant background in social services by offering a low-threshold service to people with low-level German-language skills.

4.3 Pilot region: Jászság Microregion, Jász-Nagykun-Szolnok County (Hungary)

General information about the region

Jász-Nagykun-Szolnok County is located in the middle of the Hungarian Great Plain. Land use and economic opportunities are essentially influenced by the low and flat nature of the area. Although the county is centrally located within the country and the Great Plain, it is on the periphery of the Észak-Alföld Region (Northern Great Plains). The distance between the capital of the county, Szolnok, and the capital of the region, Debrecen, is quite far, so there is no regular, everyday connection between them. In wider regional terms, an important role was played in the past by the Tisza River. In the last two centuries it has gradually lost its importance because of the underdevelopment of the road structure that runs alongside to the Tisza River. The vicinity around the Budapest metropolitan area is of special importance and Szolnok plays the role of an eastern gate to the metropolitan area.

For historical reasons the area of the county can be divided into three main parts (Jászság, Nagykunság, and Külső-Szolnok) around three main cities (Szolnok, Jászberény, and Karcag). All three centres are located on the periphery of the county. As a result the central part of the county is one of the most disadvantaged areas in the country in terms of economic and social conditions, which are accompanied by unfavourable environmental factors like flooding, inland inundation, and drought risks. Altogether 72 per cent of the county's population live in cities, but 51 per cent live in cities with over 10,000 inhabitants. The settlement structure consists mainly of second- and third-order cities. In terms of regional disparities the industrial agglomeration around Jászberény should also be mentioned, which is built on modern electronics industries. Jászság also, however, definitely has a rural character.

The number of inhabitants of the county was 383,000 at the beginning of 2012. Since the turn of the millennium population shrinkage has accelerated, both compared to the previous decade and to the national average. The shrinkage rate of 8 per cent in the last decade was four times the national average. The acceleration of shrinkage was caused mainly by increasing internal migration, which resulted in a mass exodus. In addition, natural demographic processes also contributed to population shrinkage. The population density of the county is 72 people per square kilometre which is quite low in comparison to the national value (108 people per square kilometre). The educational level of inhabitants has been converging towards the national average, but the increase in the rate of highly educated people lags behind the national average. The relatively low educational level of people could be related to the fact that there are few opportunities for higher education in the county. In the period concerned, the largest population loss can be observed in municipalities with fewer than 2,000 inhabitants, which are inhabited by people with the lowest educational level, but not do not have a large share of Roma inhabitants. These municipalities also experience the highest unemployment rates and substantial ageing.

The performance of the county in terms of its contribution to Hungary's GDP is quite weak. GDP per capita was 68 per cent of the national average in 2009, which means it ranks in fourteenth place among the counties. The Gross Value Added by sectors is: 7.6 per cent by the agricultural sector, 41 per cent by industry, and 51 per cent by the service sector. The dominant sector in terms of employment is manufacturing, which quite often supplies other firms within the county or in the surrounding areas. It is possible to see that agricultural

companies count as large employers where employment rates are lower.

Between 1990 and 2001 the number of employees decreased by more than 30 per cent of the national average, while at the same time the number of unemployed and inactive earners doubled. The availability of jobs is different in the two parts of the county divided by the Tisza River. The unemployment rate of the county is equal to the national average but it has increased, particularly since 2008.

The demographic situation in the region

In 2011 the total population of Jász-Nagykun-Szolnok Region amounted to 383,000 people, 3,800 less than the year before. In 2011, 3,250 children were born and 5,400 people died. The annual natural decrease was 2,150 people. After the year 2000 the immigration trends in several micro-regions changed to out-migration trends. Only the Jászberényi Micro-region registered positive trends (the rate of immigration still exceeds the rate of out-migration), and this micro-region suffers the least from ageing trends.

During the 1990s population trends in the county were more favourable than at the national level: although the national average decrease was 1.7 per cent, in Jász-Nagykun-Szolnok Region it was only 1.2 per cent. But after the year 2000, the decreases continuously accelerated, both compared to previous trends and to the national average (see Map 21). In the last ten years population loss amounted to 8 per cent (compared to the 2.1 per cent national average). The main causes of these processes are the change in direction and intensity of internal migration and the increasing out-migration of the population. In addition, trends in natural population development have also contributed to the process: the birth rate is lower and the mortality rate is higher than the national average. The estimated life expectancy significantly increased over the past decade (women: 77.8 years; men: 70.0 years). Another favourable development is that differences between women and men are decreasing. None of the cities and towns registered population growth between 2001 and 2011. The most significant population decrease nevertheless took place in settlements with fewer than 2,000 inhabitants.

After the year 2000 population ageing in the region accelerated and exceeded national trends. In 2001 the value of the national ageing index⁸⁹ was under 100. In this regard the Jász-Nagykun-Szolnok Region was in an advantageous position, but in the past decade its ageing index has deteriorated, and its index value has increased from 88.1 to 121.5, while on the national level it rose from 91.3 to 116.6. The county-level mean age rose by 3 years in the case of women and 2.3 in case of men.

The situation analysis of the current County Development Plan covers several development directions and fields of action: One of the most important priorities is to develop the road and rail infrastructure of the county in order to enhance regional accessibility and connectivity to other poles and centres and to the capital city. Although the county has a central position, it has traditionally had several peripheral parts, both in a national and regional (NUTS 2) context (within the North Great Plain region). New types of cooperation, municipal and NGO initiatives could reposition the Tisa-area within the country and transnationally, and in this regard the Jász-Nagykun-Szolnok Region plays a vital role. Social inclusion and the fight against poverty articulated in the EU 2020 Strategy are strongly harmonised with the county's principles.

⁸⁹ The 'ageing index' indicates the number of children in relation to the number of elderly in the total population.

Implemented pilot action – day-care services

The Hungarian pilot action was implemented in three settlements (Jánoshida, Jászfényszaru, and Jászárokszállás) of the Jászság Micro-region in the Észak-Alföld Region (North Great Plain Region - Hungary). The action promoted the return of women to the labour market by launching integral day-care services for children. The direct goal of the pilot project was to rationalise child day-care services, to increase the capacities of child day-care services, and to launch day-care services that respond to unique necessities.

A feasibility study was elaborated for the three settlements involved focusing on the above-mentioned goals and the professional management issues of day-care services that would operate as a network in the pilot region. The feasibility study is based on broad data collection and situation analysis of primary and secondary data on the presently available and required nursery capacities, on SWOT analysis, on the national legislation in force on child nursery services, on municipality will, and on the local demand for launching day-care services in the micro region. In the pilot settlements the study mapped the necessary infrastructural conditions and the appropriate real estate available or purchasable in the municipalities. The study also mapped the necessary HR capacities, available re-training programmes and the possibilities for the involvement of public employees in day-care services.

The survey of tendering possibilities to cover infrastructural and equipment needs (mapping funding options) is also a main component of the study, including a time plan, risk analysis and marketing-communication strategy for day-care nurseries. The study also mapped possible avenues of cooperation with churches, civil organisations and SMEs and the sources of operating costs in order to determine the appropriate price of day-care nursery services in consideration of the local financial possibilities of target groups. The broad data collection and analyses mean that a realistic budget can be drawn up, by which the long-term (institutional and financial) outlook can be surveyed as well. Upon completion of the feasibility study with the above-described content, political recommendations were delivered for local decision-makers to establish effective public services in shrinking regions. Three different organisational models were developed and implemented in three participating cities in Jászság region.⁹⁰

4.4 Pilot region: Vejprty Region (Czechia)

General information about the region

The town Vejprty lies in the western part of Czechia in the Ore Mountains at an altitude of about 760 metres above sea level. The town is part of the Chomutov border region and with the German municipality Bärenstein it optically forms one unit divided only by the border creek Polava. Both municipalities created their own centres in the past, which served their respective municipalities and commuting territory. Vejprty, which is the natural centre of the mountain region Vejprtsko, is the border check-point. The town was significantly influenced by the changes that occurred after World War II, mostly by the expulsion of the German population from Czechoslovakia and the subsequent resettlement of the border regions, which together led to a rapid decrease in the population, a change in the social and community structure.

