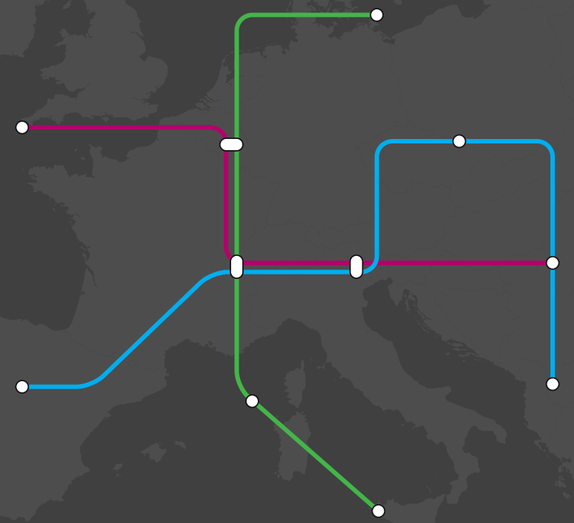
PBL Netherlands Environmental
Assessment Agency

Cities in Europe

Facts and figures on cities and urban areas



Cities in Europe

Facts and figures on cities and urban areas



Preface

Cities are economic powerhouses, places of social interaction and fora that enable us to exchange ideas. Cities, however, are also the places where some of our biggest challenges manifest themselves. In this 'urban age' cities are becoming increasingly aware of their responsibilities as well as their capacities to play their part in addressing issues like poverty, segregation, and climate change adaptation. Some cities aim to take the lead by setting ambitious targets and by experimenting with innovative approaches that can be shared across borders. Additionally, the European Union and its Member States increasingly look to cities to put their policies into practice.

Given the complexities of the challenges facing us, we need to explore the opportunities for cross-border collaboration and multi-level coordination. Exploration of new strategies, plans and practices requires, among other things, high-quality data, thorough analysis and clear communication. Visualising information can play a vital part in creating and sharing knowledge. In *Cities in Europe*, PBL Netherlands Environmental Assessment Agency presents data on European cities and the urban dimension of a number of key challenges featuring prominently on both the *Urban Agenda for the EU* and the Dutch national *Agenda Stad*. Well-established facts, new findings and counter-intuitive connections are presented in a visually attractive way, in a series of infographics. In this era of networked knowledge production, bringing statistics to life is indispensable for effective policy-making and informing and involving stakeholders and the public at large, in cities, countries and Europe as a whole.

Hans Mommaas
Director-General

Cities in Europe

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Introduction

European cities are vital to the future of Europe. As stated in the Leipzig Charter on Sustainable European Cities (European Union, 2007), cities 'possess unique cultural and architectural qualities, strong forces of social inclusion and exceptional possibilities for economic development'. Moreover, cities are centres of power, knowledge, innovation and integration. It is also in cities that great strides towards sustainability can be made, as their density allows for more energy-efficient forms of housing, transport and service provision. Many cities in Europe show serious ambitions and efforts to reduce greenhouse gas emissions. At the same time, however, these same cities often lack affordable housing and suffer from concentrations of unemployment and poverty. Furthermore, many cities have difficulties in dealing with traffic congestion, poor air quality and the effects of climate change (e.g. heat and heavy rainfall).

Cities in Europe contains 13 infographics that show facts and figures on recent urban developments in the context of the Europe 2020 strategy and the *Urban Agenda for the EU*, which aims to strengthen the urban dimension in the European Union. Based on the harmonised definition of urban areas by Eurostat and the OECD, European cities are compared with each other and recent trends are described, such as those in migration, risk of urban poverty and urban-rural divergence in employment growth. Furthermore, the following questions are being explored: which cities have shown strong growth in population, GDP and employment? Are the growth rates related to the size of the agglomerations? In which cities is the population showing high levels of satisfaction about quality of life? And which cities are falling behind? What types of territorial patterns can be distinguished?

This publication consists of two parts. In this part, Cities in Europe, we look at cities in a European context. The other part, Cities in the Netherlands, describes urban developments in the Netherlands in the context of the Dutch *Agenda Stad*, the national urban agenda for the Netherlands.

Urban Agenda for the EU

Cities are expected to play a key role in delivering the Europe 2020 strategy for smart, green and inclusive growth (European Union, 2015). Therefore, the EU's cohesion policy for the 2014–2020 period seeks to support towns and cities through a range of European investment priorities, such as urban mobility, economic and social regeneration, the digital agenda, improvements in research and innovation capacity, and the low-carbon economy.
In the past years, the European Commission, EU Member States and European cities have collaborated to develop an Urban Agenda for the EU.
The core objective of the Urban Agenda for the EU is to involve cities in the design of EU policy, to mobilise cities for the implementation of EU policies, and to strengthen the urban dimension in these policies.
Under the 2016 Dutch EU Presidency, the Urban Agenda for the EU aims to strengthen the urban dimension in EU policies by: (1) improving the development, implementation and evaluation of EU legislation ('better regulation'); (2) ensuring better access to and utilisation of European funds; and (3) by improving the EU urban knowledge base and stimulating the sharing of best practices and cooperation between cities.
In 2016, the Urban Agenda for the EU is focussing on 12 priority themes (see infographic), as well as aiming to promote stronger cooperation between the European Commission, EU Member States and cities in order to stimulate smart, green and inclusive growth in the cities of Europe.



Smart growth

The Europe 2020 strategy envisions the transition towards smart growth through the development of an economy based on knowledge, research and innovation. Concerning smart growth, cities are at the forefront of innovation. Moreover, the physical concentration of people and capital means that cities are more productive than other places.



Green growth

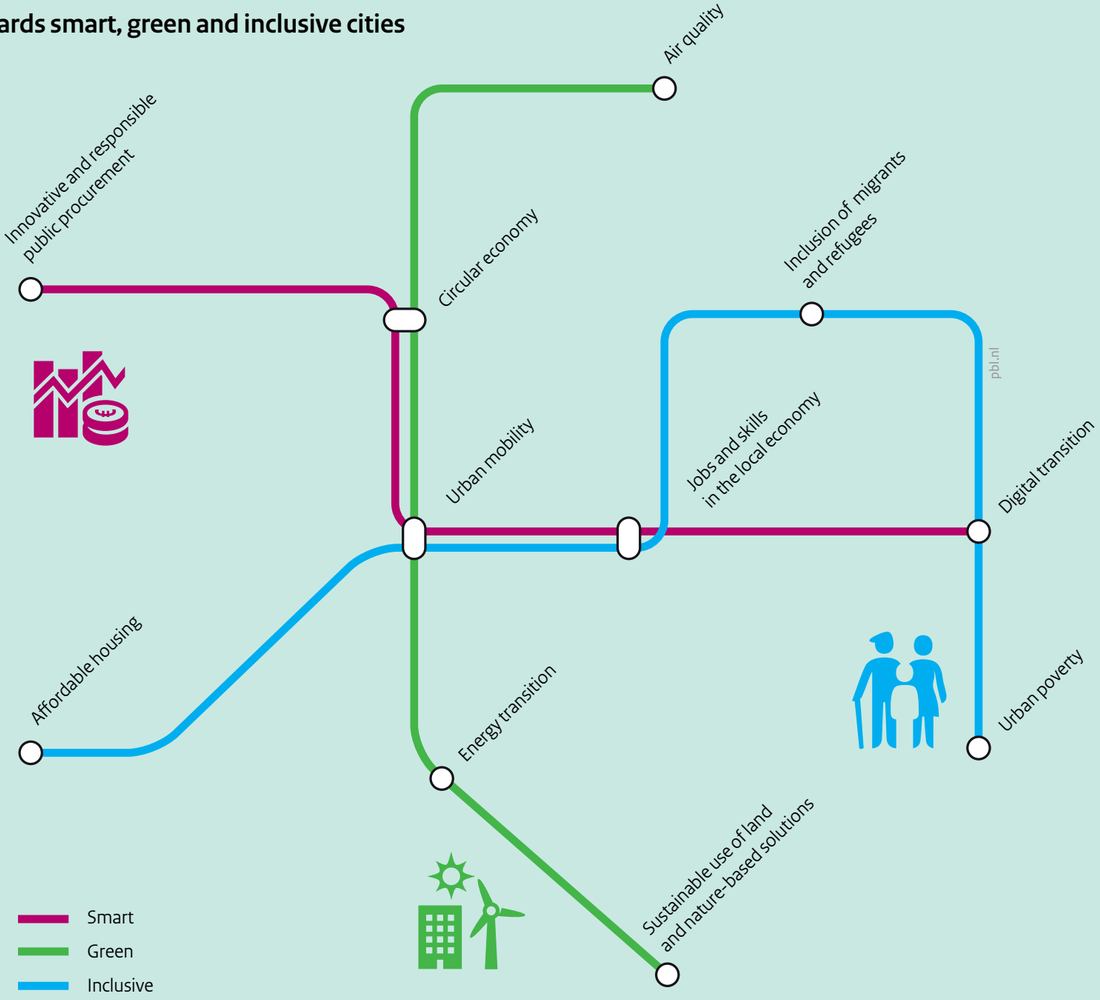
The green growth objective relates to the promotion of more resource-efficient, greener and competitive markets. Healthy, compact and energy-efficient cities are key to green growth in Europe. Many European cities are currently developing or expanding their networks for sustainable transport, waste management, district heating and green infrastructures.



Inclusive growth

The inclusive growth priority of the Europe 2020 strategy encompasses policies aimed at fostering job creation and poverty reduction. Cities can contribute to inclusive growth by combating social polarisation and poverty, by providing affordable housing and by integrating refugees and migrants into urban society.

Towards smart, green and inclusive cities

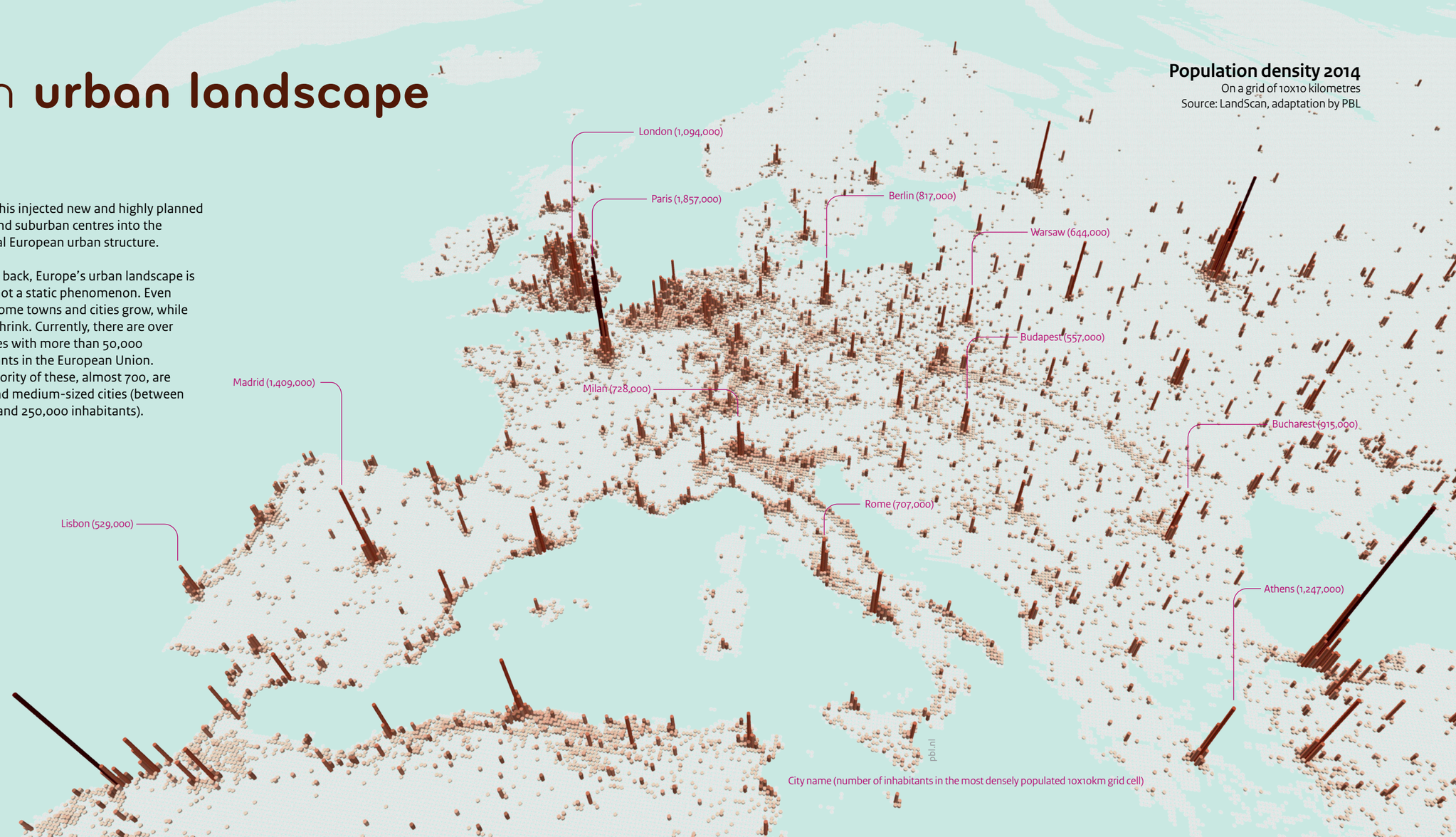


The European **urban landscape**

The urban landscape of Europe is characterised by a large diversity of small, medium-sized and large cities. Compared to other parts of the world, many urban regions in Europe have a polycentric structure where multiple towns and cities are in close proximity to one another. In other cases, a single large city – typically a nation's capital – dominates its surrounding region, resulting in a more monocentric pattern. In a few regions, a linear urbanisation pattern can be discerned, such as in areas bordering the Mediterranean Sea and Italy's Adriatic coast.

Europe's urban structure is the result of many underlying factors. Some settlements date back to the Roman Empire, where they functioned as administrative centres. Other towns and cities developed during the Middle Ages as regional marketplaces at strategic locations along trade routes, often close to a river or harbour. As a result of political, demographic and economic developments, towns and cities flourished (and therefore expanded) in some periods, whereas other periods were characterised by decline (Benevolo, 1995; Rutte and Abrahamse, 2016). Over the course of the 20th century, cities spilled over into their surrounding regions. Several countries built so-called new towns. Milton Keynes in the United Kingdom, Almere in the Netherlands and Nowa Huta in Poland are examples of these. This injected new and highly planned urban and suburban centres into the historical European urban structure.

Looking back, Europe's urban landscape is clearly not a static phenomenon. Even today, some towns and cities grow, while others shrink. Currently, there are over 800 cities with more than 50,000 inhabitants in the European Union. The majority of these, almost 700, are small and medium-sized cities (between 50,000 and 250,000 inhabitants).



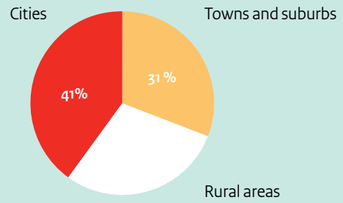
Most Europeans live in **urban areas**

According to the harmonised definition by Eurostat and the OECD, urban areas — defined as cities, towns and suburbs — provide a home to 72% of the EU-28's population; 41% live cities and 31% in towns and suburbs. Over the past 50 years, the urban population has continued to grow. However, the strongest growth took place in towns and suburbs. Many people have settled in the newly developed residential areas surrounding the existing cities. In contrast to the urban growth rates, the rural population showed a steady decline throughout the past decade. The share of people living in rural areas has decreased from 35% in 1960 to 28% in 2010.

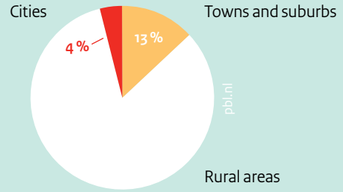
What is the degree of urbanisation?

The degree of urbanisation is a density-based classification originally introduced in 1991 to distinguish densely populated areas with more than 50,000 inhabitants (cities), intermediate urbanised areas (towns and suburbs) and thinly populated areas (rural areas). In 2011, work carried out by the European Commission, Eurostat and the OECD resulted in a harmonised definition of the degree of urbanisation which is based on more precise population datadata (see appendix).

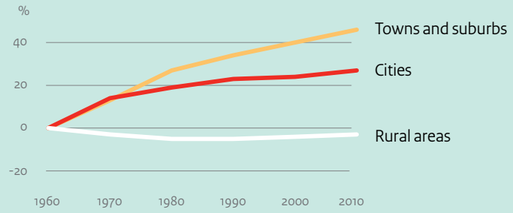
72% of the EU population lives in urban areas...



...on 17% of the land area.

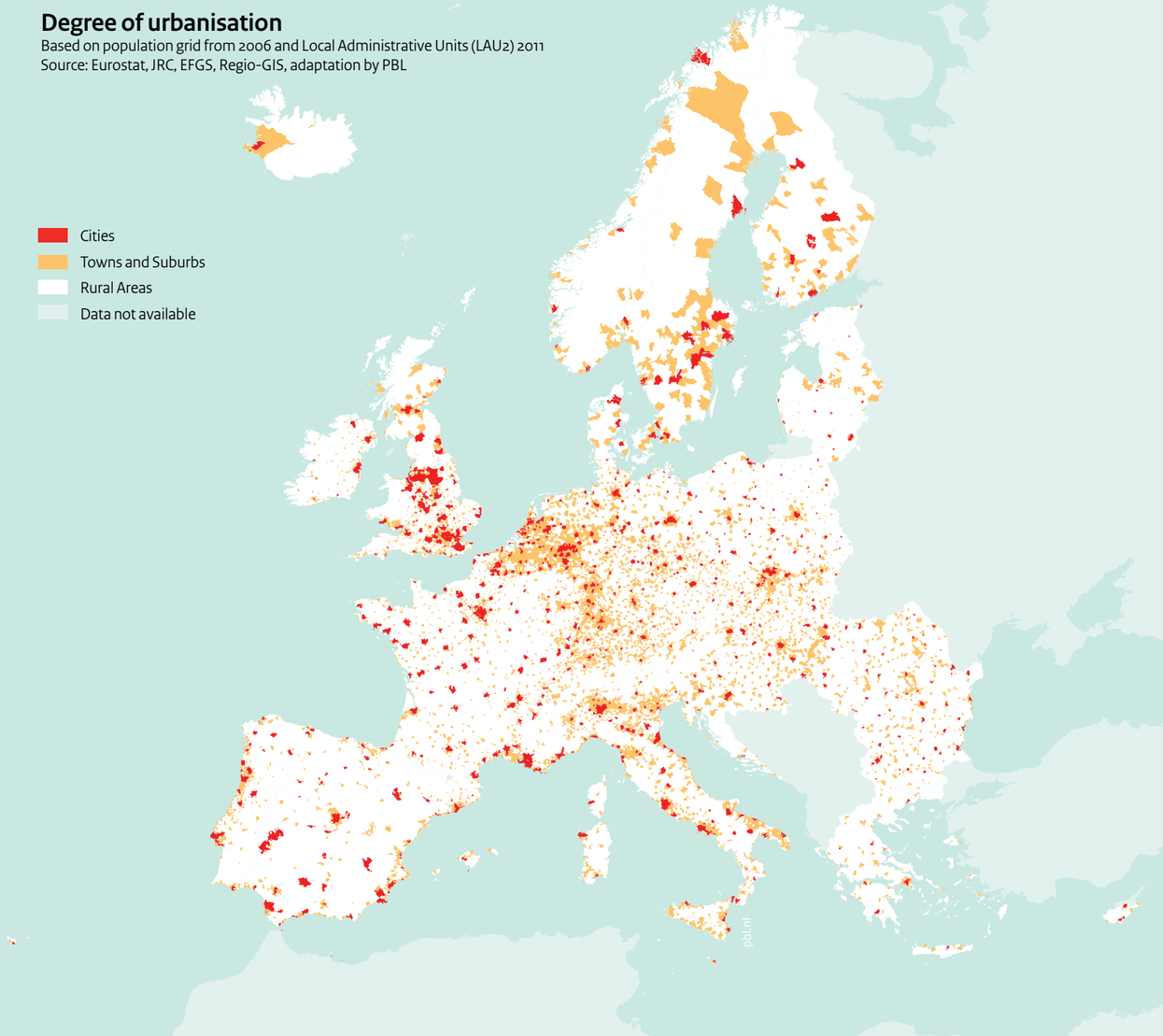


The urban population is growing.



