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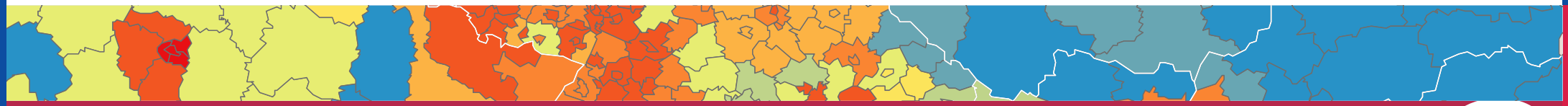

Territorial Observation No. 9
December 2013

9

Territorial Dynamics in Europe

Gateway Functions in Cities

EUROPEAN UNION
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ESPON 2013 Programme

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Foreword

In a globalised world, gateway cities are important focal points of social and economic development and receive considerable policy attention. Gateway cities are transport hubs, nodes in global financial systems, the location of research institutes in cutting-edge international innovation networks and places attracting international tourism.

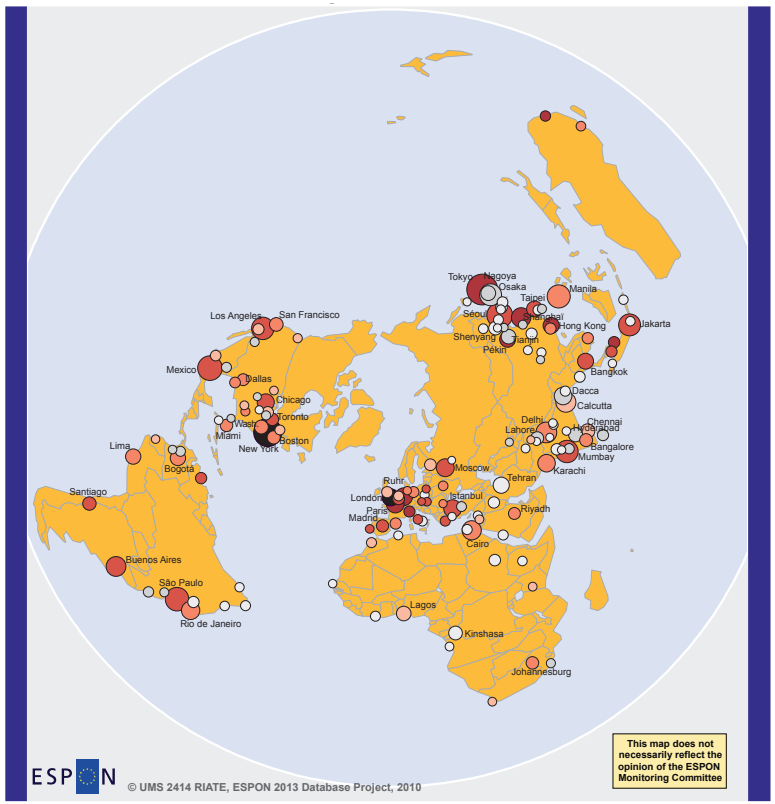
In short, gateway cities are crucial for smart growth and Europe's global competitiveness. Cities and regions need to increase their efforts in exploiting their specific strengths and development potential to achieve Europe 2020 targets in relation to smart growth. This implies also that different cities and regions may strenghten their role as gateways for specific functions and territories. Targeted investments in infrastructure, and the development of internationally connected economic activities helps to strengthen important gateway functions. At the same time, it is important to invest in the connection of gateway cities to their wider hinterland, so that a larger area can make use of the gateway functions and contribute to increasing the critical mass and thus the weight of the gateway.

Map 1 presents a familiar picture of global gateways. However, gateways are about much more than what can be presented in a single map and there are also many more gateways in Europe than those shown in this map.

This report uses findings from a range of ESPON research projects to give some insights into different types of gateway functions including major economic and business gateways, knowledge gateways, transport gateways and gateways with particular attractiveness. Furthermore, the report shows where in the territory which types of gateway functions are to be found. This evidence can support policy decisions about investments to strengthen gateways, smart growth and Europe's global competitiveness.

The classification shown in the map is based on the presence of advanced services in an urban area. To create the map the locations of the 100 largest global service producing enterprises within six different branches (accountancy, advertising, banking/finance, insurance, law, and management consultancy) were charted. Using data from around the year 2000, the number of such offices within Europe amounted to 2,548. Although this is just one indicator, the presence of the largest global service producing enterprises provides a good proxy for the global standing of a location.