⁹⁰ For details, see Borowski, D. (2014): 'Final Report Pilot Actions.' ADAPT2DC project output, 26 pp.

Currently Vejprty occupies almost the same area as in the interwar period, but the density of the population decreased, while the character of the town also changed substantially after the construction of a block of flats in the centre. A total of 3,074 inhabitants live in the municipality (2011). The number of inhabitants has been slowly decreasing since the end of World War II. The educational structure of the local population is lower than in Czechia as a whole. There is a significantly lower share of university educated people; the share of inhabitants with completed secondary school is also below the national average. Consequently, people with only primary education are overrepresented in the town.

The changes after World War II led to a significant decrease in the economic base of the town, in spite of considerable state intervention under the planned economy. The regional economy of Vejprtsko was permanently subsidised during the socialist period. When the system of massive financial redistribution by the state was abolished Vejprtsko became threatened by economic decline. New opportunities came with the liberalisation of the economy, the opening of the borders and the development of tourism. Nowadays, the main sectors of the economy include industry, mostly manufacturing, food-processing and a textile industry. There are also several smaller entrepreneurial subjects in the tertiary sector, mostly in trade, and services such as restaurants, accommodation and other commercial services. About 7.5 per cent of entrepreneurial subjects work in agriculture, forestry and fishing industries. In the whole region people in a labour occupation (68.7 per cent in 2004) predominate in the workforce. The highest proportion of employed can be found in the secondary sector.

The town of Vejprty itself suffers from high unemployment: 14.7 per cent in 2011 (the mean for Czechia was 9.8 per cent, and for Ústí Region 12.9 per cent). The most frequent age cohort among job applicants was the cohort of 20-29 year-olds. Almost half of the job-seekers had only primary education, 37 per cent had secondary education without the state exam (vocational) and only 15 per cent were job applicants with complete secondary school with the state exam or job applicants with higher education. In 2001, 19 per cent of inhabitants commuted to their place of employment, of them 62 per cent did so every day. Many of them (18 per cent) spent more than 60 minutes on their daily commute (one way). People mainly commute to nearby cities. Commuting is quite expensive owing to the long distances and poor transport connectivity.

The demographic situation in the region

The population in the Vejprty Region is ageing and slightly shrinking. The number of the inhabitants aged 0-14 is decreasing and the number of people over age 65 is increasing. The share of people aged 0-14 fell by 6 percentage points from 1991 to 2001. The town of Vejprty itself also saw a decline in total population size owing to migration, and migration growth was negative (see Map 22). More deaths than births have been typical for the municipality since 1979 (with one exceptional year of natural increase). The number of emigrants has been higher than the number of immigrants in the last three years. Mostly young and educated people are leaving the town for big cities.

In the town there is an elementary school, a special-education elementary school and an elementary school for the arts. There is also ambulant medical care provided by the hospital in the city of Kadaň; this service involves the provision of care by a general practitioner, plus some other special surgeries and an emergency service. There is no ward, i.e. a medical facility where a patient can stay overnight. It is sometimes difficult to commute to bigger cities for medical treatment using public transportation, especially for older people, whose numbers are constantly growing.

Implemented pilot action – energy savings

The municipalities in the pilot region have to deal with various problems in relation to population shrinking. The most important current problem is the growing number of vacancies in public and also private buildings. Former hospital, nursery schools, shopping centres, and factories are now empty or used only partly and are falling to ruin. The pilot action developed in the Vejprty area proposed a governance model for municipalities that aims to reduce the maintenance costs of public buildings. The money that is not spent on maintenance costs can be used for investment into other community activities. In the first step an energy-costs analysis of selected buildings was conducted and those cases that pose the biggest financial burden on the municipality were identified. In the second step energy savings optimisation measures were proposed based on energy audits and supplemented with ideas on how to cut costs and find new uses for these buildings according to the needs of the municipality and its inhabitants. These documents aid in the decision-making process in the municipality. The funding for implementation of thermo-insulation measures has to be obtained from external funding opportunities. In the third step a governance model for the energy efficiency of public buildings was proposed⁹¹ and as such it can be further used and implemented in other municipalities and regions. The implemented pilot action does not mitigate population shrinkage per se but it helps affected municipalities to maintain physical and budgetary resources for coping with challenges stemming from demographic change.

⁹¹ For details, see Borowski, D. (2014): 'Final Report Pilot Actions.' ADAPT2DC project output, 26 pp.

4.5 Pilot region: Po Valley (Italy)

General information about the region

The Po Valley is a valley in the province of Cuneo, Piemonte, Northern Italy. It is 32 km long and it contains ten municipalities within the Mountain Community of Monviso. The importance and the renown of the valley is related to the fact that it hosts one of the most famous peaks in the Alps, the Monviso (3841 m), and it is the source of the longest river in Italy, the Po.

Table 6: Demographic characteristics of Po Valley

Municipality	Altitude (m)	Area (km ²)	Population (2010)	Males	Females	Population density (inh./km ²)
Crissolo	1,318	49.04	174	99	75	3
Ostana	1,282	16.98	73	43	30	4
Oncino	1,220	49.00	81	50	31	1
Paesana	614	58.91	2937	1,429	1,508	49
Sanfront	490	39.67	2598	1,273	1,325	67
Rifreddo	433	6.78	1077	542	535	181
Revello	350	53.47	4226	2,095	2,131	80
Envie	327	25.07	2074	1,051	1,023	82
Gambasca	479	5.77	403	214	189	68
Martiniana Po	460	13.80	767	396	371	59
Valle Po (total)		318.00	14,450	7,192	7,258	45
Cuneo Province		6,902.00	592,303	291,172	301,131	86
Piedmonte Region		25,398.00	4,457,335	2,158,445	2,298,890	175

Source: Istat, 2010

At the end of 2010 the entire population of the Po Valley amounted to 14,450 inhabitants: only 328 of these inhabitants lived in the three aforementioned municipalities in the upper valley, namely Crissolo, Ostana and Oncino. The average population density, which is 59.4 inhabitants per square kilometre, is consistent with the average density of the mountains, even though there are substantial internal differences (see Map 23). In particular, in contrast to the three less-populated municipalities in the upper valley (around 4 inhabitants per square kilometre), there are the lower valley villages, where the population is higher than 1,000 inhabitants and the density is much higher than the average.

According to the Report on the Marginality of the Mountain Communities in Piedmonte Region, the municipalities of Ostana and Oncino exhibit the most unfavourable conditions in the valley in terms of socio-economical parameters, service availability and job market, while the degree of marginality of the Mountain Community is classified as intermediary.

Since the end of the nineteenth century, the Po Valley had experienced strong depopulation, even in the villages at the bottom of the valley. Nevertheless, in recent decades there has been a demographic recovery in this area, due in particular to the openness of local authorities and their support for the settlement of young families. This positive population trend can also be observed in the lower Po Valley, and it is characterised by the expansion of the main towns towards the lowland. Nevertheless, the reference centre for services and jobs has moved out of the valley, namely to Saluzzo.

According to the Population Census (2001), the employed population in the Mountain Community was 11,866. The unemployment rate was consistent with the provincial average (3.9 per cent). A total of 42.9 per cent of the population was employed in the industrial sector. The manufacturing industry is particularly important and employs 31.2 per cent of the working population. The service sector was the dominant sector as it employed more than 50 per cent of all employees in the municipalities of the upper Po Valley. The agricultural sector employed 18.8 per cent of the working population, which is more than in the other municipalities of Cuneo province.