Degree of urbanisation

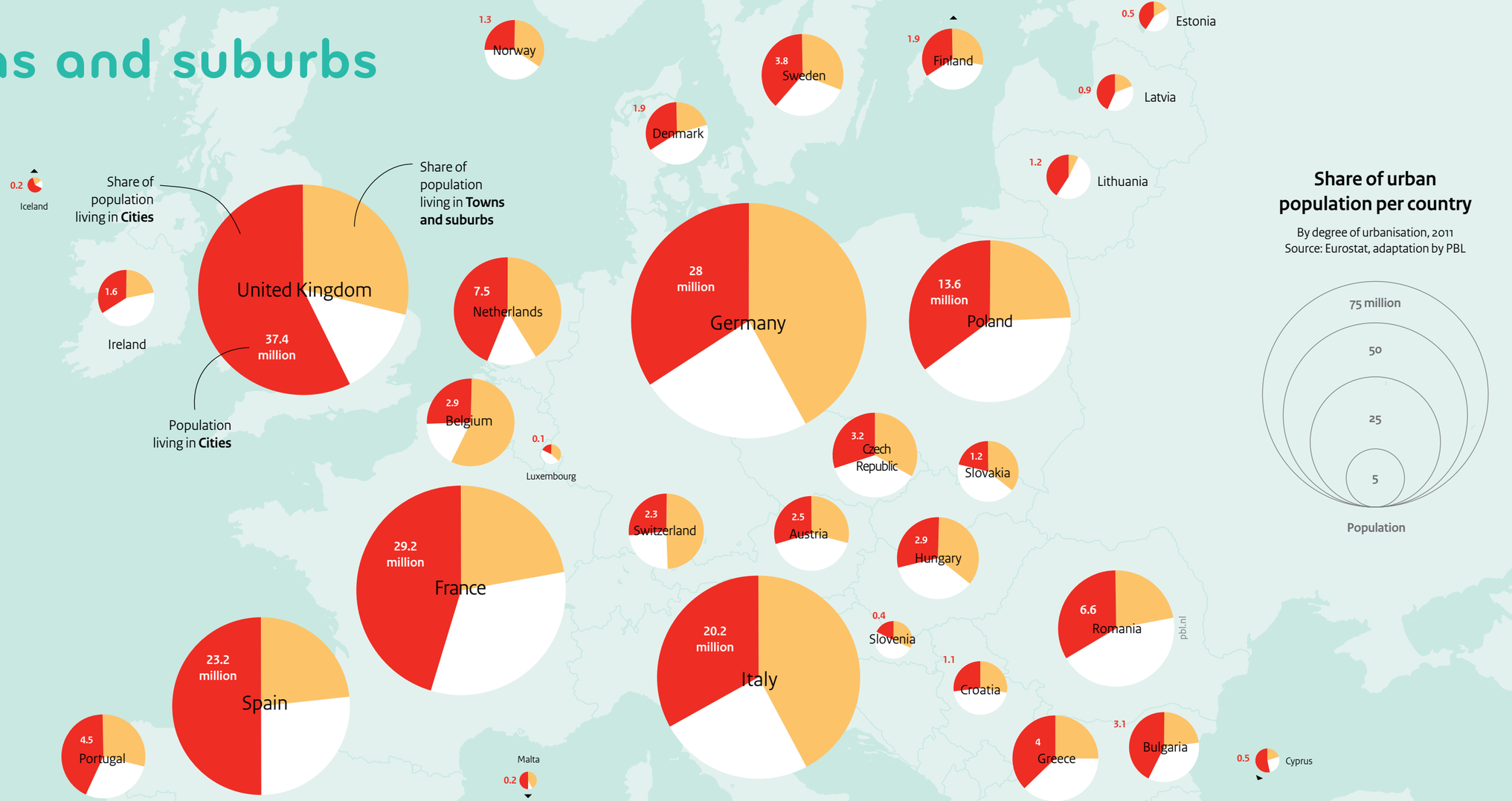
Based on population grid from 2006 and Local Administrative Units (LAU2) 2011
Source: Eurostat, JRC, EFGS, Regio-GIS, adaptation by PBL



Cities, towns and suburbs

Compared to other parts of the world, Europe is highly urbanised. However, urbanisation levels vary from country to country. In general, western and northern Europe are more urban than the rest. The most urbanised region of Europe is sometimes called the Pentagon because it lies between the cities London, Paris, Milan, Munich and Hamburg. Over three quarters of the population live in urban areas in Germany, the United Kingdom, the Netherlands and Belgium. Eastern Europe, in contrast, is less urbanised. In Poland, Slovenia, Slovakia and Romania, over 40% of the population still lives in rural areas.

Eurostat and the OECD subdivide urban areas into two main categories: cities, and towns and suburbs. The share of the population living in cities is largest in the United Kingdom, Iceland, Malta and Spain, whereas in Slovenia and Slovakia it is the smallest. In the category of towns and suburbs, Belgium and Switzerland have the largest share, but also in Germany, the Netherlands, Italy and Malta over 40% of the population lives in towns and suburbs.



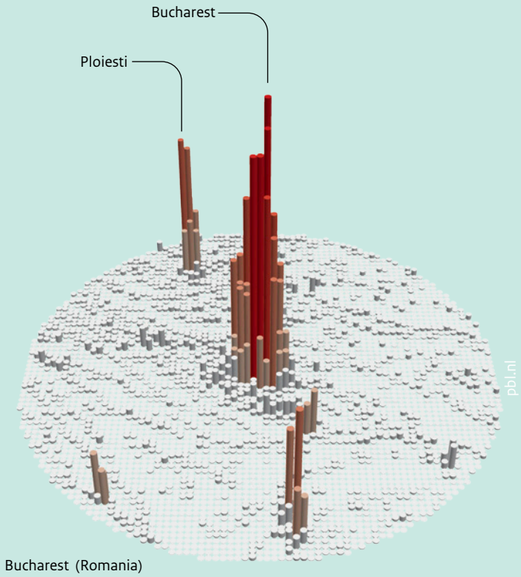
Share of urban population per country

By degree of urbanisation, 2011
Source: Eurostat, adaptation by PBL

Different types of **urban regions**

Population density 2014
On a grid of 2x2 kilometres
Source: LandScan, adaptation by PBL

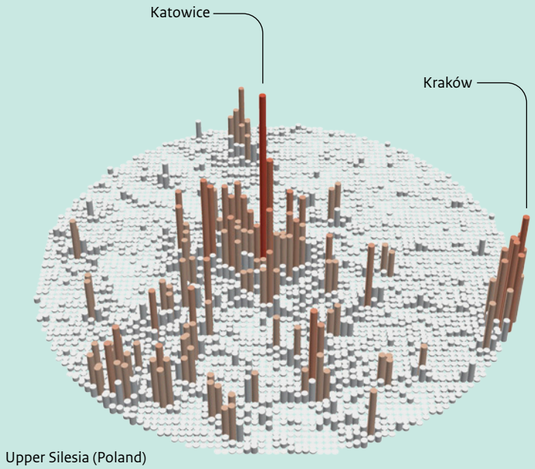
Urban areas in Europe come in all shapes and sizes. In general, four different morphological types can be distinguished: monocentric, dispersed, linear and polycentric urban regions.



Bucharest (Romania)

Monocentric urban region

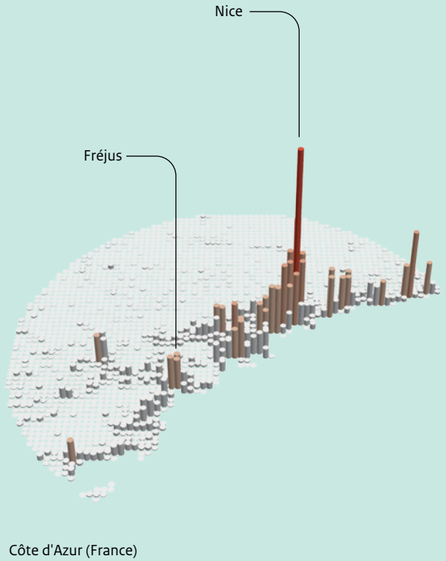
Regions with monocentric urban structures can be found in France, Spain, Portugal and countries in the northern and eastern parts of Europe, where cities are distributed over relatively wide areas.



Upper Silesia (Poland)

Dispersed urban region

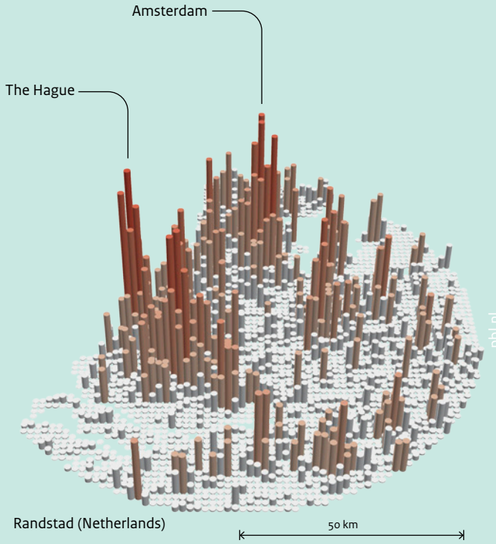
Dispersed urban patterns are formed by scattered or sprawling cities, towns and suburbs with relatively low densities. Examples can be found in parts of Belgium, in northern Italy and in the south of Poland.



Côte d'Azur (France)

Linear urban region

Regions with linear forms of agglomeration have emerged along some of Europe's coastlines, for instance in Portugal, in the southern parts of Spain and France, and in the east of Italy. Linear urban regions are also present in mountain valleys in Switzerland and Austria.



Randstad (Netherlands)

Polycentric urban region

In polycentric urban regions, multiple cities lie in close proximity to one another. These kinds of regions can be found in the Netherlands, the western part of Germany and the southern half of the United Kingdom.

Growth and **decline** in metropolitan areas

Changes in the size of the population in cities are the result of natural processes (births and deaths) and migration.
In most European metropolitan areas, the population is growing. Cities in Europe are also becoming more culturally and ethnically diverse, as a result of the free movement of citizens within the European Union and the influx of migrants and asylum seekers from non-EU countries. Most EU cities saw an increase in the share of non-national inhabitants in recent decades.

In the 2000–2010 period, the strongest population growth took place in London, Madrid and Paris. But also Dublin, Toulouse, Oslo and metropolitan areas in Spain gained in population. However, not all metropolitan areas have been growing. In the same period, population numbers in Athens, Tallinn, Genova and a number of cities in Poland and Germany declined.

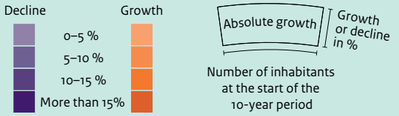
How are metropolitan areas defined?

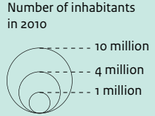
The OECD database contains detailed data on 114 metropolitan areas in Europe. According to the OECD definition, metropolitan areas are urban areas with more than 500,000 inhabitants. The OECD, in cooperation with the European Commission and Eurostat, has developed a harmonised definition of urban areas that overcomes previous limitations linked to administrative definitions (OECD, 2012). According to this definition, an urban area is a functional economic unit characterised by densely inhabited 'cities' with more than 50,000 inhabitants and 'commuting zones' whose labour market is highly integrated with nearby cities.



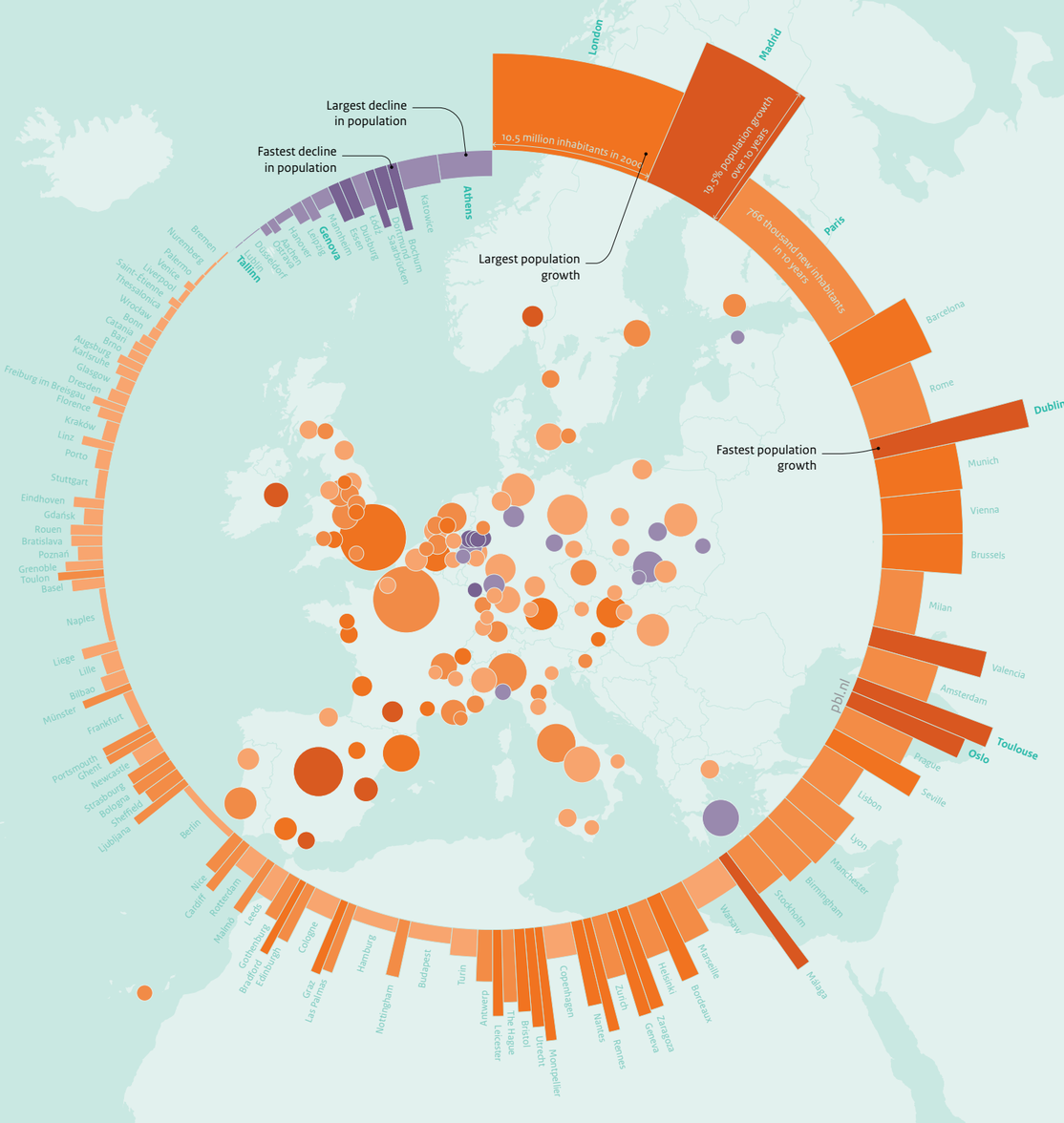
City

Commuting zone





Population change for the 114 metropolitan areas in Europe, 2000–2010
Source: OECD Metropolitan Explorer, adaptation by PBL

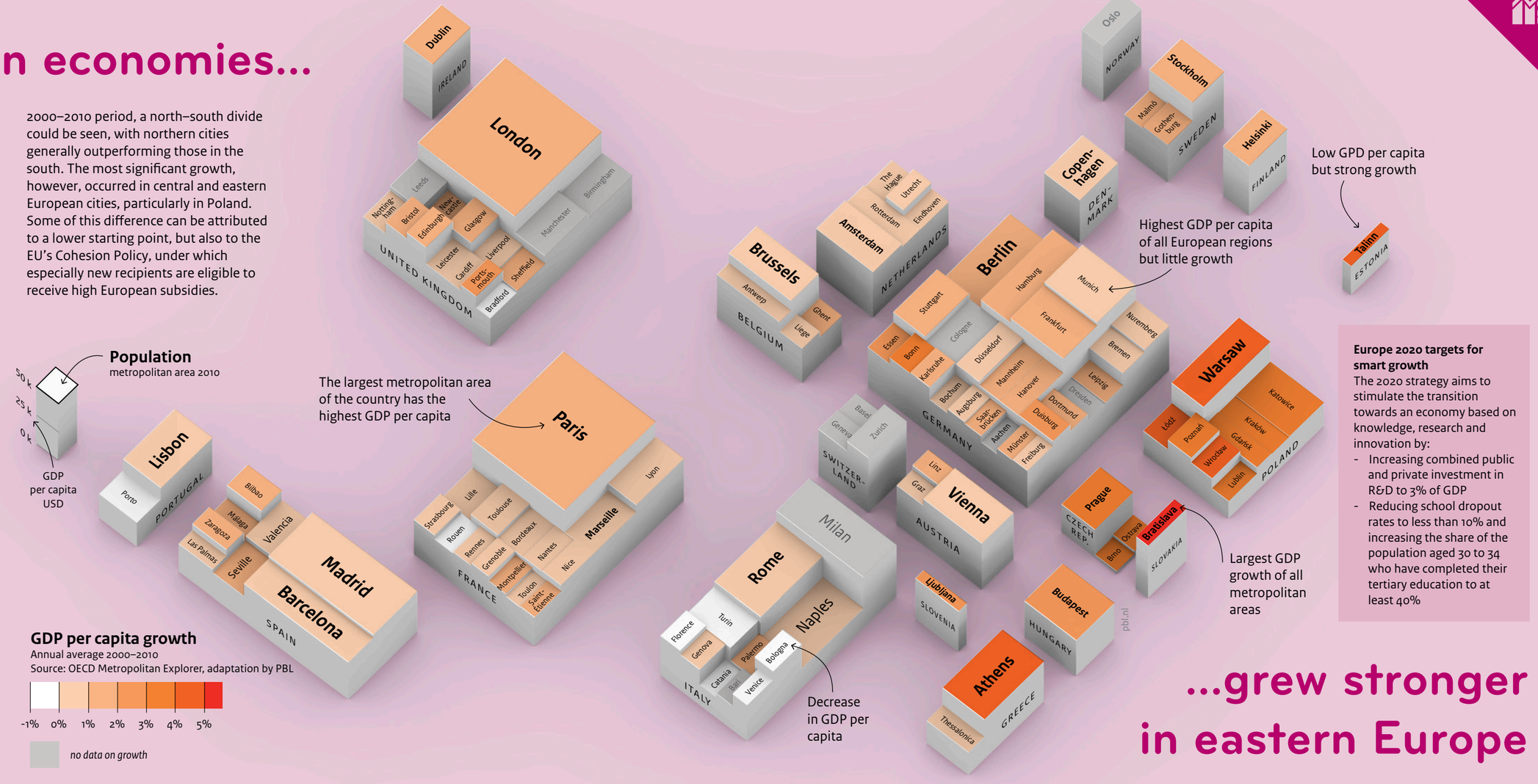


Metropolitan economies...

Cities are the engines of the economy. Metropolitan regions contain 59% of the EU population, but they hold 62% of its jobs and represent 67% of GDP (European Commission, 2014).
The concentration of people, capital and business opportunities means that cities are more productive than other places. It is therefore not surprising that cities figure prominently in the EU strategy for jobs and growth. The Urban Agenda for the EU, in particular, aims to ensure maximum utilisation of the growth potential of cities.

Many of Europe's largest cities are also its most affluent. The megacities of Paris and London rank among those with the highest GDP per capita ratios of the EU, such as Munich, Stockholm and Frankfurt. Still, there is not a clear linear relationship; Helsinki is smaller than Naples, but shows a higher GDP per capita and a stronger economic growth rate. Bigger is therefore not always better. There is much more at stake, such as the national economy of the country in which they are situated. To a large extent, the geographical distribution of GDP per capita of cities reflects that of regions and countries in Europe.

Cities also differ in growth rate; just as real engines, they are running at different speeds. Again, size not necessarily matters – although Paris and London appear to perform above average – as much as geographical location. In the 2000–2010 period, a north–south divide could be seen, with northern cities generally outperforming those in the south. The most significant growth, however, occurred in central and eastern European cities, particularly in Poland. Some of this difference can be attributed to a lower starting point, but also to the EU's Cohesion Policy, under which especially new recipients are eligible to receive high European subsidies.



Europe 2020 targets for smart growth
The 2020 strategy aims to stimulate the transition towards an economy based on knowledge, research and innovation by:
- Increasing combined public and private investment in R&D to 3% of GDP
- Reducing school dropout rates to less than 10% and increasing the share of the population aged 30 to 34 who have completed their tertiary education to at least 40%

...grew stronger in eastern Europe

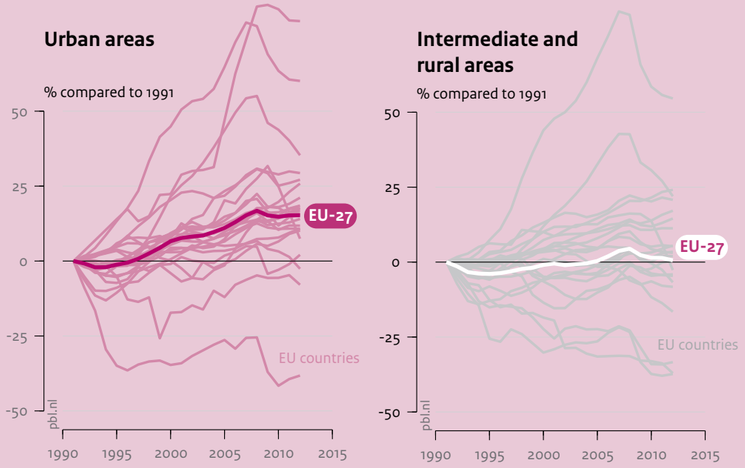
Stronger job **growth** in urban areas

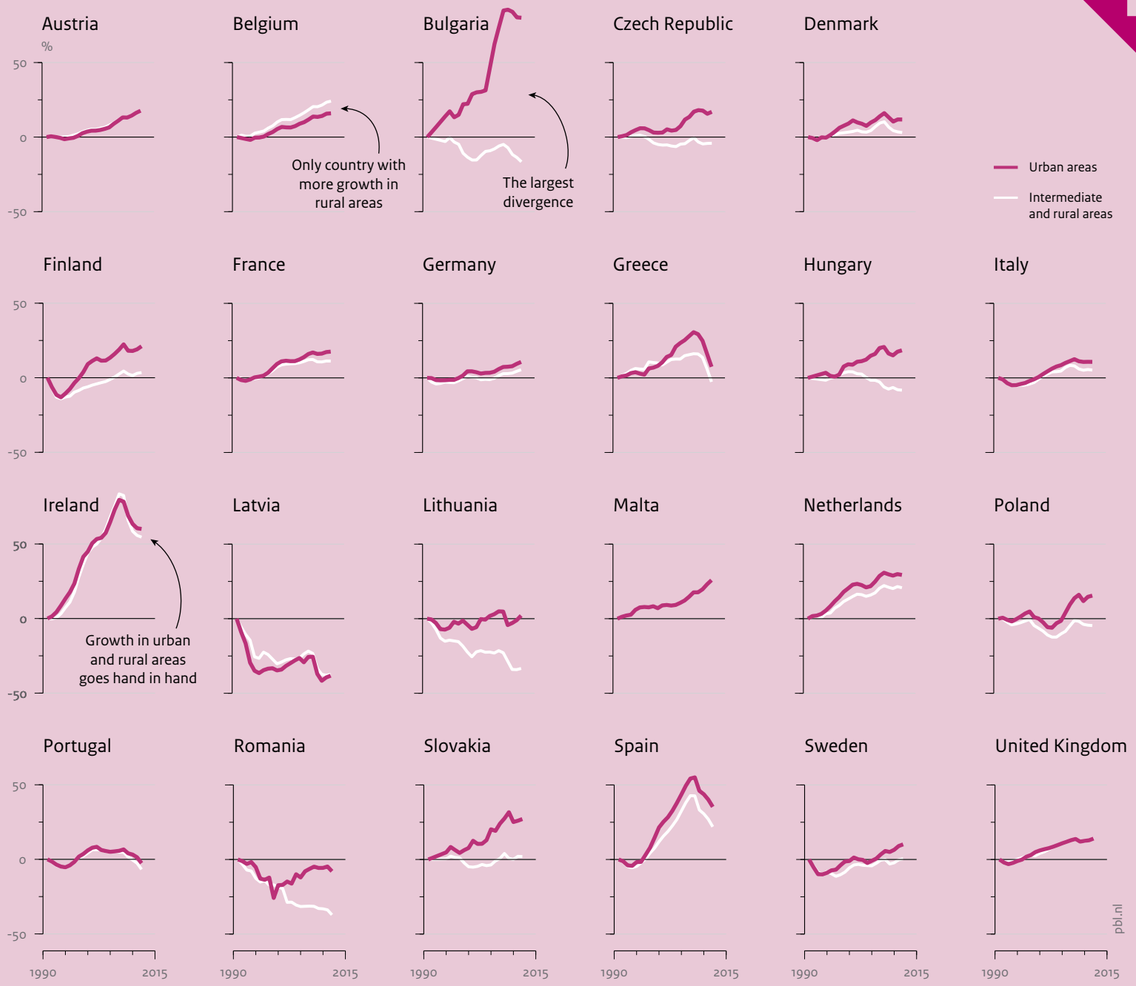
For centuries, people have migrated to cities to find work, and this trend continued into the 21st century. In the first decade of this millennium, European cities, on balance, outperformed rural areas in terms of job growth. The gap between urban and rural areas is widening; the difference in job growth in the 1990–2012 period in both area types across Europe (EU-27) was almost 15% (PBL, 2016).

Monitoring this trend is important in the context of both the European Union's smart growth and inclusive growth agendas. With these agendas the EU aims, among other things, to raise Europe's employment rate (75% employment rate for people aged 20 to 64, by 2020). This requires not only the creation of more jobs, especially for women, young people and older and low-skilled workers, but also a modernisation of labour markets, and investment in education and skills training.

As 'engines' of the European economy, cities have a key role to play in translating EU and national smart and inclusive growth policy objectives into concrete action. In terms of job growth, different European urban areas show different developments. Geography and differences in the structure of national economies matter. In the 1990–2012 period, job growth in rural and urban regions virtually went hand in hand in Ireland, Portugal, Austria and the United Kingdom. At the other end of the spectrum, urban regions in Bulgaria, Romania, Poland, Slovakia, Hungary and Lithuania performed far better than their rural counterparts over the same time period. Romanian and Lithuanian rural regions, for instance, lost over 30% of their jobs. The Netherlands follows the EU average, albeit somewhat less pronounced in its divergence and at a higher overall growth rate. The only country which seems to defy the trend is Belgium; here, rural job growth outperformed that of the cities.

Change in the number of jobs in the EU-27





Source: Cambridge Econometrics, adaptation by PBL

Towards **greener** cities

With the growing awareness of the consequences of climate change, the EU has committed itself to limiting greenhouse gas emissions and reducing the consumption of fossil fuels (European Union, 2015b). The Europe 2020 strategy has renewed the EU's commitment to become a 'low-carbon' economy where, by 2050, greenhouse gas emissions will be 80% to 90% lower than they were in 1990. Among other initiatives, European Cohesion Policy funding is being reallocated to support the production of renewable energy and improve energy efficiency. Cities can be instrumental in the transition towards a low-carbon economy. They are significantly more efficient in terms of energy use and land use than other areas (European Commission, 2014). Household energy consumption in cities tends to be lower because a larger proportion of people live in apartments or terraced housing, both of which are more efficient in terms of heating than freestanding houses. Cities are also more energy efficient as regards transportation. Due to the shorter distances, walking and cycling are more attractive options in towns and cities than in other areas. There is also a higher demand for public transport which makes it more cost-effective to offer high-quality services, such as underground rail. A growing number of European cities and urban regions are already making serious efforts to reduce their greenhouse gas emissions; for example, by implementing more renewable energy or expanding their district heating networks. Despite the lofty ambitions of Europe's cities to become greener, simply reducing emissions in urban areas will not be sufficient to stop global warming.

Cities provide fertile ground for innovation and creativity (UNEP, 2013), but because large-scale energy infrastructures are interconnected and government and governance structures are interdependent, coordinated multi-level innovation strategies are needed so that lessons can be shared with other metropolitan regions and across national borders.

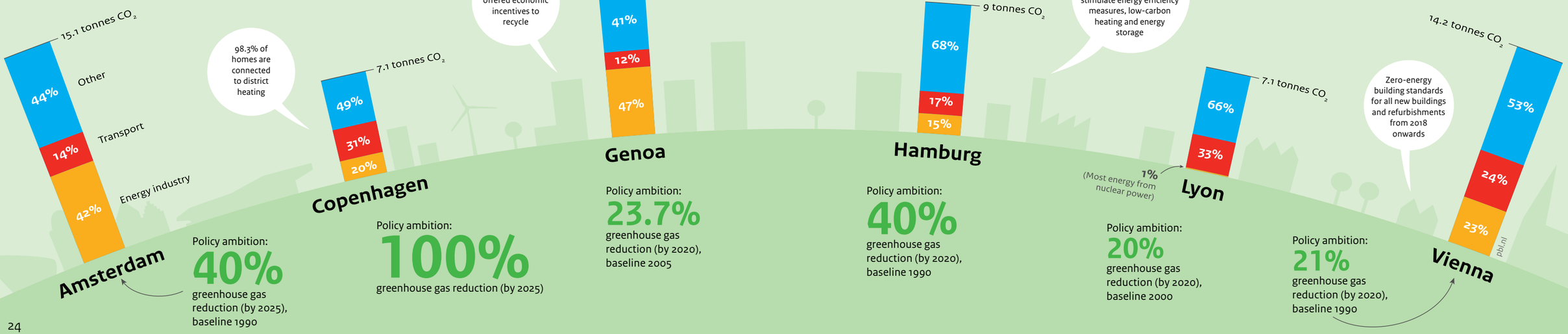
Europe 2020 targets for green growth

The Europe 2020 strategy sets three objectives for climate and energy policy, to be reached by 2020:

- Reducing greenhouse gas emissions by at least 20% compared with 1990 levels
- Increasing the share of renewable energy in final energy consumption to 20%
- Moving towards a 20% increase in energy efficiency

CO_2 emissions per metropolitan area

Per inhabitant in 2008
Source: OECD Metropolitan Explorer; TRANSFORM, adaptation by PBL

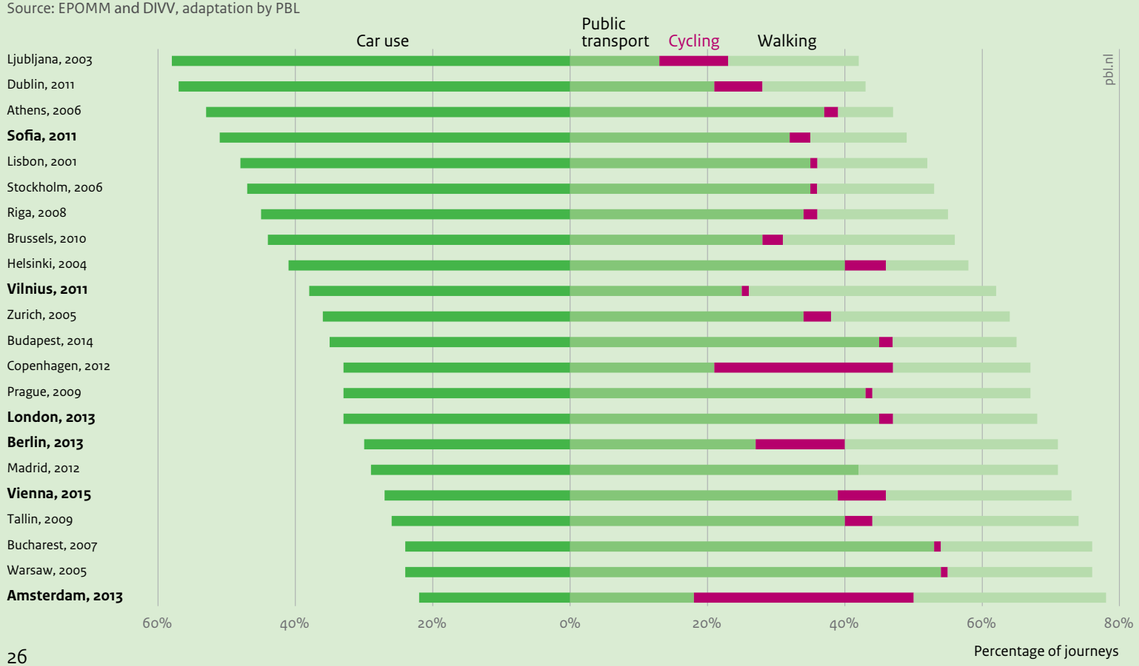


Cycling the city

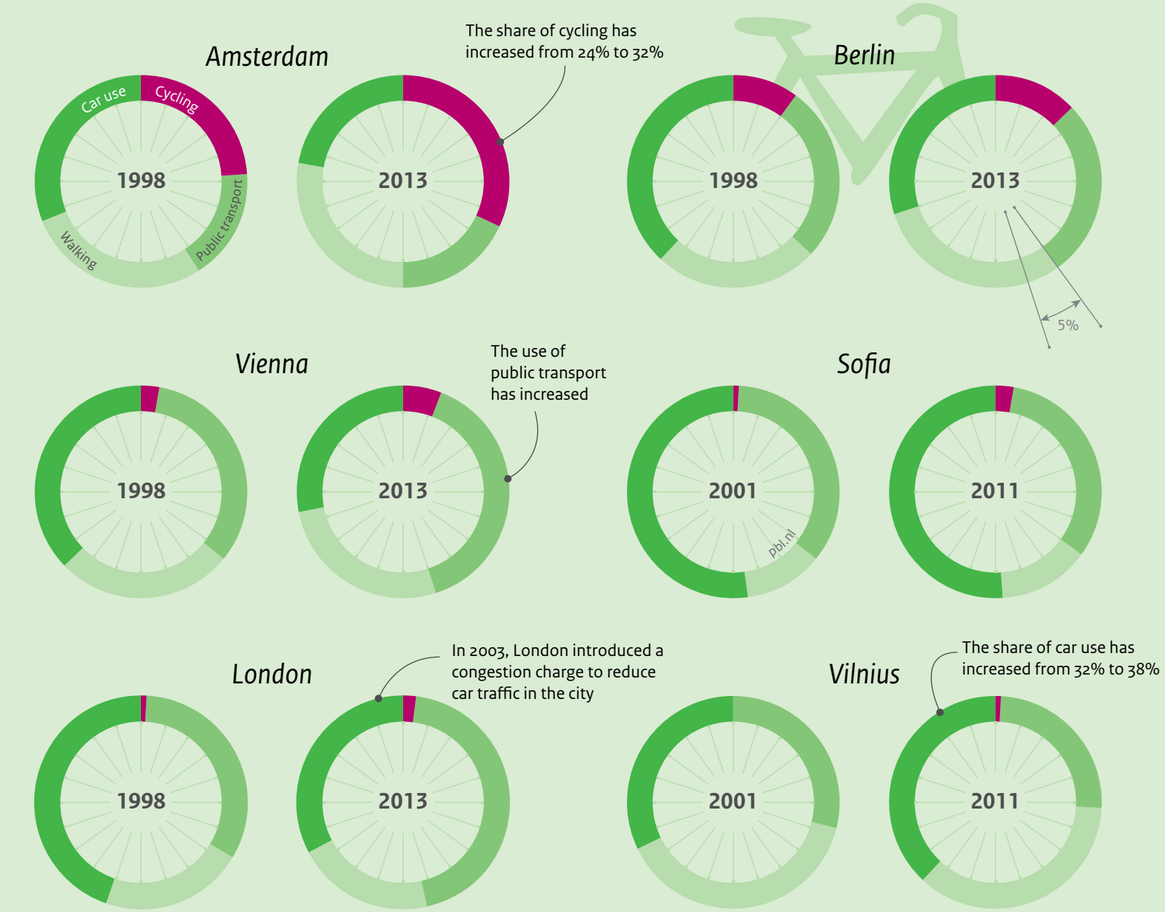
Most trips begin and end in cities. Increasing demand for travel has led to severe congestion, poor air quality, undesirable levels of noise pollution and high levels of CO_2 emissions, in many European cities. The European Commission has pledged its support to cities to promote sustainable modes of transport, such as cycling, walking and public transport, as well as clean and energy-efficient vehicles (European Commission, 2013). In recent years, bicycle use has increased in many European cities. For short distances, bicycles tend to be the fastest mode of transport. Cycling can help relieve traffic congestion, car parking problems and air pollution, while providing social benefits such as health and liveability. Moreover, it is an inexpensive solution; bicycles are relatively inexpensive to buy and large parts of the infrastructure are already in place. Considering the fact that about half of all private car journeys and over half of all lorry trips in European cities are under five kilometres, there is significant room to improve the share of cycling (European Union, 2015c).