The demographic situation in the region

Table 7: Population trend in Po Valley (1991-2010)

Municipality	Population					Variat. (%)
	1991	2001	2006	2008	2010	1991-2010
Crissolo	212	210	194	182	174	- 17.9
Ostana	82	79	72	73	73	- 11.0
Oncino	106	102	100	90	81	- 23.5
Paesana	3,058	3,072	2,960	2,933	2,937	- 4.0
Sanfront	2,615	2,611	2,667	2,648	2,598	- 0.7
Rifreddo	1,037	1,032	1,061	1,077	1,077	+ 3.9
Revello	4,208	4,192	4,233	4,254	4,226	+ 0.5
Envie	1,884	1,890	2,006	2,065	2,074	+ 10.0
Gambasca	329	346	387	382	403	+ 22.5
Martiniana Po	709	667	746	765	767	+ 8.1
Valle Po (total)	14,240	14,201	14,426	14,469	14,410	+ 1.19
Cuneo Province	547,234	556,330	573,613	586,020	592,303	+ 8.2
Piedmonte Region	4,299,912	4,213,294	4,352,828	4,432,571	4,457,335	

Source: Istat and BDDE Database Piedmonte Region

In the last two decades the overall population of the Po Valley registered a population increase of 1.2 per cent (+170 persons). There are basically two different trends in this area. The municipalities of the upper valley are experiencing a strong population decline (Crissolo, Ostana, and Oncino), and Paesana, a village on an inner mountain that used to be highly populated, lost 121 inhabitants between 1991 and 2012. But Sanfront registered only a decrease of -0.7 per cent, and in the other municipalities of the valley there was an increase in the population, with various trends ranging from very slight growth in Revello to more consistent growth in Gambasca. The overall population of the Po Valley remained stable due to a positive net migration balance and a negative natural balance. This is mainly the result of a high mortality rate (ranging between 10.65 in Revello and 19.55 in Paesana) that is moreover

higher than the birth rate (Revello 6.63; Paesana 8.51). In the Po Valley the mortality rate is higher than in the Cuneo Province (11.26) and the regional average (10.94), while the birth rate is consistent with the provincial (9.2) and regional (8.61) average.

In the last decade (2001-2010) there have been no fundamental changes in the age structure. Compared to 2001, there was only a small decrease in the 15-24 age group (1,427 inhabitants in 2001, 1,412 in 2010) and in the 25-44 age group (4,016 in 2001, 3,821 in 2010), while there were increases in the other three age groups (0-14: +3.4 per cent, 45-64: +8.8 per cent; over 65: +1.7 per cent). Consequently, the dependency ratio increased, going from 55.5 in 2001 to 56.1 in 2010, and surpassing the regional average (55.6). The old to young-age-dependency ratio is lower than the regional average (it is 172.4, while the regional average is 177.7), but it is still very high in the municipalities of the upper valley.

Implemented pilot action – a multi-service centre

The pilot action in Ostana focuses on service delivery in the conditions of peripherality and an ageing population. In the past, the needs of all the people living in Ostana and nearby municipalities were met by numerous small shops. Depopulation led to the disappearance of all these shops. Nowadays, the people who live here have to travel many kilometres in order to reach a shop; a similar situation can be observed in other municipalities in the upper Po Valley. In the summer nearly five hundred people spend their summer vacation in these villages. Since many summer visitors have a house on their property, they and the other inhabitants are really interested in finding a way to overcome the problem of the shops being located so far away. First, a collective organisation was established to purchase and deliver food and other essential goods, but it has not been easy to coordinate the idea. The municipality therefore instead formed contacts with retailers that might be interested in opening a small shop in Ostana. The idea was that this small shop would be organised as a multi-service centre that would also offer other basic services and would function as a communication and meeting point for people from different generations. The objective of the pilot action in Ostana was to supporting the organisation of such a centre; among other things, the project team coordinated the involvement of the relevant stakeholders and created a feasibility study of all the possible services that could be included in the centre. Since the situation in other mountain villages is similar, the case of multi-service centre in Ostana is an important model and guide for how to maintain service delivery in a remote village. Currently, the service centre in Ostana provides the following services:

The presentation and sale of the local agri-food production and the general promotion of the valley;

1. The sale of over-the-counter medications, which as of 2006 can be sold in shops in Italy under simpler regulation than in pharmacies, the so-called Para-Pharmacies (in preparation);
2. The coordination of a 'widespread hotel', connecting the main bed & breakfasts in the area;
3. The coordination of a car-sharing service in collaboration with the other upper Po municipalities and environmental associations in order to promote sustainable accessibility to the mountain area;
4. Enabling the family doctor to receive patients once a week in the centre (in preparation);
5. The area lacks cultural facilities, e.g. a library is felt to be an indispensable necessity for the growing young population;
6. To reduce maintenance costs, the post office will

- be transferred to the centre (in preparation);
7. In conformity with conditions in the Piedmonte Region, the establishment of small kindergartens (in preparation) is preferred over the organisation of bus services: a small room could be used to provide this service, which is currently unavailable.

4.6 Pilot region: North-western Małopolska (Poland)

General information about the region

The north-western part of Małopolska consists of four districts (LAU -1): Miechowski, Chrzanowski, Olkuski and Proszowicki. They are all located on the border of Małopolska and other Polish regions. Most of the selected area is lowland, only one part of Olkuski district is upland. The area is prevalingly rural. There are also small towns, all of them with fewer than 40,000 inhabitants (see Map 24). Population density in the selected area varies. It is very low (below the national average) in Miechowski (74 people per square kilometre) and Proszowicki (105 people per square kilometre). In Olkuski there are 184 people per square kilometre, which is slightly below the regional average. However, in Chrzanowski the population density is high (343 people per square kilometre), which is well above the regional average. The total population size of the selected pilot area is 335,000 inhabitants.

The unemployment rate in 2010 in Chrzanowski was 13.9 per cent and in Miechowski 14.2 per cent, which is very high and appreciably higher the regional and national average. At the same time the unemployment rate in Proszowicki was 11.9 per cent, which was slightly below the national average, but above the regional average. Surprisingly, the unemployment rate in Miechowski (9.7 per cent) was actually below the regional average (10.4 per cent). The reason for this is the more agricultural character of both regions, which results in so-called 'hidden' unemployment. The industrial character of Chrzanowski and Olkuski means that unemployed inhabitants are more often registered in local employment offices. However, the situation in the labour market in all four districts is very difficult.

The demographic situation in the region

Due to the migration of the young workforce to Krakow and other economic centres and due to the low birth rates contributing to the changing demographic structure the selected pilot area has been affected by dynamic processes of population ageing and decrease (see map 24). A population decrease was observed between 2000 and 2010 in all four districts (-6.6 per cent in Miechowski, -3.9 per cent in Chrzanowski, -1.4 per cent in Oluski, 0.5 per cent in Proszowicki). The data from 2011 show negative population growth across the selected area, but the situation is worst in Miechowski (natural growth per 1000 inhabitants was -4.3). Migration balance in 2011 was negative in three of the four districts and was positive only in Proszowicki.

The population structure of the selected area shows that ageing processes are much more advanced there than in the other parts of Małopolska. The mean age is relatively high. In 2010 it was: 39.99 in Chrzanowski, 39.8 in Miechowski, 39.4 in Olkuski, and 37.8 in Proszowicki. In comparison, the mean age for the whole Małopolska region in 2010 was 37.0 and the mean age in the 'youngest' district of Małopolska was 32.73. The demographic burden per 100 persons⁹² of working age in 2011 was as follows: 33.6 persons in Miechowski, 28.6 persons in Proszowicki, 28.5 persons in Chrzanowski, and 28.0 persons in Olkuski. The demographic forecasts for the selected area are not optimistic.