The cycling capitals of Europe are easy to spot

Source: EPOMM and DIVV, adaptation by PBL



Changes over time differ between cities



Source: EPOMM and DIVV, adaptation by PBL

Risk of **urban poverty** persists

Growing socio-economic inequalities within Europe are widely considered a major challenge for cities. Not just because inequalities may threaten competiveness, but also because of the social impact on urban communities (Tammaru et al., 2015). Inequality can refer to differences in income levels, employment rates as well as segregation (the separation of groups in space, for instance urban neighbourhoods).

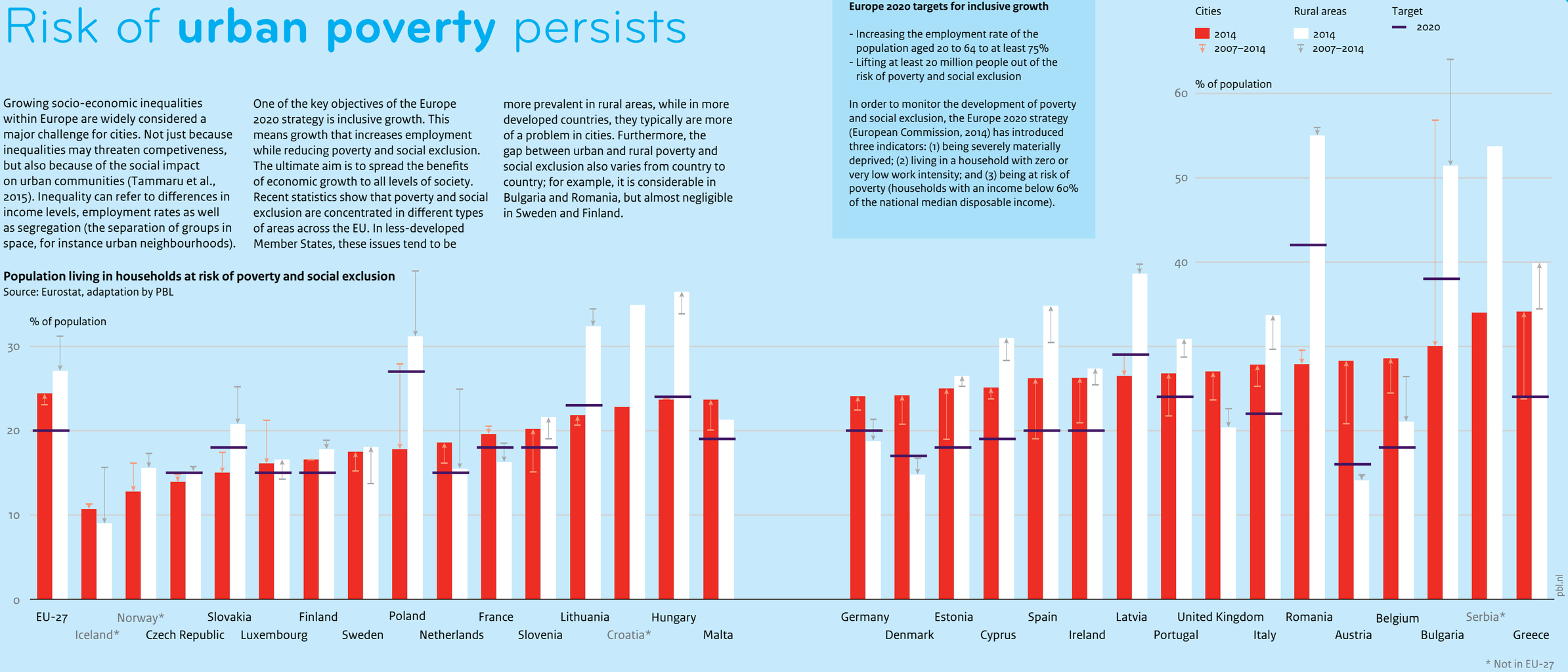
One of the key objectives of the Europe 2020 strategy is inclusive growth. This means growth that increases employment while reducing poverty and social exclusion. The ultimate aim is to spread the benefits of economic growth to all levels of society. Recent statistics show that poverty and social exclusion are concentrated in different types of areas across the EU. In less-developed Member States, these issues tend to be more prevalent in rural areas, while in more developed countries, they typically are more of a problem in cities. Furthermore, the gap between urban and rural poverty and social exclusion also varies from country to country; for example, it is considerable in Bulgaria and Romania, but almost negligible in Sweden and Finland.

Europe 2020 targets for inclusive growth

- Increasing the employment rate of the population aged 20 to 64 to at least 75%
- Lifting at least 20 million people out of the risk of poverty and social exclusion

In order to monitor the development of poverty and social exclusion, the Europe 2020 strategy (European Commission, 2014) has introduced three indicators: (1) being severely materially deprived; (2) living in a household with zero or very low work intensity; and (3) being at risk of poverty (households with an income below 60% of the national median disposable income).

Population living in households at risk of poverty and social exclusion
Source: Eurostat, adaptation by PBL



* Not in EU-27

Migrants move to **cities**

Europe's population is growing, not only as a result of natural processes (more births than deaths), but also because of immigration (from outside Europe). Over the last few years, Europe has experienced a large influx of people. As a consequence of the geopolitical instability in the Middle East and Africa, immigration and refugee flows into Europe have increased, and this has had a significant impact on European countries and cities. People also migrate within the EU. For example, because of disparities in employment and income levels, inhabitants of central and eastern Member States have moved to those in the west (Espon, 2015; European Commission, 2014).

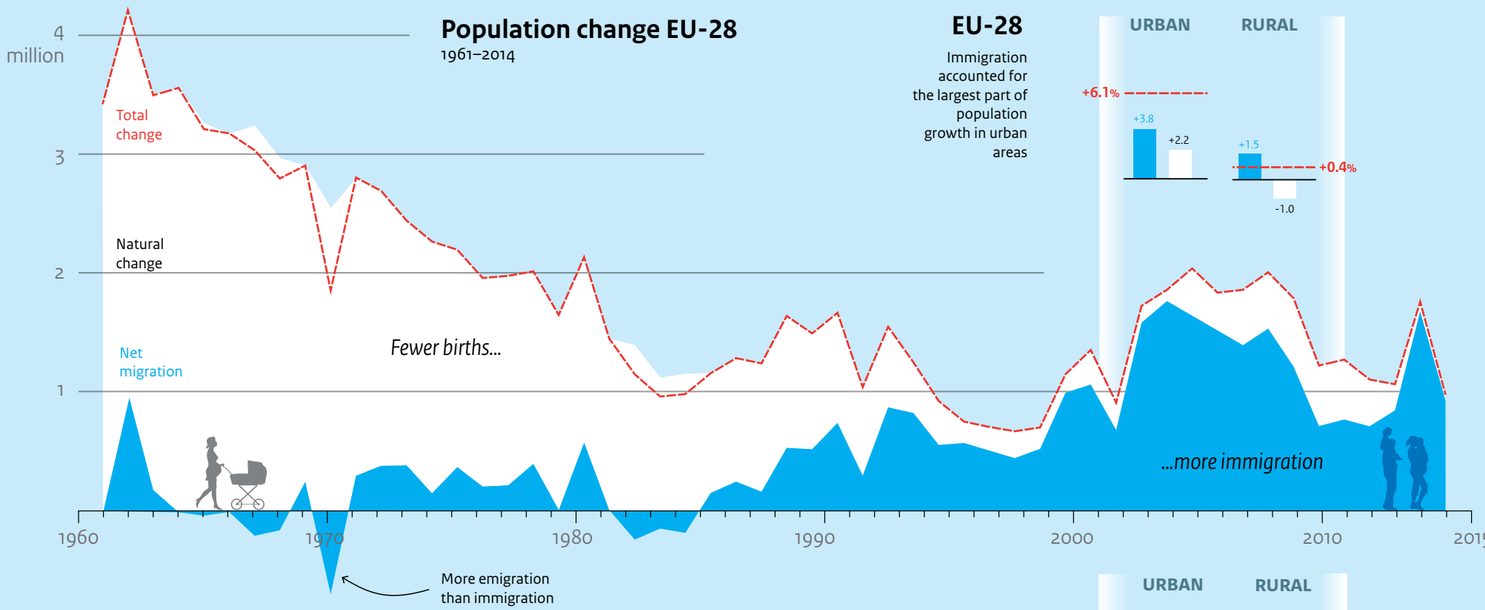
Migration, in general, and the current refugee flows into Europe, in particular, have clear territorial and urban dimensions. The main cause of the EU's population growth is net immigration. Between 2001 and 2011, the EU's total population (EU-28) increased by 3.8%, with net immigration accounting for 3% of this. Natural population change was only 0.7% (European Commission, 2014).

Over the centuries, cities have received immigrants, both those with a residence permit as well as asylum seekers and undocumented immigrants. In the EU-15, net immigration accounted for the largest share of population growth in urban areas. In the EU-13, net immigration more than offset the natural decline in urban population (European Commission, 2014). Cities can benefit from newcomers; for instance, because they bring new skills and knowledge. However, a large influx of people can also pose major challenges with respect to housing and public services. Not every city is affected in the same way. Even within cities, challenges may differ between neighbourhoods.

Especially so-called 'arrival city' neighbourhoods (Saunders, 2011) can suffer from an accumulation of social, economic, cultural and individual problems that impede the establishment of a local sense of community, of belonging. This can limit the opportunities for people to develop new talents and skills.

Population change EU-28

1961–2014

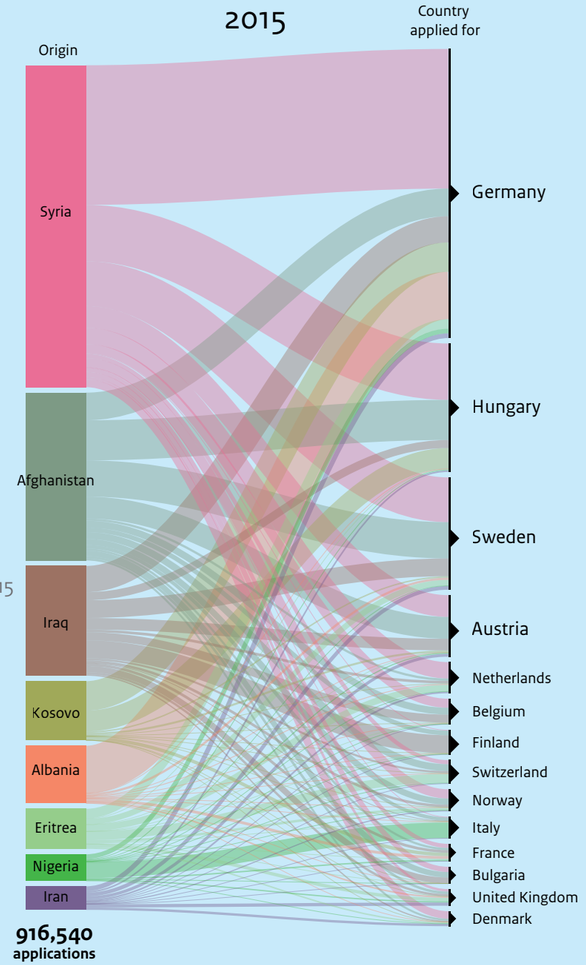


By urban-rural typology

2001–2011

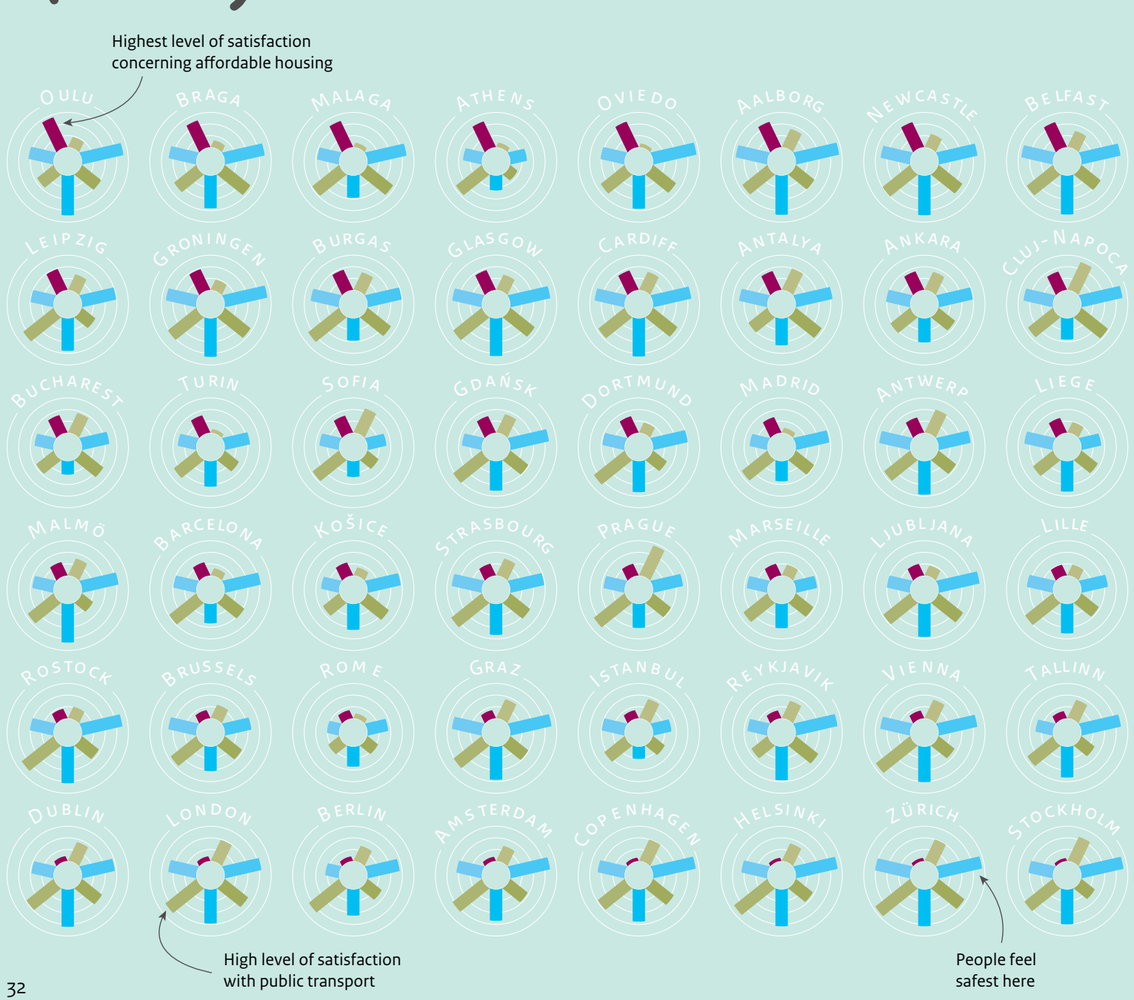
First-time asylum applications

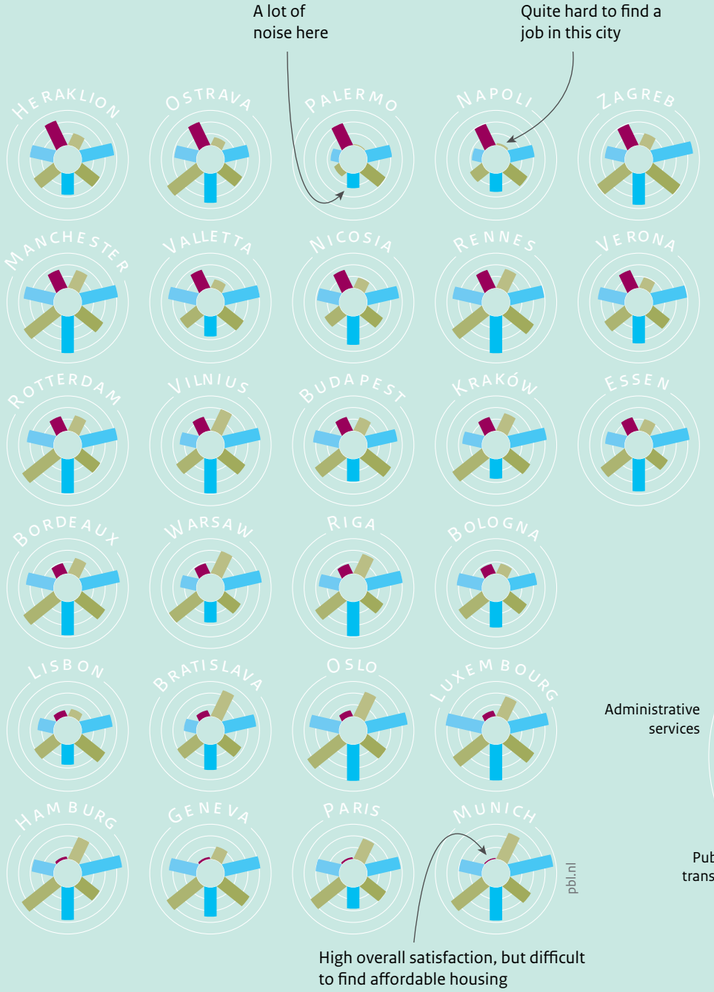
Top 8 countries of origin and top 14 receiving countries, 2015



Source: Eurostat, adaptation by PBL

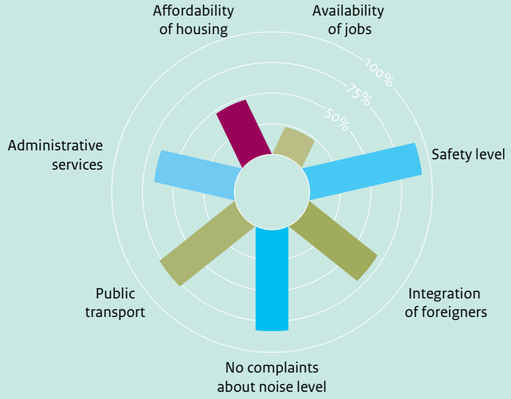
Quality of life in cities





How do Europeans rate the quality of life in their city? To answer this question, the European Union regularly conducts an extensive survey of almost 80 cities of varying sizes (European Union, 2016). This infographic shows the level of satisfaction according to seven indicators. This allows for interesting comparisons between cities. For example, many capital cities, such as London, Paris, Vienna, Amsterdam and Copenhagen, offer a high quality of life, but score much lower on affordable housing. In some smaller cities, such as Aalborg, Braga, Groningen, Zagreb and Oulu, the score on housing prices is more in line with the other indicators.

Level of satisfaction



Appendix

All infographics in Cities in Europe have been created and edited by PBL Netherlands Environmental Assessment Agency. The authors would like to thank the following people from the Ministry of the Interior and Kingdom Relations (BZK) and the Ministry of Infrastructure and the Environment (IenM) for their contribution to this publication: Syd Jordaan (BZK), Nathalie van den Heuvel (BZK), Pedro Campos Ponce (BZK) and Bernice den Brok (IenM).

Furthermore, many PBL colleagues have given valuable input and feedback. Special thanks go to: Hans van Amsterdam, Andries de Jong, Femke Daalhuizen, Ton Manders, Raymond de Niet, Hans Nijland, Jan Ritsema van Eck, Jacqueline Timmerhuis, Anet Weterings and Ries van der Wouden.

The following sources were used:

Page 10 European urban landscape
In this infographic, LandScan 2014 data was used to generate the spikes in population densities on a grid of 10x10 kilometres. More information about the definition and distribution of cities can be found here: http://ec.europa.eu/eurostat/statistics-explained/index.php/Statistics_on_European_cities#Cities_.28Urban_Audit.29

Page 12 Most Europeans live in cities
The definitions of cities, towns and suburbs and rural areas are based on the 'degree of urbanisation' typology by Eurostat and the OECD. Depending on the share of the population living in the various types of clusters, Local Administrative Units (LAU2) areas are classified into three degrees of urbanisation: In 'Cities' (densely populated areas with more than 50,000 inhabitants) at least 50% of the population lives in high-density clusters. In 'Towns and suburbs' (intermediate density areas) less than 50% of the population lives in rural grid cells and less than 50% lives in high-density clusters. In 'Rural areas' (thinly populated areas) more than 50% of the population lives in rural grid cells. The map of Europe showing the 'degree of urbanisation' is based on a 2006 density grid and LAU2 2011 delineation. The map was kindly provided by Eurostat, JRC, EFGS and REGIO-GIS. More information about the 'degree of urbanisation' typology can be found here: http://ec.europa.eu/eurostat/web/degree-of-urbanisation/overview

Page 14 Cities, towns and suburbs
The definitions of cities, towns and suburbs and rural areas are based on the 'degree of urbanisation' typology by Eurostat and the OECD.

Page 16 Different types of urban regions
In this infographic, LandScan 2014 was used to generate the spikes in population densities on a grid of 2x2 kilometres.

Page 18 Growth and decline in metropolitan areas
This infographic is based on data provided by the OECD Metropolitan Explorer (version January 2014). The Metropolitan Explorer offers an interactive visualisation of the 275 metropolitan areas in 29 OECD countries. For this study the 114 metropolitan areas in European countries have been selected. The OECD Metropolitan Explorer database contains comparable values of population, GDP, employment, quality of air and many other indicators. More information about the OECD Metropolitan Explorer can be found here: http://measuringurban.oecd.org/#

Page 20 Metropolitan economies grew stronger in eastern Europe
This infographic is based on data provided by the OECD Metropolitan Explorer (version January 2014).

Page 22 Stronger job growth in urban areas
This infographic is based on data from the European Regional Database by Cambridge Econometrics (version April 2015). The European Regional Database contains socioeconomic data for 27 European countries on regional scale (NUTS3) for the period 1980 to 2012.
The definitions of urban, intermediate and rural areas are based on the 'urban-rural typology' by Eurostat and the OECD. The data was aggregated on regional scales (NUTS2 and NUTS3).
More information about the 'urban-rural typology' by Eurostat and the OECD can be found here: http://ec.europa.eu/eurostat/statistics-explained/index.php/Urban-rural_typology

Page 24 Towards greener cities
This infographic is based on data provided by the OECD Metropolitan Explorer (version January 2014) and EU-funded research project TRANSFORM. More information about TRANSFORM can be found here: http://urbantransform.eu/about/smart-energy-city/

Page 26 Cycling the city
This infographic is based on the TEMS modal split database by the European Platform on Mobility Management (EPOMM). The modal split data for Amsterdam has been provided by *Dienst Infrastructuur Verkeer en Vervoer* (DIVV), Amsterdam. More information about the TEMS modal split database can be found here: http://www.epomm.eu/tems/index.phtml?Main_ID=2928

Page 28 Risk of urban poverty persists
This infographic is based on data provided by Eurostat; 'People at risk of poverty or social exclusion by degree of urbanisation' (version January 2016). The graphic shows data on 'Cities' and 'Rural areas'. Data on 'Towns and suburbs' is not included in the graphic.

Page 30 Migrants move to cities
This infographic is based on data provided by Eurostat; 'Population change - Demographic balance and crude rates at national level' (version February 2016) and 'Asylum and first time asylum applicants by citizenship, age and sex Monthly data' (version March 2016).

Page 32 Quality of life in cities
This infographic is based on data published by the European Union; 'Quality of life in European cities' (2016).

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PBL Netherlands Environmental Assessment Agency

Cities in the Netherlands

Facts and figures on cities and urban areas



Cities in the Netherlands

Facts and figures on cities and urban areas



Cities in the Netherlands

06 Dutch Agenda Stad
08 Cities are popular
10 An urban nation
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16 Large cities attract migrants
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22 Income disparities in the city
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Introduction

In the Netherlands, about three quarters of the population live in urban areas and most people work there. The largest metropolitan areas also show the strongest population growth. In 2015, the Dutch Government launched its *Agenda Stad*, a national urban agenda. Agenda Stad aims to promote economic growth, improve liveability and stimulate innovation in urban areas. The Dutch urban agenda affirms that cities play a key role in the future development of the country.

What is going on in Dutch cities? This book strives to provide insight into the most important facts and factors affecting our cities in an accessible way. How have cities developed in the recent past? How many people live and work in cities and their environs? And how does the structure of Dutch cities compare to those in other European countries?

This book covers three topics that are vital for the city: economy, liveability, and innovation. How strong is the gravitational pull of Dutch cities in comparison to competing urban regions? What factors determine liveability and health in cities? And how do cities fare when it comes to innovation? These urban issues, challenges and opportunities are clarified using 12 infographics.

This publication consists of two parts.
This part, Cities in the Netherlands, examines cities in the context of the Dutch Agenda Stad. The other part, Cities in Europe, looks at urban developments across Europe within the context of the Europe 2020 strategy and the Urban Agenda for the EU.

Dutch **Agenda Stad**

Europe faces increasing urbanisation which brings both opportunities and challenges. Major urban challenges manifest themselves within a variety of societal domains, such as climate adaptation, inclusion of low-income groups, and new economic drivers. Business, local governments, civil society and universities in urban areas are anticipating on these opportunities and challenges. The Dutch national Agenda Stad focuses on the overlapping areas of economy, liveability and innovation.

Opportunities and challenges in urban areas that require collaboration between the national government, cities and other stakeholders lie at the heart of the Dutch Agenda Stad. These are often complex, radical and transitional challenges that do not fit in existing policy frames. This collaboration takes shape in City Deals. City Deals contain concrete cooperation arrangements between different levels of government, business, civil society and other stakeholders. Coalition building in

City Deals is a means to achieve the goals of the Dutch national Agenda Stad, which is to strengthen economic growth, innovation and liveability in Dutch cities. The Dutch national Agenda Stad and the Urban Agenda for the EU are in line with each other. The national agenda can be an example of an innovative way of collaboration for other European countries and cities, while at the same time Dutch cities can learn from the way other European cities deal with major urban challenges.

Economy

Urban economies are more productive, grow faster and have a greater innovative potential. Dutch cities lag behind in growth of labour productivity however. Their economic position can be strengthened by improving connections between urban regions, coordinating investment projects and increasing the complementarity between cities.

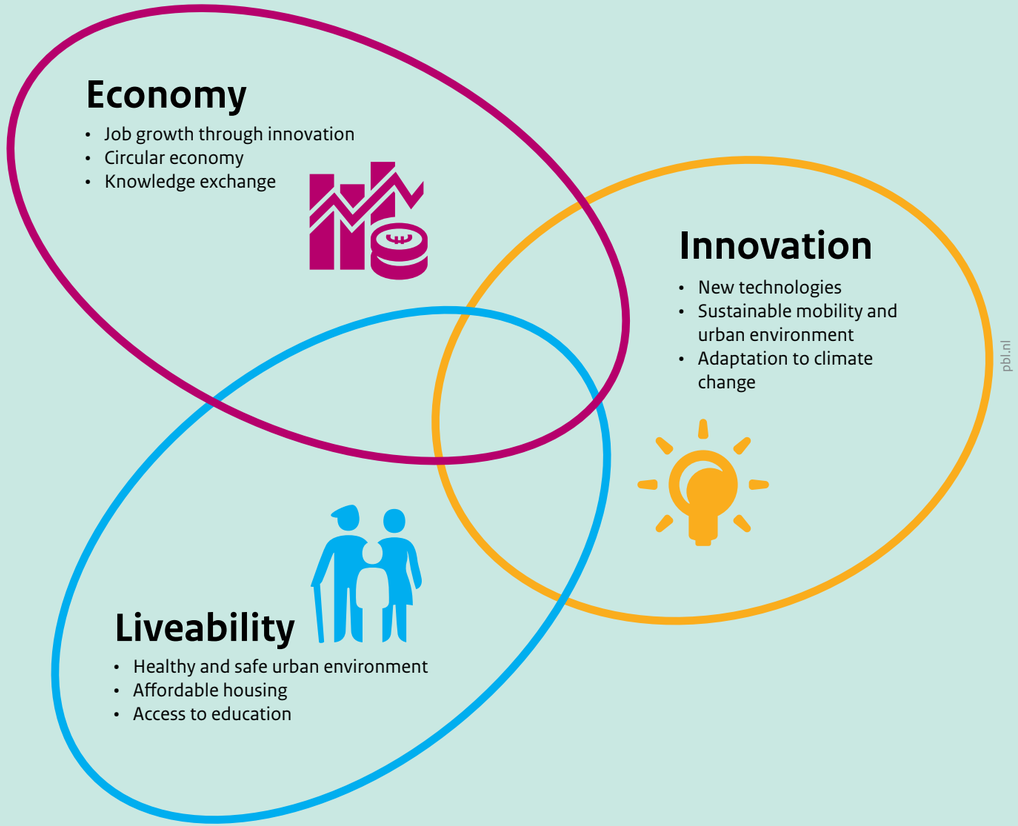
Liveability

The liveability of Dutch cities has improved dramatically over the past few decades. Local problems regarding air pollution, traffic congestion, income disparities and safety still remain however. Cities can contribute to improving the liveability by investing in sustainable mobility schemes, affordable housing and quality of the public space.

Innovation

Urban regions are incubators of innovation and entrepreneurship. It is here where individuals, businesses, institutes and governments meet and profit from each others' knowledge and creativity. Smart and clean technologies are vital for sustaining economic growth over the long term. Using up resources and energy at current rates is no longer an option.

Three priority areas of the Agenda Stad



Cities are popular

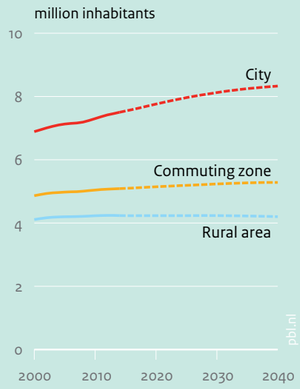
The Netherlands is a highly urbanised country. At the same time, the share of the population that lives in large metropolitan areas (over 500,000 people) is remarkably small. The majority of Dutch ‘urbanites’ live in small and medium-sized towns. This is the result of the polycentric urban structure of the Netherlands; most urban regions are made up of multiple urban cores at relatively short distances from each another.

The roots of our modern polycentric urban structure can be traced back to medieval times. Twenty of the 35 largest Dutch cities originate from the 11th to 15th century, mainly as towns with important ports. While, in the 14th century, large parts of Europe struggled with epidemics and an economic recession, parts of what is now the Netherlands experienced an economic peak and urban boom. After this period up to the mid 19th century, some cities, especially in the west of the country expanded greatly (e.g. Amsterdam and Rotterdam), while others contracted. In the second half of the 19th century, after a period of stagnation and contraction, a new era dawned; growth resumed in existing towns and, for the first time since the Middle Ages and in the wake of industrialisation and railroad construction, new towns were being formed (e.g. Eindhoven and Tilburg) (Rutte and Abrahamse, 2016).

Currently, after an extended period of suburbanisation and urban decline in the 1960–1990 period, cities are regaining their former status. City centres in particular have enjoyed a resurgence of population growth, especially regarding families with children (Evers et al., 2015). The outlook for the future is also favourable. CBS/PBL (2013) predict a strong concentration of population growth in urban municipalities, particularly in and around big cities.



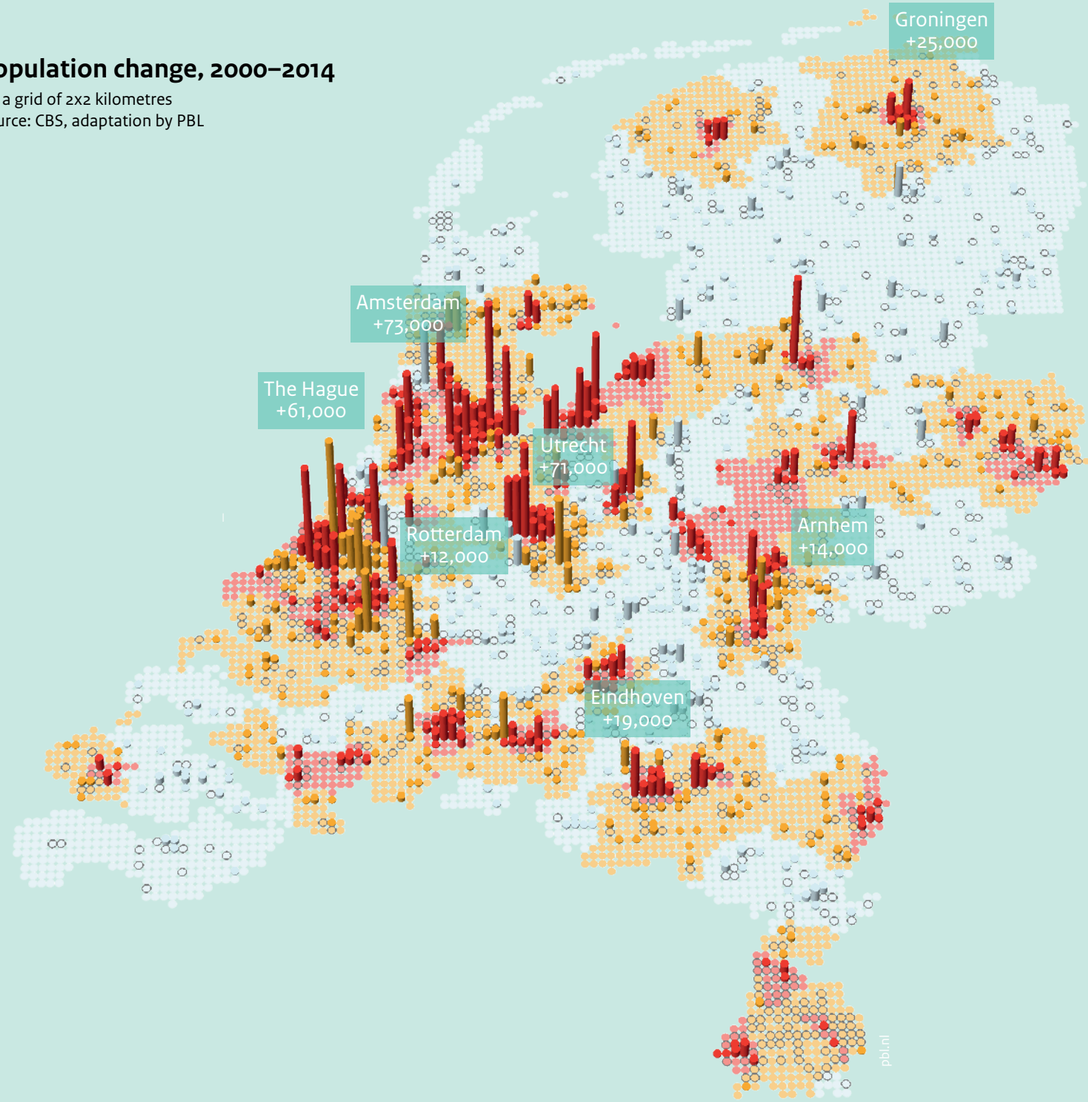
Population



Projection (CBS/PBL)

Population change, 2000–2014

On a grid of 2x2 kilometres
Source: CBS, adaptation by PBL



- City
- Commuting zone
- Rural area
- Population growth in the city
- Population growth in the commuting zone
- Population growth in the rural area
- Population decline

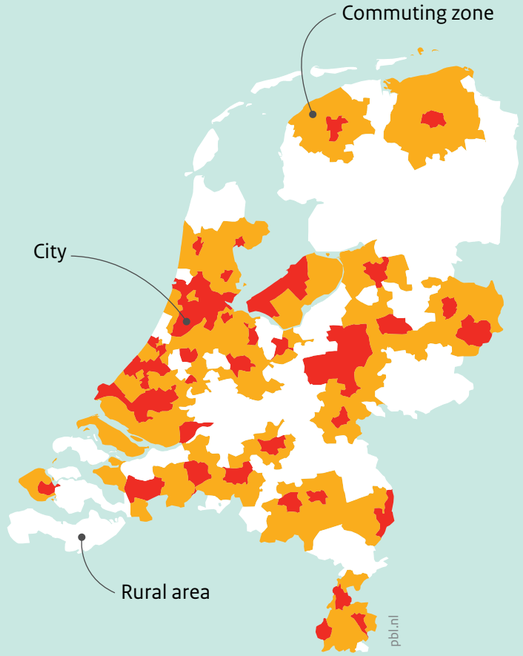
Growth and decline smaller than 100 persons per grid cell are not shown on the map

An **urban** nation

In the past, it was easy to tell where the city ended and countryside began. In the course of the 20th century, the difference between urban and rural became increasingly blurred. Cities have transformed into urban regions with a wide variety of spaces and functions. People have also become much more mobile and have adopted much more complex lifestyles in their work and leisure time.