⁹² The demographic burden describes the increase in the total dependency ratio during any period of time, mostly caused by an increased old-age-dependency ratio.

The originally agricultural and to some extent industrial profile of the local economy has been affected by transformation processes. As a result, the area has been facing a difficult economic situation with high unemployment rates and low incomes. Its geographic location in between Krakow and Katowice does not give it better access to the labour market. The need to commute forty kilometres in one direction to get to work in a situation where there are limited or no train connections makes things difficult for potential employees. The cost of commuting is also relatively high in relation to incomes. Well developed and accessible public transport could help to increase the mobility of employees in this area.

Implemented pilot action – tele-medical service

The pilot action was carried out in north-western Małopolska. It was conducted among a group of senior citizens who were selected on the basis of their health condition and place of residence (targeting an area affected with demographic changes). The aim of the action was to provide tele-medical services (tele-ECG) to monitor the selected seniors' health condition, improve their quality of life, and prevent further deterioration of health. The patients received tele-medical equipment to monitor their bodily functions (ECG) at home. In addition, medical assistance, consultation and diagnosis both through communication technology and in person was provided. The pilot action seeks to achieve savings and improve health-care quality through early diagnosis and disease prevention. The use of tele-medical technology makes it possible to reach patients in remote and depopulating areas and decrease the time and costs involved in traveling to hospital. The pilot action established a transferable good practice in the area of tele-medical services for senior citizens. The use and applicability of a selected tele-medicine solution was tested in praxis and positively evaluated by the patients themselves. The pilot application provides reliable data regarding the savings in health care to be derived from providing services in this way, and these data are then utilised in the form of recommendations for public policies in EU regions concerning health care in the face of demographic changes. In general, the pilot action achieved positive results in the area of patients' health and quality of life as well as solid economic benefits.

4.7. Pilot region: Podravje Region and Maribor (Slovenia)

General information about the region

Podravje Region lies in north-east Slovenia on the border with Austria and Croatia. It is the second largest Slovenian region in terms of population, with 16.1 per cent of the national population. The region is divided into 41 municipalities with 678 settlements. The largest cities in the region are economic and social centres: Maribor (35 per cent of the population in the region), Ptuj (7 per cent of the population in the region), Slovenska Bistrica (9 per cent of the population in the region), and Ormoz (5 per cent of the population in the region). The city of Maribor is the regional centre and the second most important cultural and educational centre in Slovenia. It is also the largest industrial town in the region.

Table 8: Facts and Figures – Podravje Region

Area:	2,170 km ²
Population	320,961
Population density (per km ²)	147.9
Number of enterprises	22,381
Persons in employment	121,006
Average monthly gross earnings	1,377 EUR
Unemployment rate	16.1%

Source: Statistical Yearbook 2011, Statistical Office of the Republic of Slovenia

The region is surrounded by hills in the north-east, subalpine wooded mountains to the west and Dravsko-Ptujsko lowlands along the Drava River. The Drava River is used for the production of electricity and the fertile soil enables agricultural production. The region has the highest share of utilised agricultural area in Slovenia (82,000 hectares) and is the leading region in terms of the number of agricultural holdings. In the Podravje Region, agricultural surfaces cover 45 per cent of the total area, while in whole Slovenia they cover 27.8 per cent of the surface.⁹³ Statistical data about population development (2009) reveal negative natural increase (-97) and low population density (149.9) (see Map 25).

People of the Podravje region have in the average very similar school education in comparison with Slovenian average. In the area of short-term vocational and vocational upper-secondary level as well as technical and general upper-secondary education, the share is higher than the Slovenian average. The statistical data also show that in the four-year period from 2008 to 2012 the population increased in only 18 municipalities of the Podravje region, while in 23 municipalities it decreased. A comparison of the ageing index with the population projection results shows that there is a relatively strong correlation between the age structure and population growth capacity. This comparison is possible because the same total fertility rates for all the municipalities were utilised.

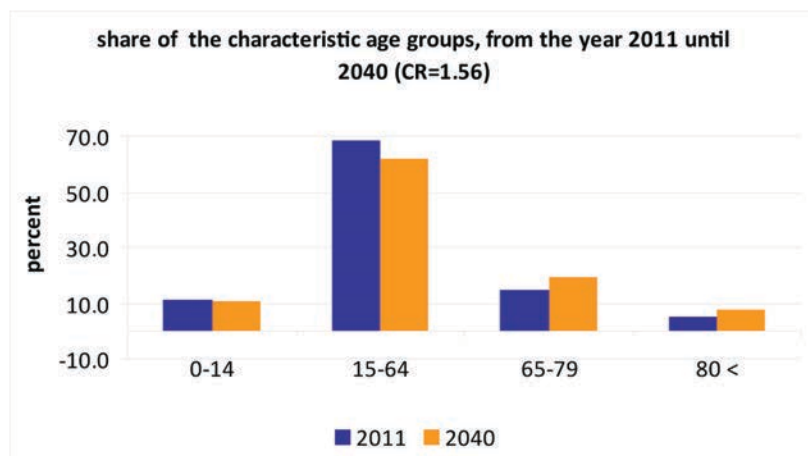
⁹³ The data in this subchapter come from the Statistical Office of the Republic of Slovenia.

Podravje Region boasts a long industrial tradition and has all the potential required to produce sophisticated products. The five main sectors of economic activity are manufacturing, construction, transport and storage, maintenance and repair of motor and other business activities. Podravje region ranks second in Slovenia as regards the contribution to the national GDP. The region is predominantly export-oriented. The highest share of gross value added was created by the service industry. In 2009 the employment population ratio (57 per cent) was among the lowest in Slovenia, while the employment ratio of older persons (aged 55-64) was above the average in Slovenia. Data on commuting show the intensity of daily commuting flows to and from a typical industrial city with increasing tertiary and quaternary functions.

Demographic situation in region

The number of people aged 65+ and the share they make up in the total population of Podravje Region have been continuously increasing in recent years. Consequently, the average age and the ageing index have also been rising. All these indicators for Podravje Region are above the Slovenian national average. The share of elderly people in Podravje Region is above the Slovenian national average. In July 2010 the share of people aged 50 or above was 38 per cent and had increased from 34 per cent in 2003, while the Slovenian national average was 37 per cent in 2007 and 33 per cent in 2003. In 2007 in Podravje Region, 16 per cent of the population belonged to the age group 65+, the average age was 41.8 years and the ageing index was 127.7.⁹⁴

Figure 3: The population structure in Podravje Region 2011, 2040



Source: Urban Planning Institute of Slovenia, own calculation.

Maribor is the second largest city in Slovenia and in spite of its economic and cultural importance has an old population age structure. Its ageing index⁹⁵ is the highest (175) of all 41 municipalities of Podravje Region. If the existing demographic trends persist in the decades to come, the index will soar to 255 by the year 2040. According to the projection the total population size of Maribor will diminish by almost 27,500 in three decades.⁹⁶ Population projections show

⁹⁴ Source: Statistical Office of the Republic of Slovenia.

⁹⁵ The ageing index is defined as the number of people aged 65 and over, divided by the number of children aged 0-14 and multiplied by 100.