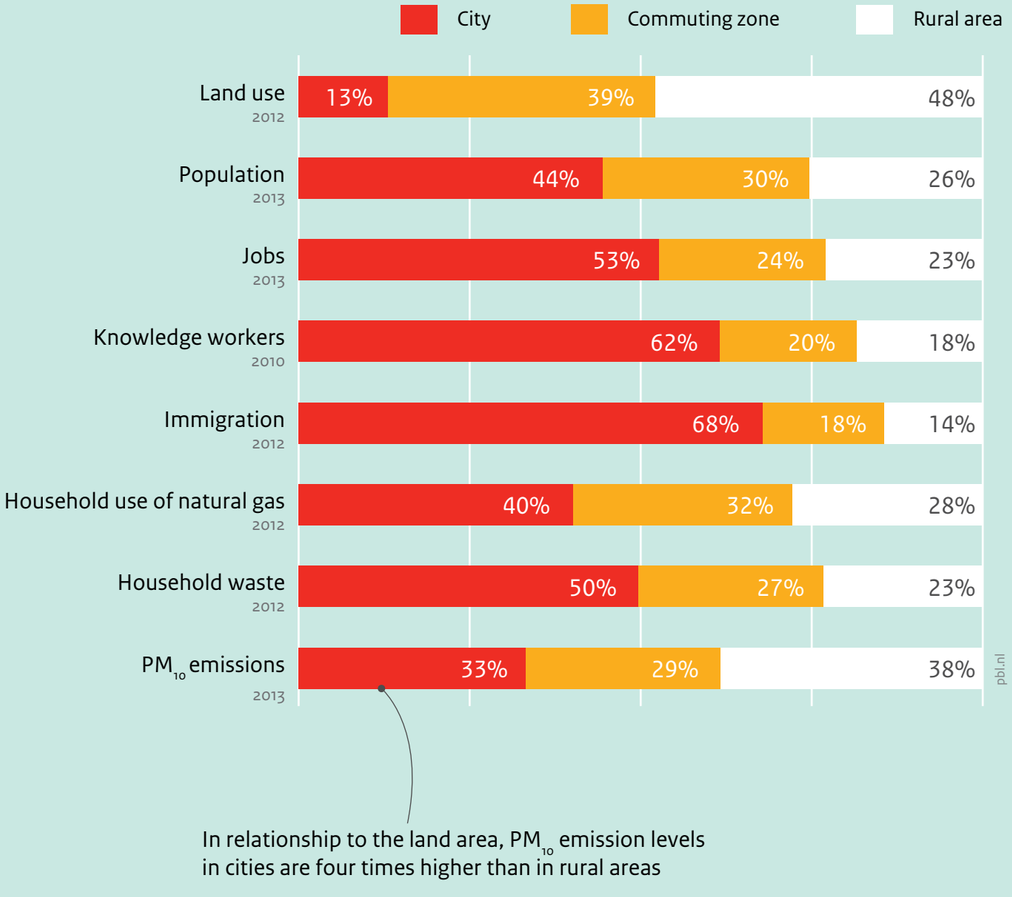
In order to define and delineate urban areas, Eurostat and the OECD use a harmonised definition that makes a distinction between ‘cities’ (municipalities of more than 50,000 residents) and ‘commuting zones’ (municipalities with a significant commuting relationship to the urban cores). Almost three quarters of the Dutch population live in urban areas, making the Netherlands one of the most urbanised countries in Europe.

Most of the jobs in the Netherlands can be found in the urban areas. These also have the highest share of knowledge workers and attract the most foreign immigrants. The high population density and concentration of human activity in cities has disadvantages as well, for example, in terms of air pollution and waste.



Important characteristics of the city

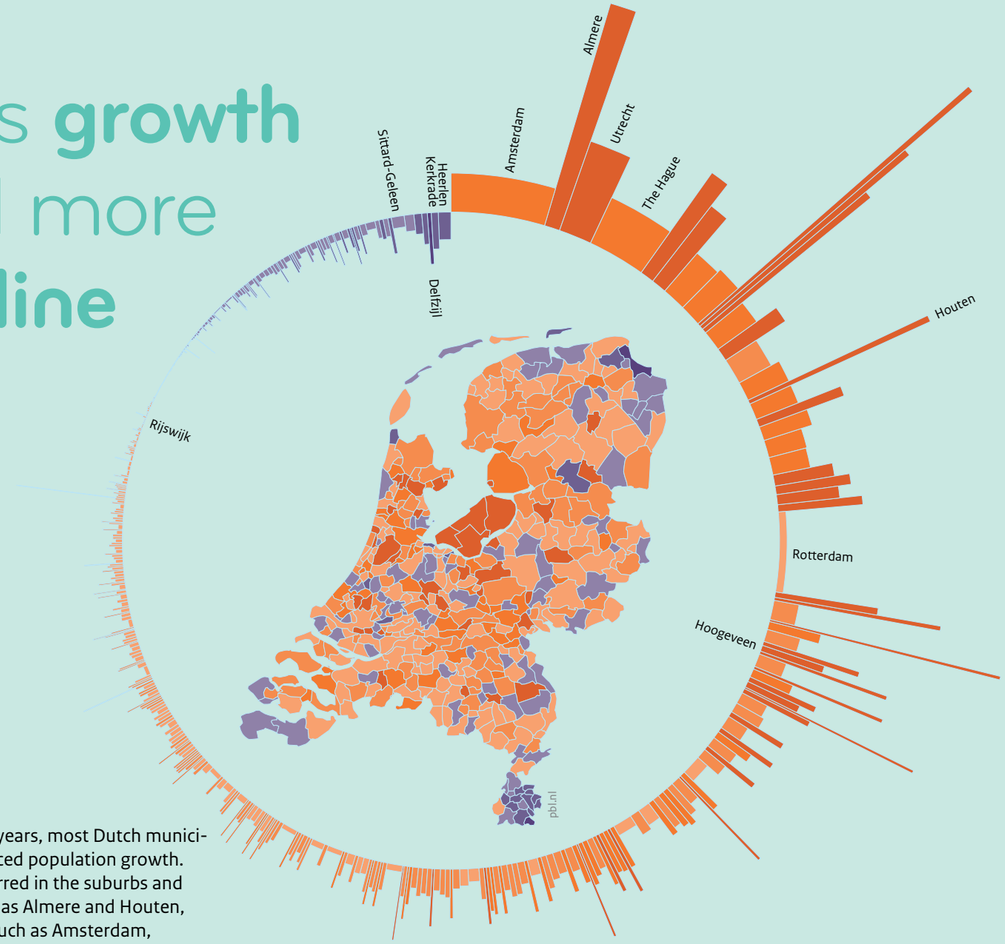
Source: CBS, LISA and RIVM, adaptation by PBL



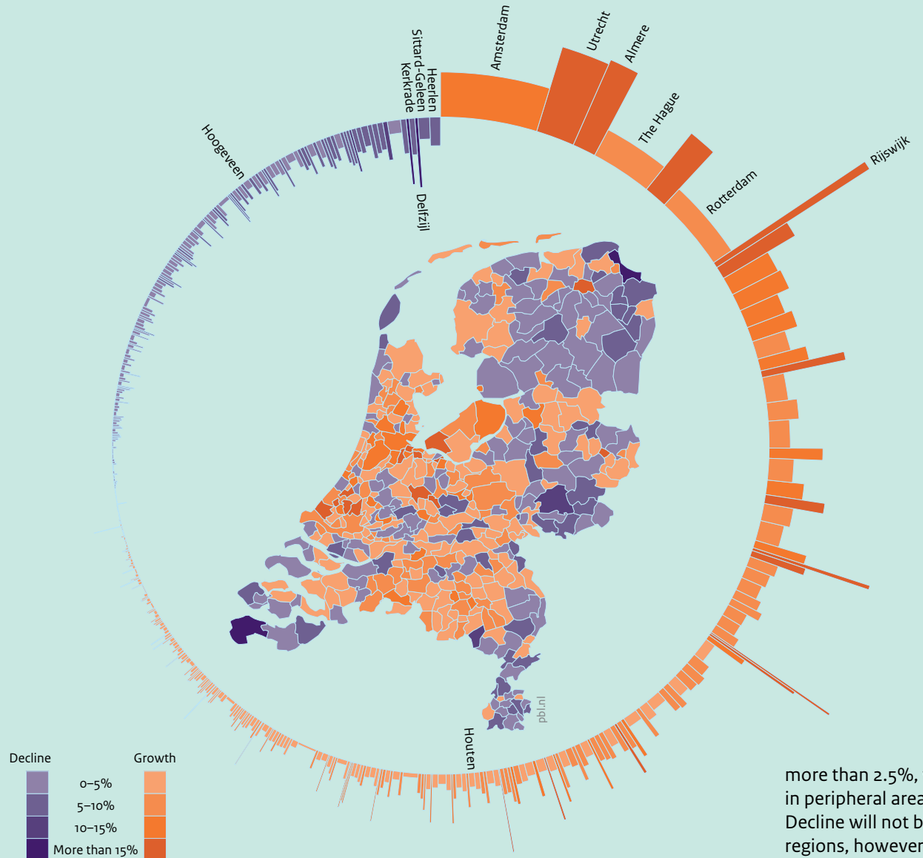
In relationship to the land area, PM_{10} emission levels in cities are four times higher than in rural areas

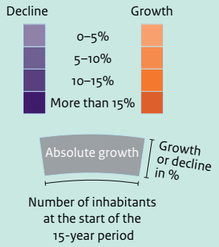
Less **growth** and more **decline**

Past 15 years
1997–2012



Over the past 15 years, most Dutch municipalities experienced population growth. This mainly occurred in the suburbs and new towns, such as Almere and Houten, but large cities, such as Amsterdam, Utrecht and The Hague, also had substantial increases in population. Rotterdam, the second largest city in the Netherlands, experienced much lower growth. There are also municipalities where growth has been negative. In about 10% of Dutch municipalities, the number of inhabitants actually decreased by over 2.5%, since 1997. Municipalities with the largest population decline are situated on the national periphery.





Source: CBS, adaptation by PBL

2012–2027
Coming 15 years

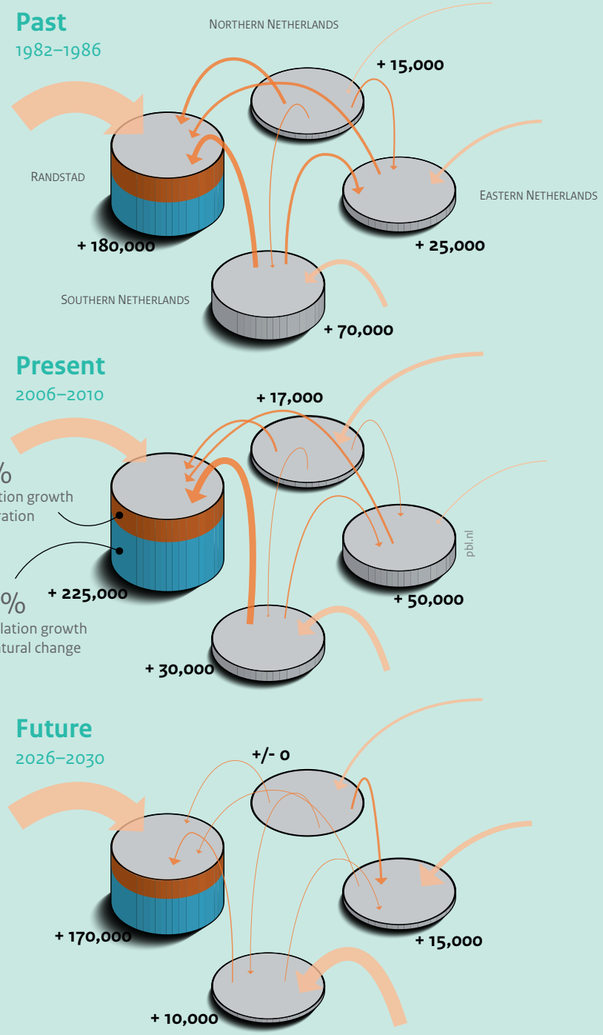
Population decline is expected to become more prevalent in the future. Over the next 15 years, about a quarter of Dutch municipalities is projected to shrink by more than 2.5%, with most of them located in peripheral areas (CBS/PBL, 2013). Decline will not be confined to these regions, however; also some less accessible 'inland peripheries', such as the Green Heart, will be affected. The large cities are expected to consolidate their position; with Amsterdam believed to remain the largest city, followed by Rotterdam.

The **gravitational pull** of the Randstad

The Netherlands is a densely populated country, and the Randstad is the most densely populated part of it. Almost half of the entire population lives in North Holland, South Holland, Utrecht and Flevoland, even though these provinces only comprise one quarter of the country's surface area. The Randstad's population is currently growing faster than elsewhere in the country, as it has in the past and most likely will do in the future.

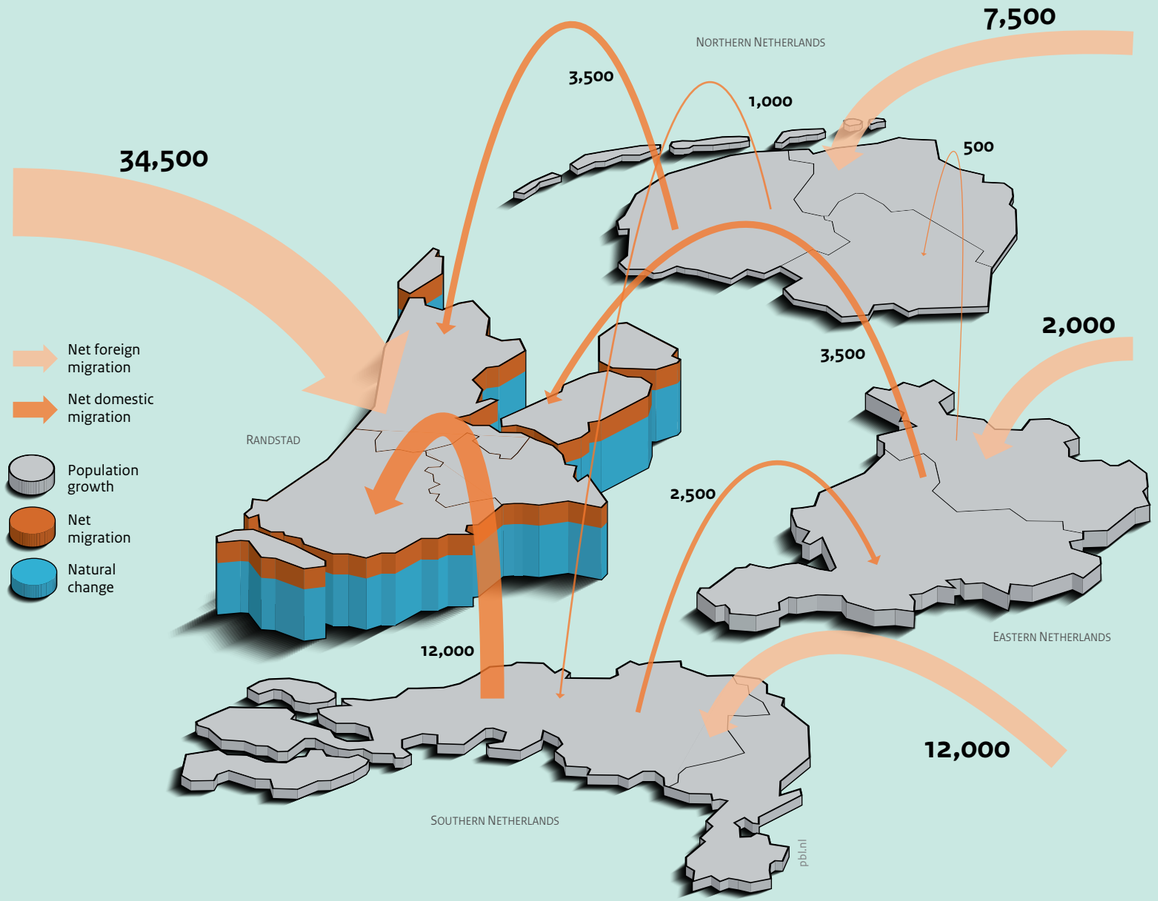
The current growth of the Randstad is even greater than in the past. Immigrants exceed emigrants in number (positive foreign migration balance) and more Dutch people move to rather than away from the Randstad (positive domestic migration balance). In addition, more people are being born in the Randstad than are dying (positive natural growth).

The Randstad is booming. In just five years (2006–2010) it grew by 225,000 people, 70% of which can be attributed to natural growth. Immigration also plays an important role; approximately 15% of the population increase came was from abroad and 10% from other areas in the Netherlands. The share of foreign immigrants is smaller than it has been in the past, and domestic migration has become more pronounced. Many of these domestic newcomers originate from the southern part of the country.



Population growth and migration flows per region, 2006–2010

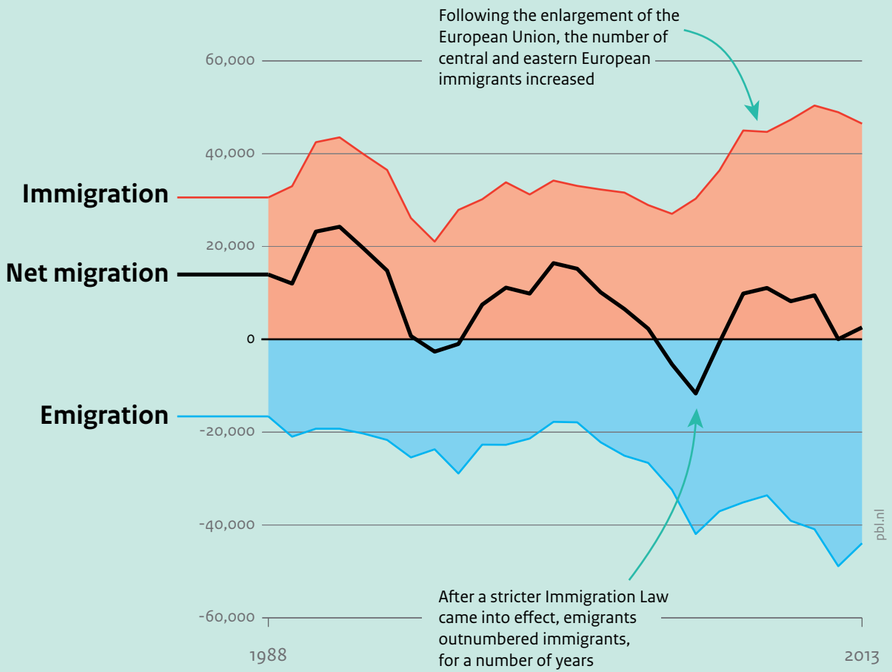
Source: CBS, adaptation by PBL



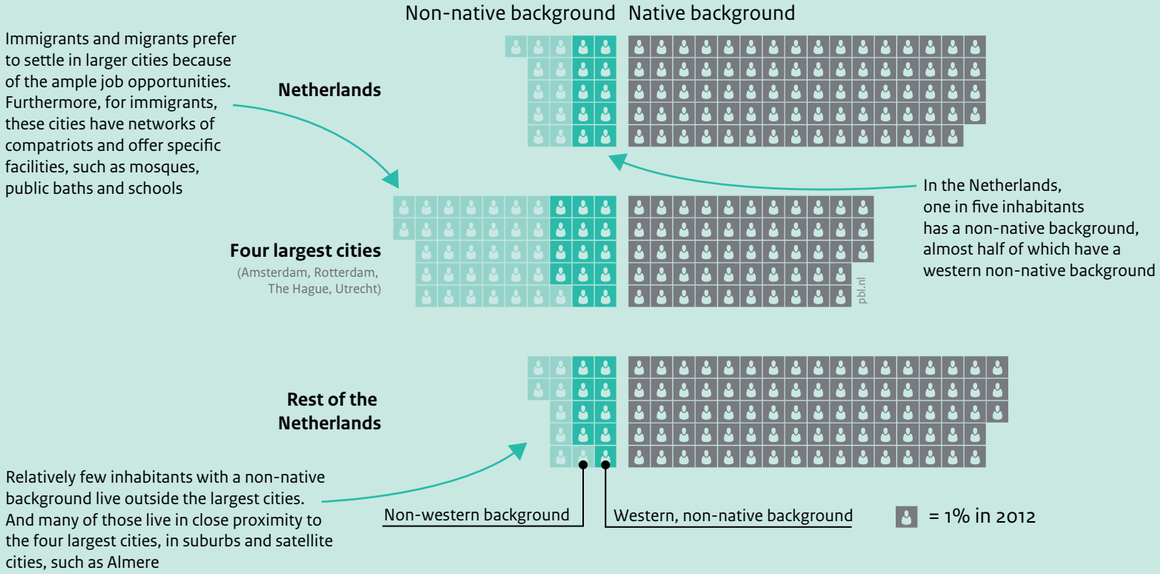
Large cities attract migrants

Immigration and emigration for the four largest cities

(Amsterdam, Rotterdam, The Hague, Utrecht)
Source: CBS, adaptation by PBL



Dutch inhabitants with a non-native background predominantly live in large cities



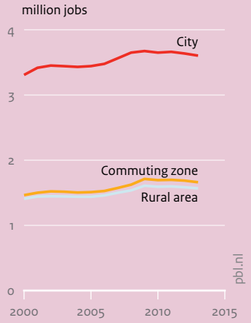
The urban population is a sundry mix of people from all kinds of places. At present, the share of residents with a non-native background in the four largest cities (Amsterdam, Rotterdam, The Hague and Utrecht) is roughly equal to that of native residents. In other parts of the country, this share is smaller. The Netherlands has a history of attracting immigrants, most of whom arrive in the Randstad and mostly in the four large cities. Already in the 1960s and 1970s, so-called guest workers came to the Randstad from southern Europe, Turkey and Morocco. Many people from Suriname arrived in the late 1970s, following this former colony's independence. The 1980s and 1990s saw many family reunions of guest workers; their wives and children moved to the Netherlands to join them and any subsequent children were born here.

Many of their children would later seek a partner from their parents' homeland. In the 1990s, a growing number of refugees from former Yugoslavia arrived in the Randstad, as well as from other areas; all fleeing war, famine or natural disasters. In the 2000s, many immigrants originated from central and eastern Europe, as a result of European Union enlargement.

Cities are where the **jobs** are

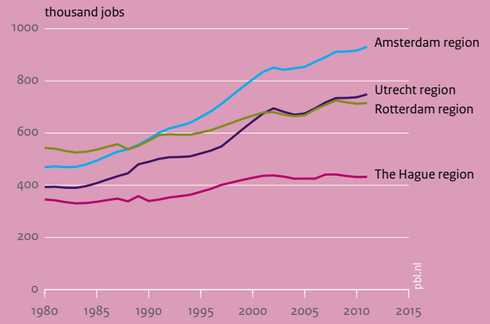
Cities play an important role as meeting places in knowledge-based economies such as that of the Netherlands. Personal encounters, whether planned or accidental, provide opportunities for the exchange of ideas and for learning from one another. The density of cities makes people more productive and enables the provision of higher quality and more varied services and amenities. Companies primarily locate in cities to be in close proximity to their customers and specialised suppliers, and because of the large and well-educated labour market and the many opportunities for cooperation. Business clusters create new job markets and opportunities for suppliers, which may create additional agglomeration benefits. In short, cities are where the jobs are.

Employment
by urban-rural typolgy



Job growth in the four largest urban regions

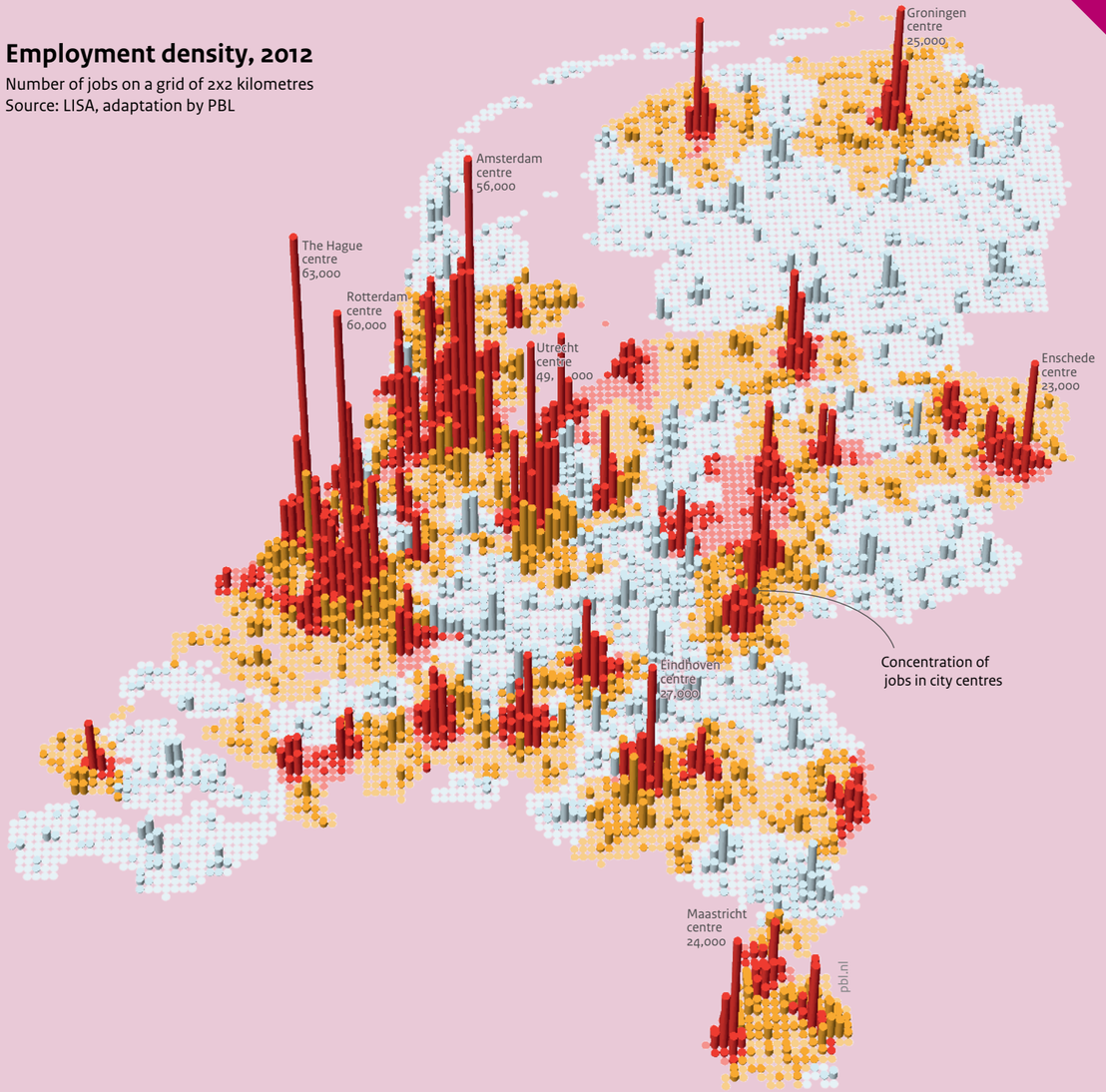
There are significant differences between cities. Amsterdam and Utrecht had the strongest job growth over the 1980–2012 period, whereas in Rotterdam and The Hague growth was more modest. In 1980, most jobs were in the Rotterdam region. Now, most are in Amsterdam and Utrecht.



Source: Cambridge Econometrics; adaptation by PBL

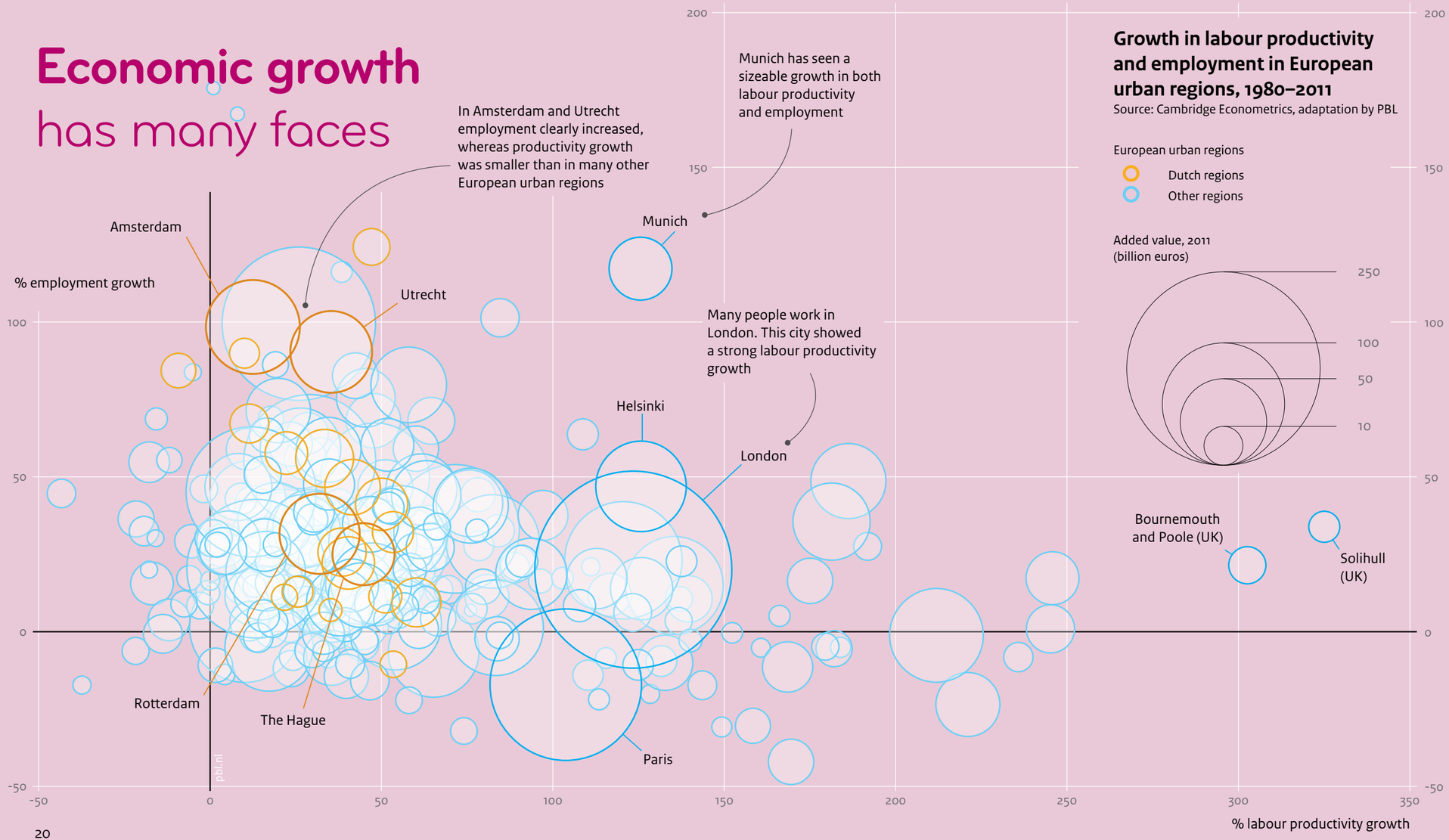
Employment density, 2012

Number of jobs on a grid of 2x2 kilometres
Source: LISA, adaptation by PBL



Growth and decline smaller than 100 persons per grid cell are not shown on the map

Economic growth has many faces



Growth in labour productivity and employment in European urban regions, 1980–2011

Source: Cambridge Econometrics, adaptation by PBL

European urban regions

- Dutch regions
- Other regions

Added value, 2011 (billion euros)

250
100
50
10

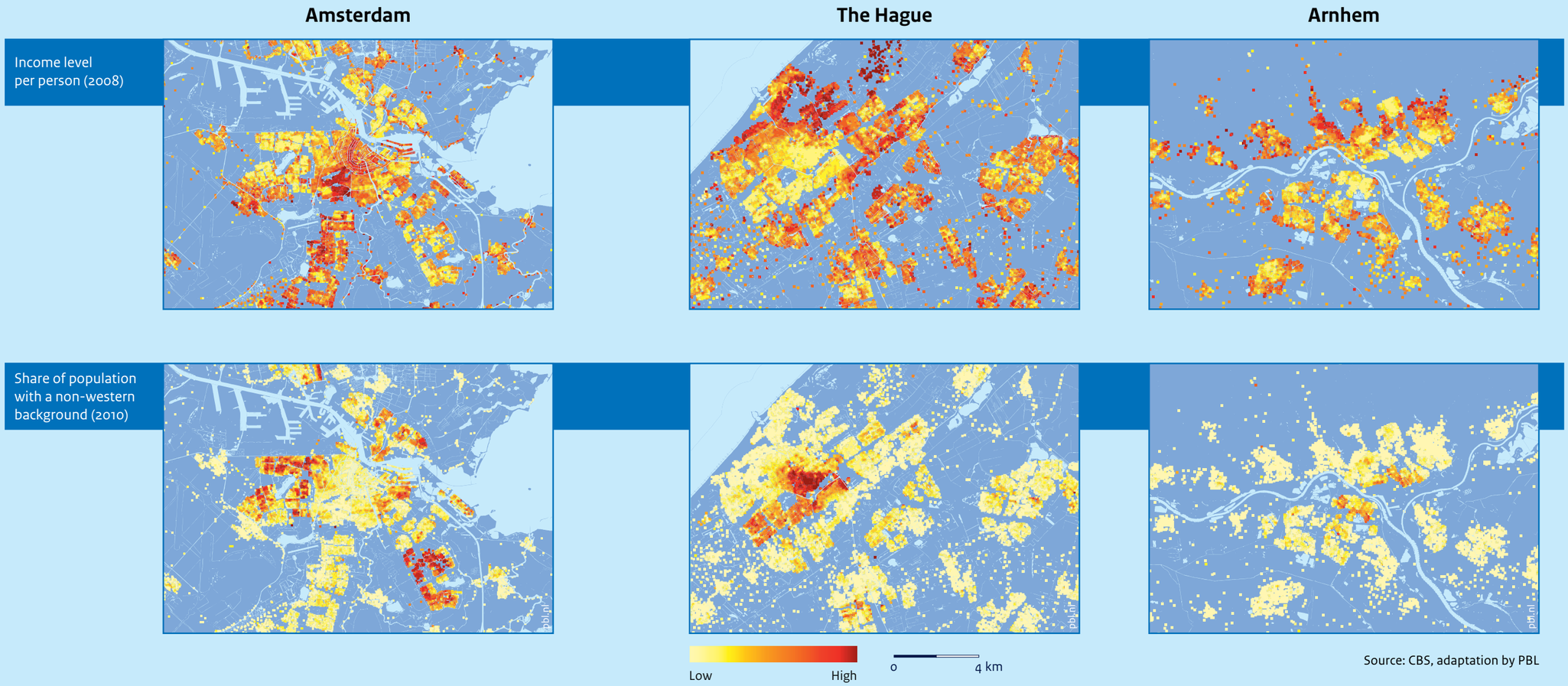
Employment growth and labour productivity growth are important indicators of economic development. In European cities and cities in OECD countries, productivity and wages generally increase with city size (European Commission, 2014). Recent OECD estimates suggest that productivity increases by 2% to 5% for every doubling of the population (Ahrend et al., 2015). In Europe, the two largest urban agglomerations, London and Paris, showed large labour productivity growth between 1980 and 2011.

Dutch urban regions, in contrast, are smaller and less dense in terms of residents and jobs. While employment in Dutch urban areas clearly grew between 1980 and 2011, productivity growth was smaller than in many other European urban regions. Recent research has shown that size and density can be partly compensated by a good position within international, national and regional networks (Van Oort et al., 2015). This position can be strengthened by improving connections between urban regions, coordinating large investment projects and increasing the complementarity between cities.

Income disparities in the city

Household incomes vary not only between cities, but within them as well. The maps of Amsterdam, The Hague and Arnhem display different distributions of wealth. In Amsterdam, high-income households occupy the historic centre and the regal 'old-south' neighbourhood, while The Hague still displays the traditional 'sand and peat divide' where affluent neighbourhoods, such as Duinoord, Statenkwartier and Archipelbuurt, occupy the high sandy ground near the coast. Wealth in Arnhem is mainly concentrated at the northern edge of the city, near the Veluwe national park.

For inhabitants with a non-western background, the maps show this pattern more-or-less in reverse. In Amsterdam, inhabitants with a non-western background mainly live in the south-eastern quarter and on the western fringe. In The Hague, in contrast, these inhabitants mainly live near the city centre, in neighbourhoods such as the Stationsbuurt, Schilderswijk and Transvaal. Arnhem has fewer inhabitants with a non-western background, but these tend to reside on the eastern side of the city centre and on the south bank of the river. Of course, there are also low-income neighbourhoods with primarily native Dutch residents, such as Morgenstond in The Hague and parts of Amsterdam Noord.