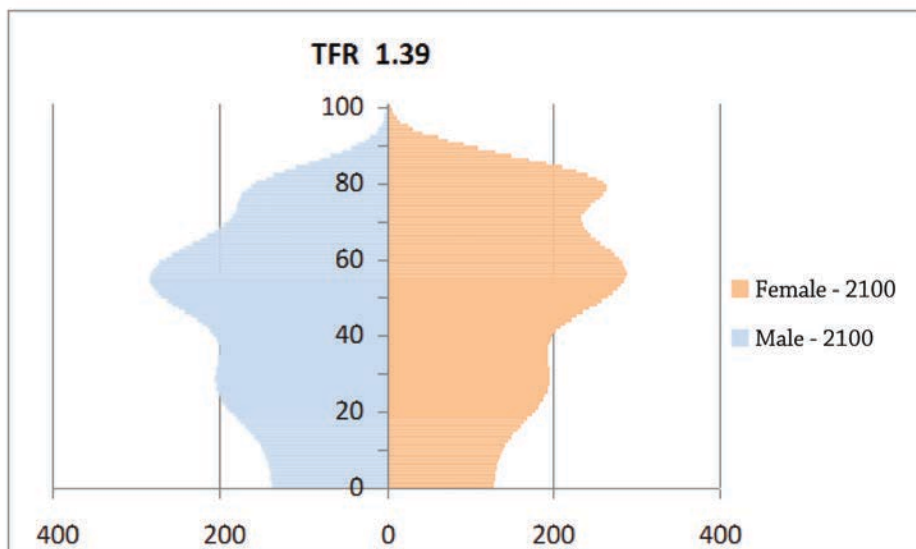
⁹⁶ To calculate the population projections data from the Statistical Office of the Republic of Slovenia were used: the input population by one-year age groups is as of 31 December 2011. The total fertility rate for the Podravje statistical region was 1.39 in 2011 and is somewhat lower than the total fertility rate for Slovenia, which was 1.57.

that the population size of all the age groups except the oldest ones (65 and over and 80 and over) will decrease. There will be minor growth before the year 2025 in the younger age groups. The projections for 41 municipalities in the Podravje statistical region indicate that the population decline in the Maribor municipality will be the highest in the region. This is understandable because its population has the highest ageing index.

The statistical data show that almost half (47.7 per cent) of the 6,122 Slovenian settlements were facing a diminishing population size in the four-year period from 2008 to 2012. The Podravje statistical region is among those in which population decrease exceeds the Slovenian average and it has 57 per cent of the settlements whose populations are diminishing. The population is growing in 44 per cent of the municipalities in the Podravje statistical region. But this does not mean that all the settlements within those municipalities are growing. In 55 per cent of growing municipalities in Podravje Region more than 15 per cent of the settlements are facing population decline. From 2008 to 2012 the process of rural depopulation in the Podravje statistical region was 'hidden' or 'relative', and it is very intensive in many parts of Slovenia but especially in north-eastern Slovenia near the Austrian, Hungarian and Croatian borders.

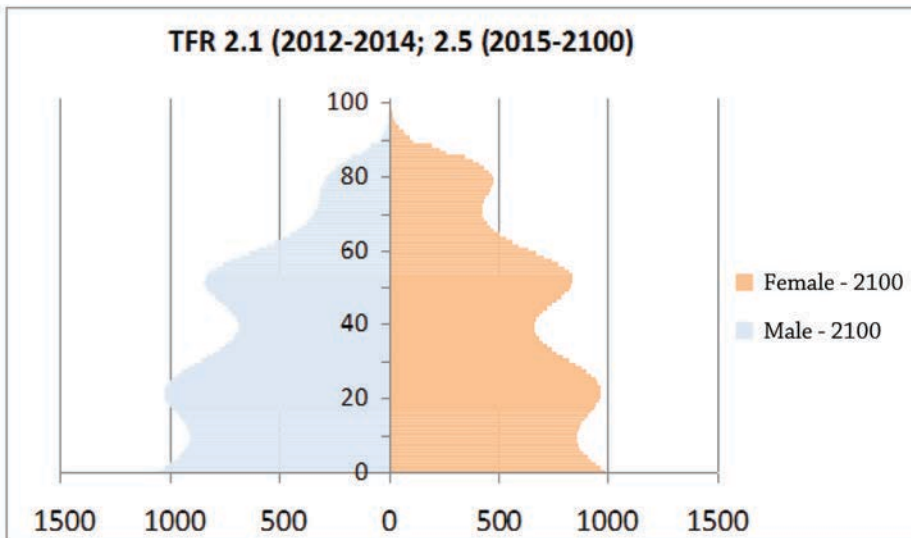
The population projection for Podravje Region using the total fertility rates of 2.1 (2012-2014) and 2.5 (2015-2100) shows a gradual improvement in the population size and the age structure if total fertility rates (TFR) increase to replacement level. The age pyramids for the Maribor municipality shows the population scenario in the year 2100 if total fertility rates (TFR) will be 1.39 from 2012 until the year 2100 (Figure 4) or 2.1 from 2012 to 2014, and 2.5 from 2015 to 2100 (Figure 5).

Figure 4: Population scenario for Maribor municipality - I



Source: Urban Planning Institute of Slovenia, own calculation.

Figure 5: Population scenario for Maribor municipality - II



Source: Urban Planning Institute of Slovenia, own calculation.

The current ageing index (135) could fall to 95 in the year 2050. Although these results are based on a purely theoretical hypothesis they could be used as a means to estimate the need to improve facilities with various kinds of social infrastructure: kindergartens, schools, medical care, homes for seniors, etc., and new jobs. Only if such goals are achieved can an improvement in the demographic situation in the area be expected.

Implemented pilot action – management of public infrastructure

The city of Maribor would like to combat the shrinking trend in the city. In order to cope with negative demographic trends, Maribor needs to evaluate how to make public infrastructure sustainable. The pilot action is focused on saving costs in order to maintain public infrastructure. In the first step, geographical mapping and analysis of publicly owned infrastructure were conducted. The aim of this was to identify the potential for cost reduction. Three specific areas of intervention were selected: roads, street lighting and public buildings. In the case of roads, a new system of parking was introduced to generate additional income and reduce maintenance costs per square metre. In the case of public buildings, options for intensifying public housing use were elaborated. Developing the attic space in buildings makes it possible to intensify the use of buildings and at the same time to reduce the building maintenance costs per square metre. In the case of street lighting, a switch was made from light bulbs to LEDs. The energy-costs calculation showed a resultant significant drop in electricity consumption. In all cases, user-friendly IT tools were developed to allow users to change easily the input parameters and thus customise the use of the IT tool for other, similar opportunities. The use of this method enables users in public administration to plan and evaluate possible savings in the provision of infrastructure. In all three cases, significant savings were achieved after the initial investment.

4.8 Summary of the pilot region experiences

The brief overview of the local dimension of population shrinkage provided in the chapters about pilot regions presents a variety of shrinkage processes and strategies for tackling demographic change. Population decline is present across the territory of the Saale-Orla-Kreis Region (Germany) and Jász-Nagykun-Szolnok (Hungary), whereas in the other regions population decline is currently present only in a certain part of the territory. The knowledge about different patterns and trends of population shrinkage can be used for mutual learning and for the exchange of experiences and best practices on how to mitigate or adapt to ongoing demographic changes in regions. It should also be noted that perceptions of what is considered to be population shrinkage or what is considered to be population ageing differ significantly between regional case studies. To put it simply, there are differences between population shrinkage and population ageing in regions measured by demographic data on the one hand and the perception of these demographic changes by regional stakeholders on the other.

Saale-Orla is a region experiencing rapid ageing and depopulation and where a key challenge is to find out how to provide the local population with crucial services in a sustainable way. A method of demographic coaching is applied in order to mobilise local stakeholders and to stimulate bottom-up initiatives and actions focusing on pressing issues. Similarly, Jász-Nagykun-Szolnok Region is experiencing marked population shrinkage due to natural change and out-migration. Because of the unfavourable economic situation in the region, the pilot action is focused on increasing the participation of women in the labour force through better childcare services. In Ústí Region only a peripheral part of the region is depopulating, but is doing so in a long-term perspective. Depopulation is occurring mainly due to its peripheral location and selective out-migration. The pilot action in Ústí Region is focused on saving energy costs in public buildings. In Małopolska Region, a pilot region is located in the municipalities in the north-western periphery, where the negative effects of population ageing and shrinking are combined. There the pilot action is focused on tele-medical services for optimising health-care costs. In Po Valley a multi-service centre is being developed as a meeting and service point to maintain the delivery of several services in low-populated mountain areas with an older population. In Podravje Region and its centre, Maribor, population shrinkage and ageing is present in the urban and peripheral areas of the region. The pilot action is focused on innovation in the management of public infrastructure with the overall target of making it more sustainable.

The pilot actions per se usually require an initial investment and the expected savings in costs are achieved later. The savings achieved should be measured as involving direct costs, indirect costs and anticipated costs. The pilot studies revealed that indirect savings are more important than direct ones. A key precondition for successful pilot action implementation is to find stakeholders who are open-minded, pro-active and willing to support measures designed to adapt infrastructure and service provision to demographic changes. A good analytical background is a crucial precondition for evidence-based policies, which are indispensable to the implementation of savings measures.⁹⁷

⁹⁷ For more details about pilot action implementation. see Borowski, D. (2014): 'Final Report Pilot Actions.' ADAPT2DC project output, 26 pp.

5 Conclusion

Martin Šimon, Renáta Mikešová

A comparative demographic and socio-economic background analysis is one of the main results of this targeted analysis of shrinking regions and cities in Central Europe.⁹⁸ The main objective of the book and the targeted analysis in general is to improve the understanding of shrinkage processes and its consequences and relations to infrastructure costs and service provision. This book focuses in particular on understanding shrinkage processes as part of broader demographic change. The analysis is provided at the NUTS 3 level instead of the NUTS 2 level and contains several studies at an even lower regional level, which allows us to see processes of demographic change in a more detailed spatial perspective. Current population shrinkage in these regions and its advancement into other regions is expected to be a major demographic issue in the Central European area alongside population ageing.

The main conclusions drawn from this analysis can be summarised as follows. The effects of demographic change such as population ageing and population shrinking will become even more relevant empirical phenomena in the next ten years, and it is necessary to have adequate strategies and policy tools prepared on how to adapt to demographic change. It is expected that there will be fewer regions with a growing population and also fewer regions with a growing population due to natural change. Conversely, there will be more regions affected by population ageing and more regions affected by simultaneous population ageing and population shrinking.

Population ageing is widespread in almost all the regions in the Central European area. Although there are different levels of ageing at the country level, with, for instance, an older population in Germany or Italy and a younger population in Poland or Slovakia, a convergence in terms of the level of ageing is to be expected. This also means that regions which currently have a younger population structure will be experiencing faster population ageing in the next few decades. Inherited population structures, as reflected in fertility and mortality rates and growing life expectancy in the regions, will contribute to further population ageing. This development will pose several challenges concerning the participation of women and the elderly in the labour force, intergenerational solidarity, reform of the pension system, and the accessibility of the school/health-care systems, etc.⁹⁹

Population shrinking is more spatially selective than population ageing. At the Central European level there is a concentrated macro-regional space of population growth from northern Italy, to western Austria, to southern Germany. National metropolises and several second-order metropolitan areas also show population growth. The remaining non-metropolitan

⁹⁸ Targeted analysis of shrinking regions and cities in Central Europe includes socio-economic analysis (Šimon, M., Mikešová, R. (2013): 'Demographic Change in Central Europe. A socio-economic background analysis.' ADAPT2DC project output, 96 pp.); economic cost analysis (BARON, M., et al. (2014): 'Economics and Strategic Management of Local Public Services in Central Europe: Towards multidisciplinary analysis of infrastructure and service costs.' Institute of Sociology, Academy of Sciences of the Czech Republic, Prague, 270 pp.) and position papers (Ehrlich, K., Schaarwächter, M. (2014): 'Position paper: a joint transnational vision for future provision of infrastructures and services in shrinking regions and cities of Central Europe.' ADAPT2DC project output, 40 pp.).

⁹⁹ DEMIFER - Demographic and Migratory Flows Affecting European Regions and Cities, ESPON 2013 project, more information available at: www.espon.eu/main/Menu_Projects/Menu_AppliedResearch/demifer.html; Hungarian Presidency of the Council of the European Union (2011), 'The impact of European demographic trends on regional and urban development: synthesis report', Budapest.

areas that are not included in the previous two categories have a stable population or are experiencing population shrinkage. This interpretation of population development is considered to be a broad generalisation to which there are several exceptions. Firstly, the cores of some metropolitan regions are experiencing population shrinkage (Milano, Budapest, Lodz) because there is a trend towards metropolisation and population de-concentration from urban cores to wider metropolitan areas. This trend is not uniform in all the countries in Central Europe. In eastern Germany, cities like Leipzig and Dresden are growing, whereas their hinterlands are shrinking. Secondly, as employment centres, metropolitan regions compete for labour force not only with other regions in the country but also with other metropolitan regions. Therefore, smaller metropolitan regions or less economically successful metropolitan regions may also experience population decline. Prime examples of this development are former industrial and mining cities located in Poland and Czechia. Thirdly, not all rural regions show similar population development. The fate of rural areas is different because of their inherited infrastructure and their demographic structure (e.g. see the population growth in east Slovakia). Contemporary population development is shaped, among other things, by the changing economy, the environmental qualities of regions and accessibility to metropolitan areas. But, in principle, sparsely populated rural areas are more vulnerable to population shrinking because of their lower population density compared to urban and metropolitan regions.

The future of population development in the regions of Central Europe will be shaped by changes in demographic behaviour and by changes in population distribution. Total fertility rates are low in all the regions in Central Europe and it is unlikely that in the short term they will approach replacement level (2.1 children per woman). This development indicates the future course of population shrinkage due to natural change. Population change in the regions is significantly shaped by the regional redistribution of the population, which usually favours metropolitan areas or macro-regional spaces of concentration. Although migration flows are difficult to predict at the national and at the regional level we can look at migration patterns within countries and estimate the main trends of their development or we can evaluate the past development of migration and its impact on population numbers in the regions. From scientific literature we know that the most migration is motivated by economic factors.¹⁰⁰ Map 12 shows the regional differences in the unemployment level compared to the national average, and thus points to future migration patterns based on the presumption that economically motivated migration is directed out of regions with higher unemployment into regions with labour demand continues. It is important to point out that in ageing and shrinking societies there is a growing share of people outside the labour force who migrate for other than economic reasons. An analysis of the components of population change (Map 11) shows that there are more regions that are shrinking due to both natural change and migration than there are regions growing due to both natural change and migration. There are also about 40 regions that have population growth despite negative natural change, but there are no shrinking regions that have positive values of natural change.

Demographic development in the regions of Central Europe, as reflected in changes in the age structure, will shape the availability, accessibility, and costs of services (affordability), especially services targeting certain age groups like schools or day-care services. An analysis

¹⁰⁰ Although in advanced societies migration is also significantly shaped by various amenities (Gosnell, H., Abrams, J. (2011): 'Amenity migration: diverse conceptualizations of drivers, socioeconomic dimensions, and emerging challenges.' *GeoJournal* 76(4): 303-322. ; Bartoš, M., Kušová, D., Těšitel, J. (2009): 'Motivation and life style of the Czech amenity migrants (case study).' *European Countryside* 1(3): 164-179.) or lifestyle reasons (Šimon, M. (2014): 'Exploring counterurbanisation in a post-socialist context: case of the Czech Republic.' *Sociologia ruralis* 54(2): 117-142.).

of the current old-age-dependency ratio and its trend reveals big differences between countries on the one hand and the widespread nature of population ageing in Central Europe and the increased economic burden on working-age populations on the other. The analysis of the current young-age-dependency ratio and its development reveals the continuing decline in the number of young people in most regions in Central Europe, with the exception of northern Italy and certain metropolitan regions.