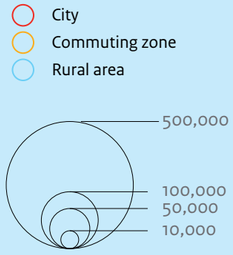


Source: CBS, adaptation by PBL

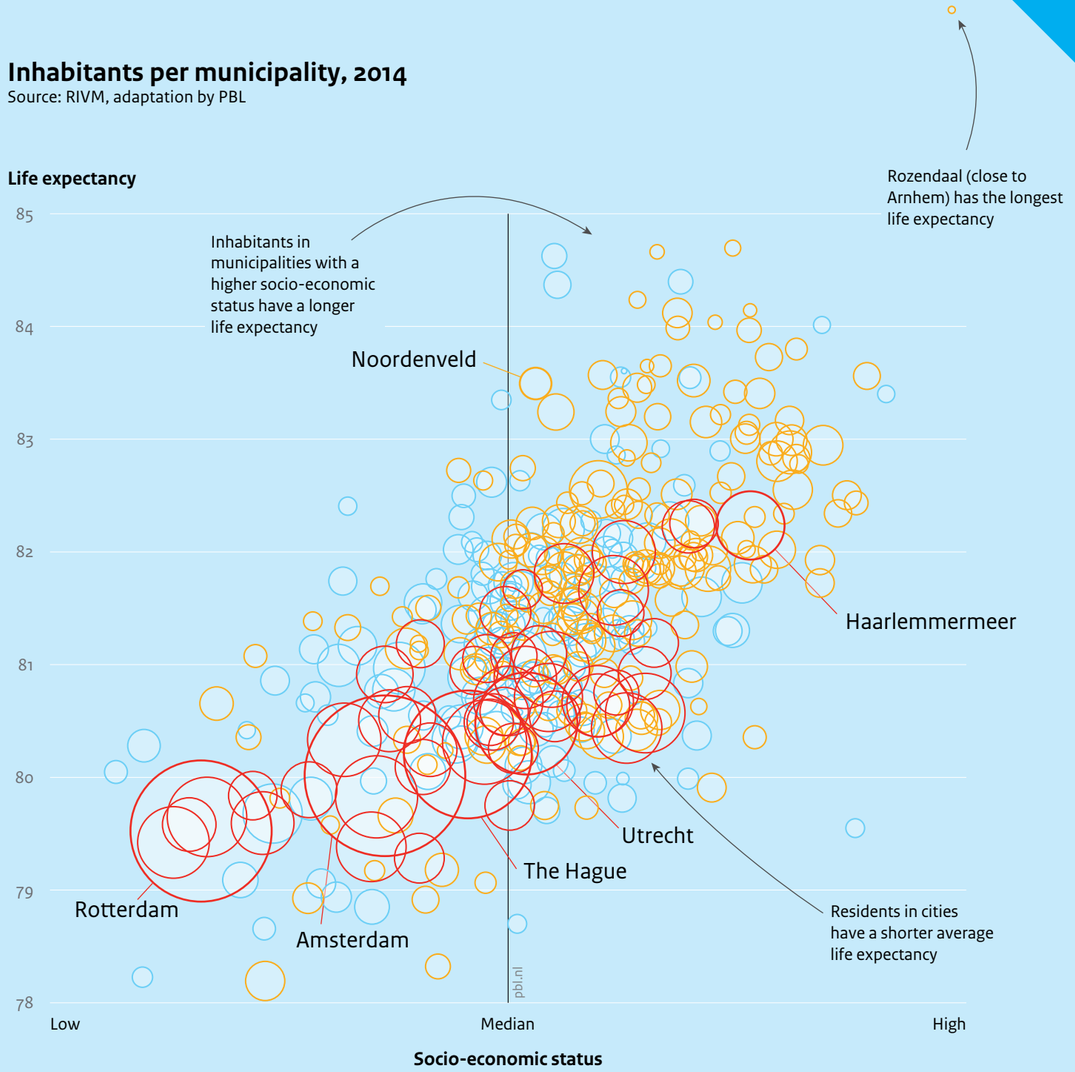
Wealthier = Healthier

The liveability and safety of Dutch cities have improved tremendously over the past few decades. Transport and manufacturing have become safer, cleaner, and less noisy. Levels of hazardous substances, such as nitric oxide and nitrogen dioxide (NOx), sulphur dioxide (SO_2) and fine particulate matter (PM10), have decreased, dramatically, as has the crime rate, both real and perceived.

Crime, nuisance and feelings of unsafety, of course, have not gone away completely (CBS, 2014). This is especially true in the four large cities, but sometimes small towns, suburbs and rural areas are also plagued by 'urban problems'. On average, inhabitants of large cities are less healthy and live shorter lives. This is mainly linked to the relatively large number of low-income people with a low level of education who tend to live in social housing in the least attractive neighbourhoods. Low educated people have substantially shorter lifespans than the highly educated, partly because they have not learned how to take care of their health, e.g. by healthy food and sufficient exercise (RIVM, 2014). Other factors may include unhealthy work environments or time schedules, and the costs of fresh food and fitness. Life expectancy in well-to-do urban neighbourhoods with highly educated residents, in contrast, tends to be long.



Inhabitants per municipality, 2014
Source: RIVM, adaptation by PBL



Cities as **incubators for innovation**

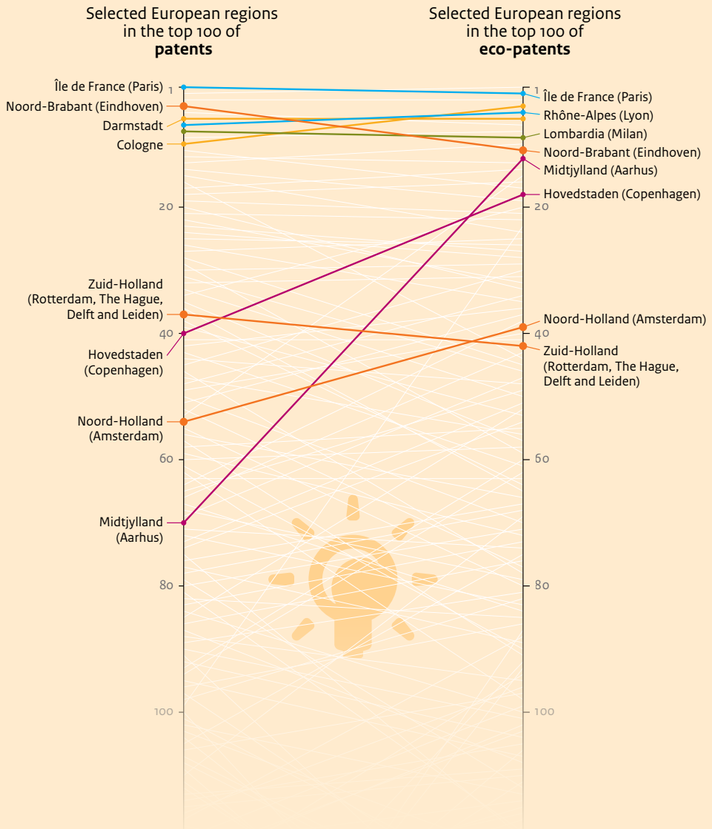
Urban regions are incubators for innovation and entrepreneurship. These areas are vital for the Dutch economy, which needs to learn to become much more efficient with natural resources and energy, in order to remain competitive. Smart and clean technologies offer economic opportunities; the global demand for energy-efficient technologies and sustainable products is growing rapidly (PBL, 2014a).

Start-ups are important for innovation and growth, but they often don't survive after the first phase of initiation. Instead of conquering the market with their innovative idea or product, they get stuck in the 'valley of death'; a phase in which a start-up firm will die off before a steady stream of revenue is established. 'Green' start-ups have a particularly hard time overcoming this hurdle. A clearer long-term ambition for greening the economy and investments in green funds may help companies traverse this 'valley of death'.

Cities are at the forefront of the transition towards a green economy. Urban citizens and civic entrepreneurs are launching all kinds of sustainability initiatives. Businesses and research institutes dealing with green innovation are highly clustered in the large urban agglomerations. Their knowledge, creativity and efforts offer opportunities for innovation and green growth.

Ranking European regions by patents and eco-patents

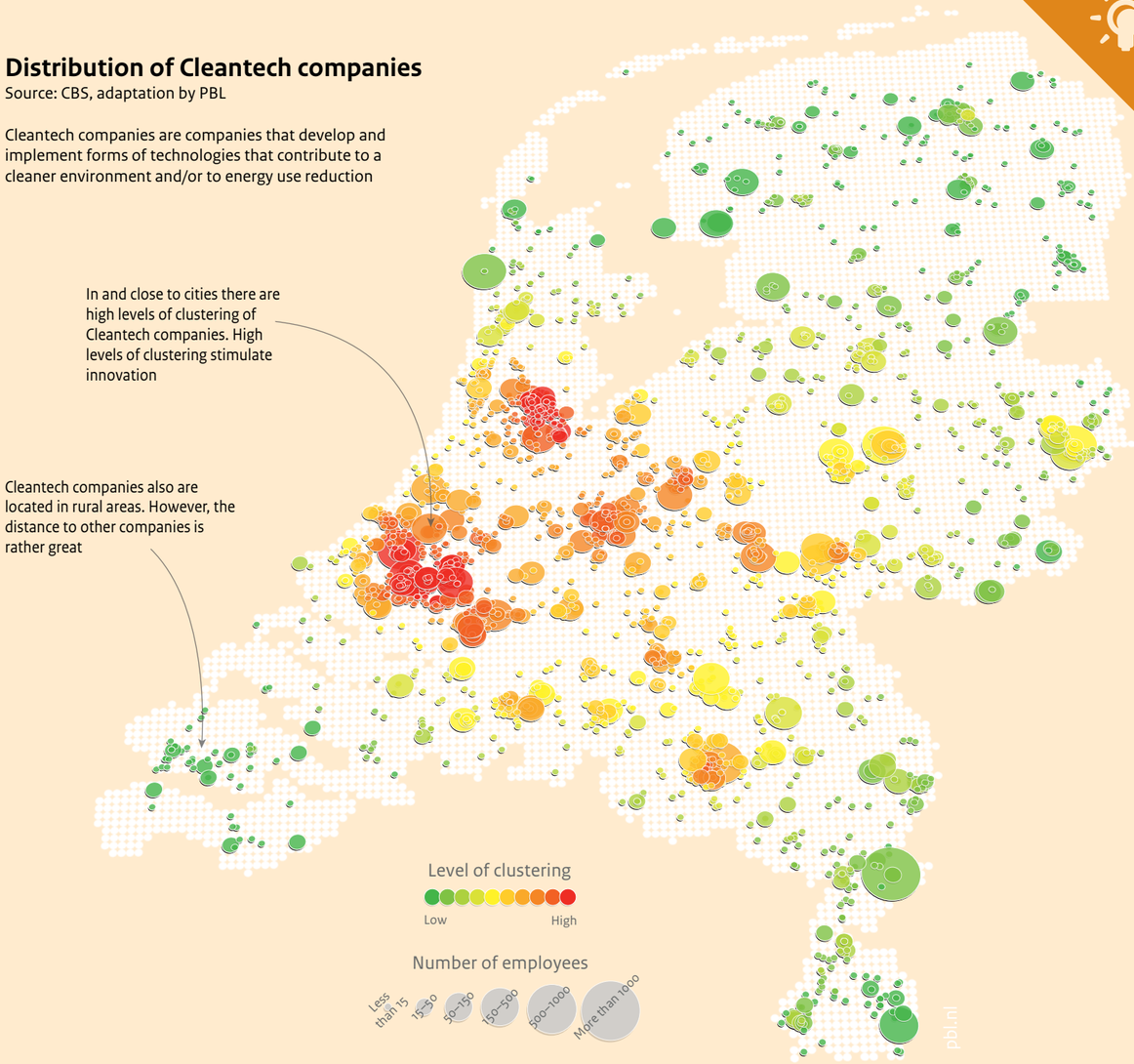
Source: OECD REGPAT, adaptation by PBL



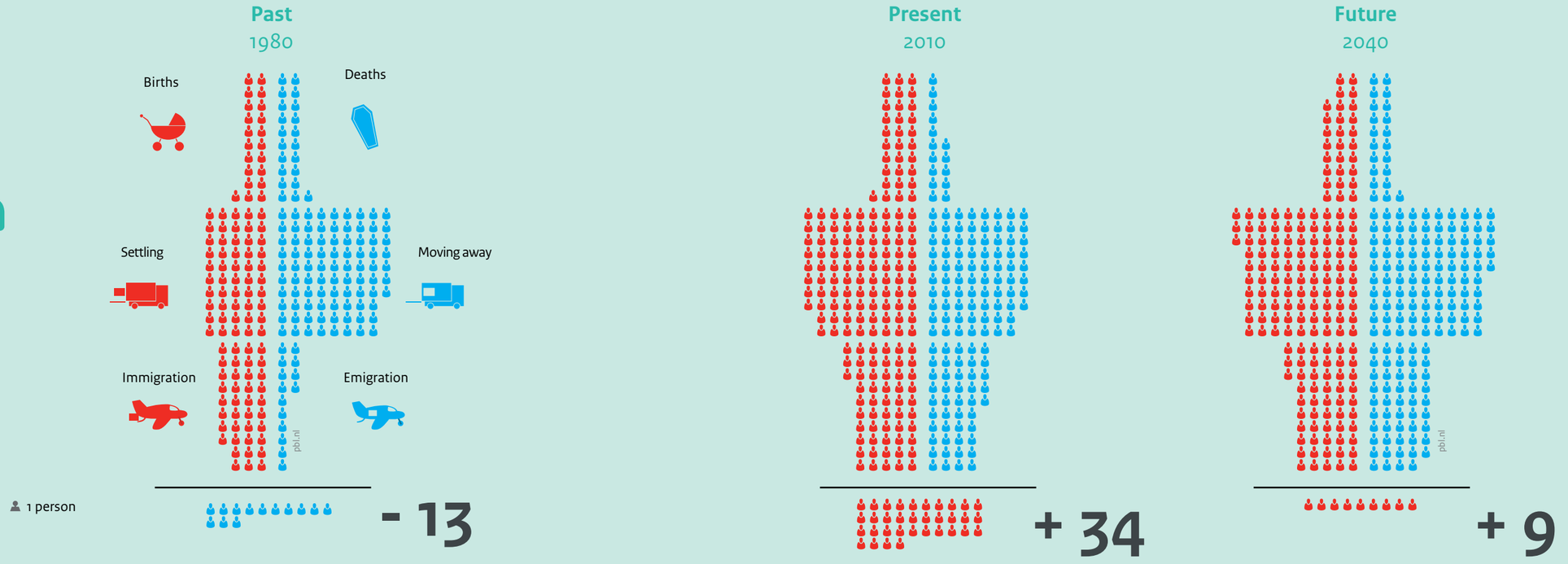
Distribution of Cleantech companies

Source: CBS, adaptation by PBL

Cleantech companies are companies that develop and implement forms of technologies that contribute to a cleaner environment and/or to energy use reduction



A day in the life of **Amsterdam**



The city of Amsterdam changes day by day. Population numbers have increased since the 1990s, and this trend is expected to continue well into the 21st century. Amsterdam was not always this popular. In the 1970s and 1980s, many families turned their backs on the small city apartments in favour of single-family dwellings in suburbs or new towns such as Alkmaar, Hoofddorp, Hoorn, Purmerend, Lelystad and Almere. Many businesses also vacated the city for accessible locations along the motorways where space was cheap and plentiful.

The tide turned in the 1990s. Amsterdam became more attractive for young people and families. Trendy neighbourhoods, such as the Jordaan, began to attract young, well-educated and well-paid people, who valued the charming historic surroundings and copious cultural attractions over physical space. New urban redevelopment projects were developed on both the western and eastern side of the city.
On a typical day in 2010, approximately 30 children were born in Amsterdam and about 15 people died. In addition to the positive natural population growth, the influx of people from elsewhere in the country also boosted Amsterdam's population. Approximately 90 people moved to Amsterdam on any given day in 2010, while only 80 left the city. In addition, about 55 foreign immigrants arrived, 10 more than decided to emigrate on that day. At the end of the day, each day, Amsterdam grew by 34 people. Between 1980 and 2010, the population in Amsterdam increased from 715,000 to 790,000. It is expected that Amsterdam will stay a popular place of residence in the future and that the city will reach a population of around 925,000 inhabitants by 2040.

Source: CBS/PBL, adaptation by PBL

Appendix

All infographics in Cities in the Netherlands have been created and edited by PBL Netherlands Environmental Assessment Agency and are based on infographics published in the 'De Nederlandse bevolking in beeld' (PBL, 2014b) and 'De stad verbeeld' (PBL, 2015b).

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The following sources were used:

Page 8 Cities are popular
The map on population change is based on data provided by Statistics Netherlands (CBS). The future projection is based on calculations by PBL and CBS (2013).
The classification of 'City', 'Commuting zone' and 'Rural area' is based on the definition by the OECD (2012). More information on the definition can be found here: http://www.oecd.org/regional/redefiningurbananewwaytomeasuremetropolitanareas.htm

Page 10 An urban nation
This infographic is based on data provided by LISA (data on employment), Statistics Netherlands (CBS) and the National Institute for Public Health and the Environment (RIVM). The classification of 'City', 'Commuting zone' and 'Rural Area' is based on the definition by the OECD (2012).

Page 12 Less growth and more decline
This infographic on population growth and decline per municipality is based on data provided by Statistics Netherlands (CBS). The future projection is based on calculations by PBL and CBS (2013). More information can be found here: http://www.pbl.nl/themasites/regionale-bevolkingsprognose

Page 14 The gravitational pull of the Randstad
This infographic on population growth and migration flows per region is based on data provided by Statistics Netherlands (CBS). The future projection is based on calculations by PBL and CBS (2013).

Page 16 Large cities attract migrants
This infographic on immigration and emigration in the four largest Dutch cities is based on data provided by Statistics Netherlands (CBS).

Page 18 Cities are where the jobs are
The map on job density is based on data provided by LISA. The classification of 'Cities', 'Commuting zone' and 'Rural area' is based on the definition by the OECD (2012). The graphic on job growth for the four largest urban regions in the Netherlands is based on data from the European Regional Database provided by Cambridge Econometrics (version April 2015).

Page 20 Economic growth has many faces
This infographic on employment growth and labour productivity growth is based on data from the European Regional Database provided by Cambridge Econometrics (version April 2015). The European Regional Database contains socioeconomic data for 27 European countries on a regional scale (NUTS3) for the period 1980 to 2012.

Page 22 Income disparities in the city
The maps showing 'income level per person (2008)' and 'share of the population with a non-western background (2010)' are based on data provided by Statistics Netherlands (CBS).

Page 24 Wealthier = Healthier
This infographic on life expectancy per municipality in relationship to socio-economic status is based on data provided by the National Institute for Public Health and the Environment (RIVM).

Page 26 Cities as incubators for innovation
The ranking of European regions by patents and eco-patents is based on data published by the OECD (REGPAT database, version July 2014). The distribution of Cleantech companies in the Netherlands is based on data by Statistics Netherlands (CBS). The map has been published in an earlier PBL publication: PBL publication: 'Green Gains: In search of opportunities for the Dutch economy' (PBL, 2014a).

Page 28 A day in the life of Amsterdam
This infographic on population change in Amsterdam is based on data provided by Statistics Netherlands (CBS). The future projection is based on calculations by PBL and CBS (2013).

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COLOPHON

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