The short-term outlook of expected population development in Central Europe in the next 20 years was also described above. The regional dimension of population change shows a prevalence of shrinking over growing regions in Central Europe (compare with Map 18 - Definition of shrinkage region at NUTS 3 level 2001-2011). The best future demographic outlooks are in the metropolitan hinterlands around the metropolitan cores (e.g. Budapest, Munich, Prague, Poznan, etc.). Macro-regional patterns of population change are relatively stable due to the iterative development of generations. Rural regions with currently younger population structures will have positive demographical development also in a medium-term outlook (e.g. eastern Slovakia, western Austria, and north-western Poland).

One of the key outputs of this study is the definition of shrinking regions. The project partners of the ADAPT2DC project agree that in principle population shrinkage occurs when death rates are higher than birth rates and when migration cannot make up for this gap between birth and death rates in a region. Population shrinkage is thus measured as the relative decline of the total population size in a region in a ten-year period; regions with total population decline should therefore be considered shrinking regions. The project partners of the ADAPT2DC project also accept this definition because it is easy to understand and easy to use in calculations. Such a definition is also in accordance with the study 'Shrinking Regions: a Paradigm Shift in Demography and Territorial Development'.¹⁰¹

Other outcome from this study are the conclusions from and recommendations developed as part of the policy analysis.¹⁰² In general, policies for demographic ageing are more common and more developed than policies on population shrinkage. Most of the policies are not related to demographic shrinkage per se, but are a part of other, broader policy documents. In sum, more policies focused on demographic change should be developed or at least incorporated into other relevant policies. One example is the use of population development scenarios to calculate the development of the costs of certain infrastructures at current price levels in a short-term perspective. It is possible to expect a partial shift away from policies focused on mitigation of demographic change towards policies focused on adaptation to demographic change. Going about business-as-usual with contemporary mitigation policies will not be sustainable in conditions where a majority of regions in Central Europe will have a shrinking population. What are required are new policy tools and governance options focused on adaptation to demographic changes.¹⁰³

In the chapter about pilot regions the different pace and extent of population shrinkage at the local level was discussed and linked with the implemented pilot action initiatives. It showed that the differing scales of population shrinkage and the local context must be taken into account when planning and implementing pilot action initiatives. 'Planning for shrinkage' is

¹⁰¹ IP/B/REGI/IC/2007-044, version 11.7.2008, available at: www.europarl.europa.eu/meetdocs/2004_2009/documents/dv/pe408928_ex_/pe408928_ex_en.pdf

¹⁰² For more detailed policy recommendation, see DOROGI, Z., et al. (2014): 'European Strategy for regional responses to demographic changes.' ADAPT2DC project output, 50 pp.

¹⁰³ Ehrlich, K., Schaarwächter, M. (2014): 'Position paper: a joint transnational vision for future provision of infrastructures and services in shrinking regions and cities of Central Europe.' ADAPT2DC project output, 40 pp.

a very new issue in the regions and it is not easy for local and regional stakeholders to accept. A further mainstreaming of adaptation strategies in parallel with strategies aimed at mitigating population shrinkage is to be expected. Evidence-based policies that learn from regions more advanced in population shrinkage is promoted.¹⁰⁴

Demographic change is a long-term process with profound consequences for local communities. Therefore, monitoring demographic changes and population development scenarios is an important tool for policy-makers at various levels of administration and governance. Good knowledge about on-going population changes is a resource for evidence-based policies. A lesson learned from population development scenarios and from regions with more advanced population shrinking and ageing allows policy-makers to see or anticipate the challenges of demographic change, which will be an important issue in their region or municipality. For example, a regional government aware of rapid population ageing can shape the focus of vocational schools in their region in order to educate the future labour force in accordance with needs that they are able to foresee based on their knowledge of population development in the next few decades. Advance knowledge of the growing number of elderly should lead to related advance knowledge of growing demands for day-care in terms of the labour force or facilities needed. In general the impact of demographic changes on infrastructure can be calculated for the supply of services, the demand for services, and costs per unit. Different infrastructures also relate to specific budgets in the various parts of multi-scalar governance. Different types of infrastructure are thus influenced differently by demographic ageing and population shrinkage.

¹⁰⁴ An online tool for comparing demographic situation in regions in Central Europe was developed within the ADAPT2DC project and is available online at adapt2dc.nth.gov.hu website.

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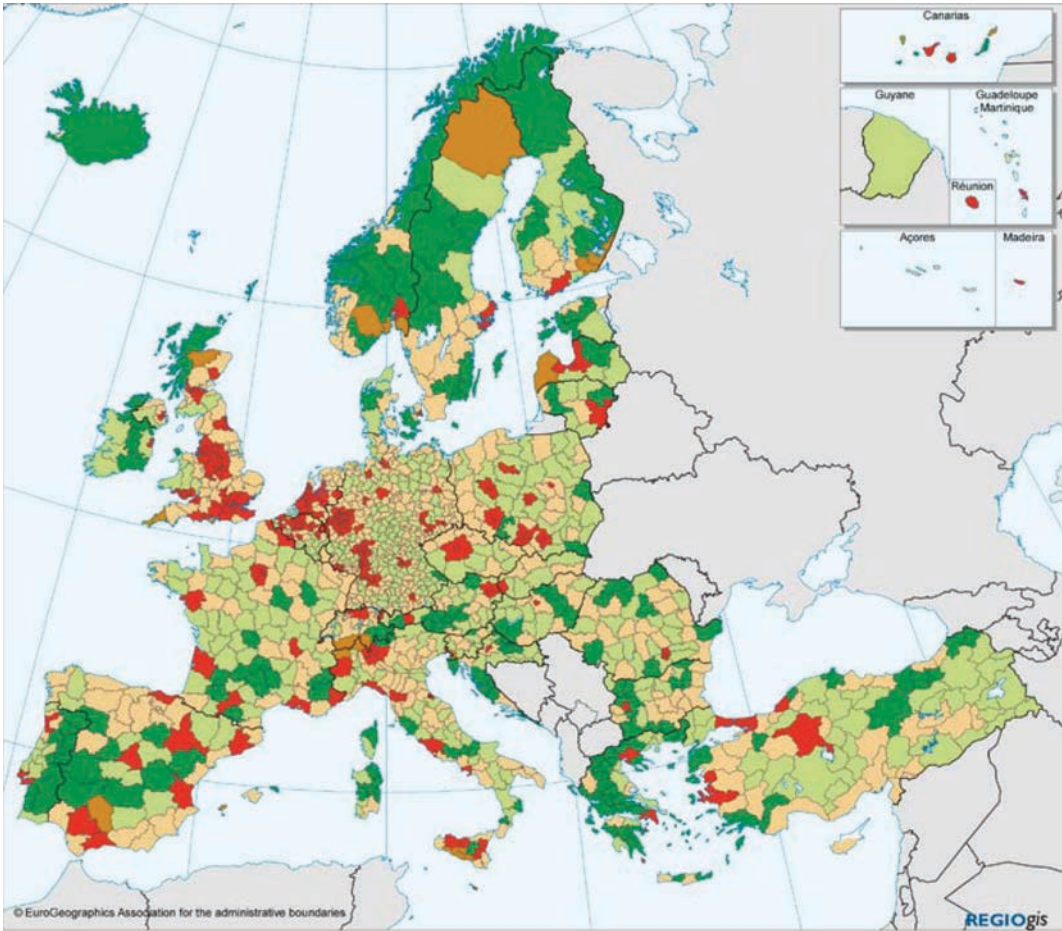
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Appendix

Map 26: Map Urban-rural typology of NUTS 3 regions including remoteness



Type of NUTS3 region

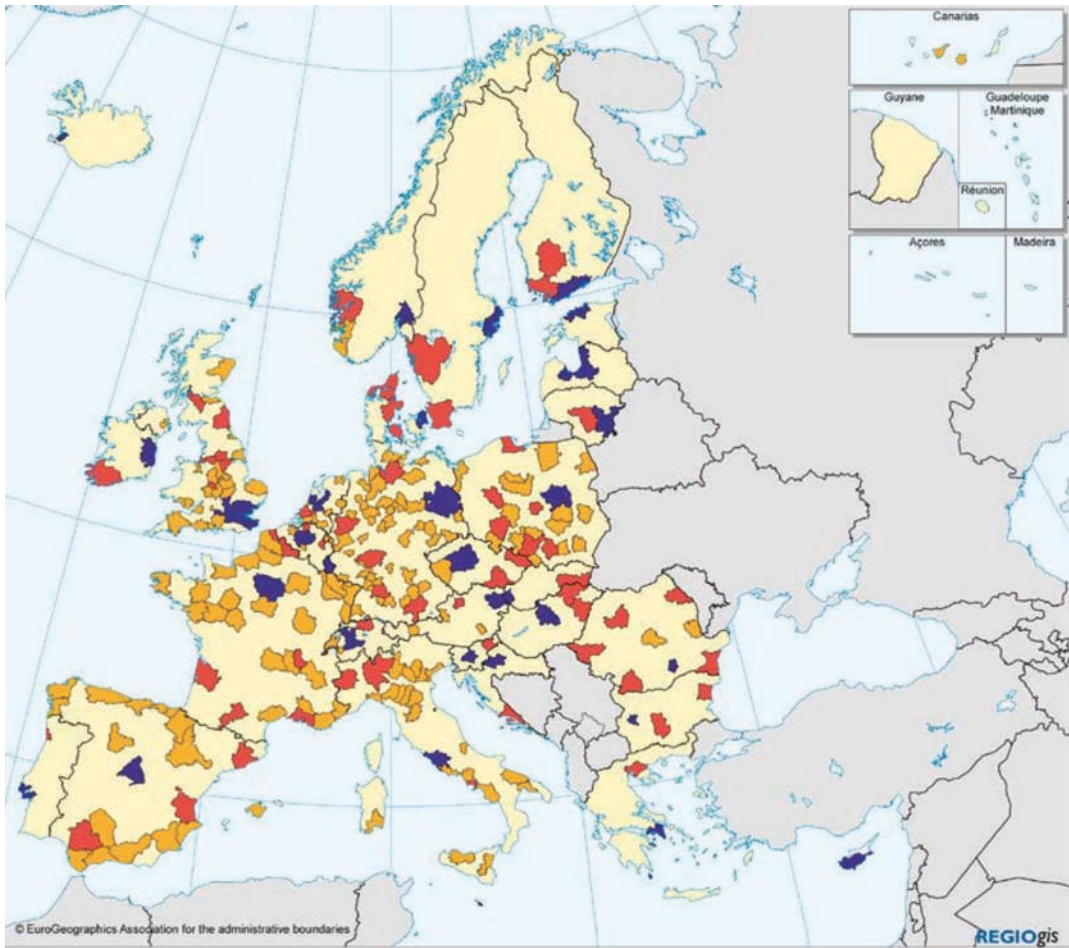
- Predominantly urban regions
- Intermediate regions, close to a city
- Intermediate, remote regions
- Predominantly rural regions, close to a city
- Predominantly rural, remote regions

Close to a city: at least 50% of the population of the region lives at less than 45 minutes travel by road to a city of at least 50 000 inhabitants.
Results for Turkey are provisional.

Sources: Eurostat, JRC, EFGS, LandScan, REGIO-GIS

0 500 Km

Map 27: Typology of metro regions at NUTS 3 level



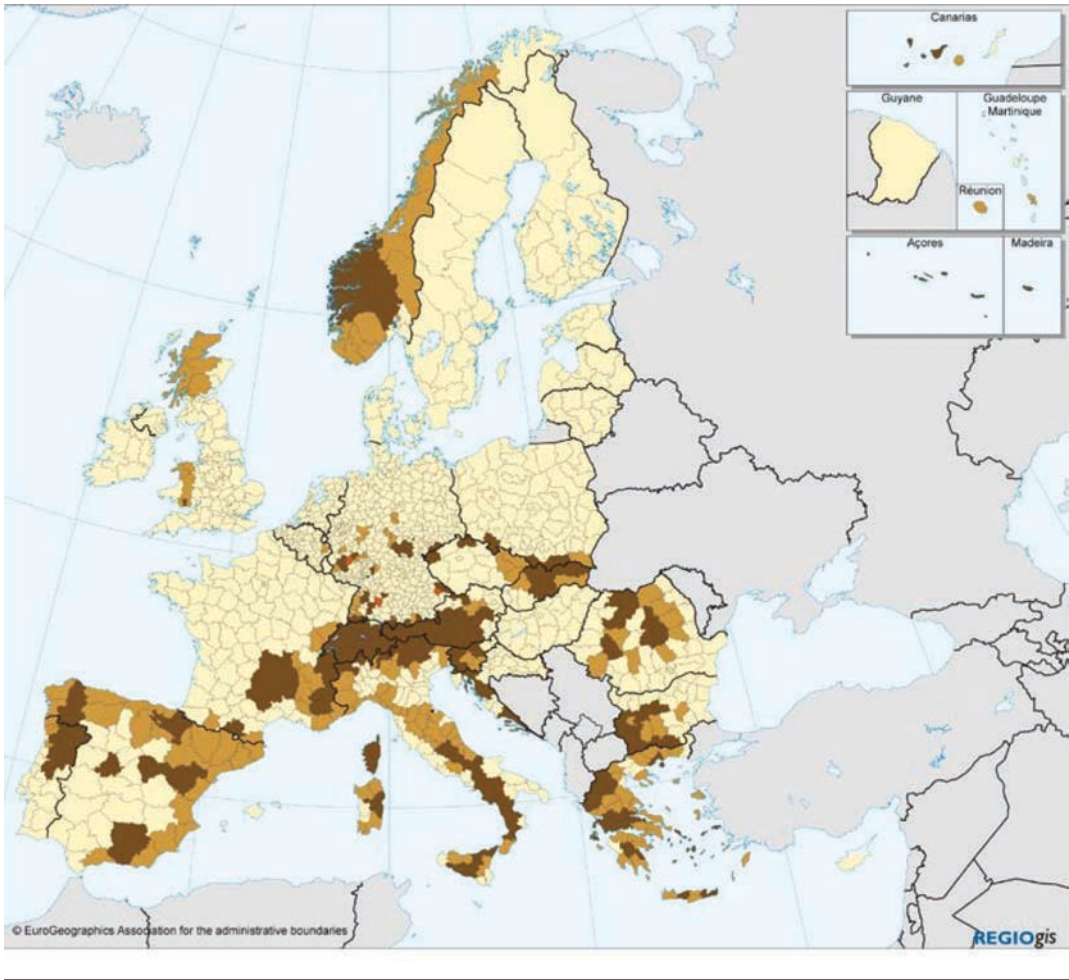
Type of metro region

- Capital city region
- Second tier metro region
- Smaller metro region

Metro regions definition v 2009
Sources: Eurostat, DG REGIO

0 500 Km

Map 28: Typology of mountain regions at NUTS 3 level



Share of mountain area in NUTS3 region

- > 50 % of population
- > 50 % of surface
- > 50 % of population and 50 % of surface
- Other regions

Sources: Eurostat, JRC, EFGS, DG REGIO

0 500 Km

Notes:

The book presents an introductory information about demographic change in Central Europe. It is particularly targeted at practitioners and policy makers at local and regional level who deal with impacts of changing populations in their work. It presents an overview of population and policy development in Central Europe and provides a deeper insight into selected regions dealing with population shrinkage and population ageing. Demographic change is seen as an important challenge for sustainable development and social cohesion in many regions in Central Europe.

Population Development and Policy in Shrinking Regions: the Case of Central Europe