Map 1 World City Network



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Sources: Population - Moriconi-Ebrard F., 2001, *De Babylone à Tokyo*, Ophrys
World cities classification - Taylor et al., 2010, *Measuring the World City Network: New Results and Developments*
© UMS RIATE for administrative boundaries

City's integration into the world city network in 2008

- London and New York, clearly more integrated than all other cities
- Other highly integrated cities
- Very important world cities that link major economic regions and states into the world economy
- Important world cities that are instrumental in linking their region or state into the world economy
- World cities linking smaller regions or states into the world economy, or important world cities whose major global capacity is not in advanced producer services
- Cities that have sufficient services so as not to be overtly dependent on world cities (smaller capital cities, and traditional centres of manufacturing regions)
- Other cities

Classification of cities based upon their level of advanced producer services.
Global service centres are identified and graded for accountancy, advertising, banking/finance and law

Population of Urban Areas
(million of inhabitants in 2000)
30
10
2

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Territorial Dynamics in Europe

Gateway Functions in Cities

Maps

1 - Executive Summary

1.1 Selected Key Findings

- **Global to regional reach.** The reach of gateway cities and regions may be global, European, national or regional. Gateway cities may cover one or more gateway functions (see table 1).

- **The functional connection.** To function as gateway a city or region does not only require external connections, but also a wider hinterland from where goods, people or services are collected and fed into the network, or to where goods, people and services arriving from other network destinations are distributed. Regional gateways are important nodes in functional urban-rural areas.

- **London rules.** Within Europe, London is pre-eminent across a wide range of gateway functions. Though on a par with New York, Hong Kong and the main hubs of India and China, London is far from being Europe's only global gateway. Europe's polycentric urban system means that there is not a strong concentration towards single cities as in some other parts of the world and therefore more cities are hosting gateway functions.

- **Concentration of gateway functions in the European core.** London along with Paris has a leading position as global/European gateway. Both cities are located within the European core, and so are many of the other leading European gateways. Global transport hubs and economic gateway functions are also concentrated in this part of Europe.

- **Metropolitan areas are key gateways across Europe.** Depending on the gateway function in question, different metropolitan areas – even those outside the core of Europe – stand out as important international gateways. This applies not only to capital cities but also to larger second tier cities.

- **Smaller cities matter a great deal.** Even some smaller cities are important gateways, e.g. in relation to education or within national transport systems. Some smaller cities may even be global gateways for a particular specialist aspect.

1.2 Possible Policy Considerations

- **Boost European gateways.** Gateways develop based on particular advantages deriving from an area's geographical position and the historic legacy which endows a place with specific activities or well developed links to other destinations. However, gateway functions can also be further encouraged or even initiated by policy interventions and targeted investments in particular types of infrastructure or the support of particular types of (economic) activities.

- **Strengthen profile**. By identifying its comparative advantage a city or region can develop a stronger profile on one specific issue and at the same time increase its gateway potential.

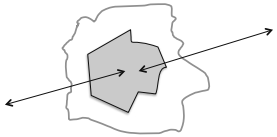
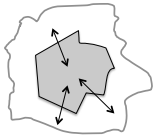
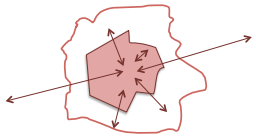
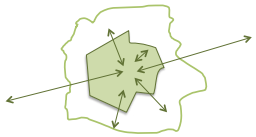
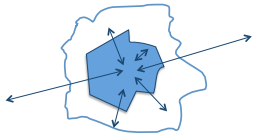
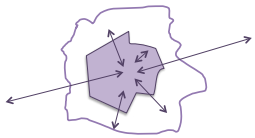
- **Tighten networks**. By supporting key actors in strengthening their cooperation bonds, a city or region can improve its position as gateway in global, European or regional networks.

- **Improve infrastructure**. Adequate infrastructure is crucial for the development of gateways. This can either be transport infrastructures, as are up-to-dated ports or modern airport facilities, IT-infrastructure, the establishment of research centers or universities, as well as infrastructure for other services of general interest or even attractive touristic facilities.

- **Support functional links**. Strengthening the role the hinterland has for the development of a gateway function can help the development of a gateway. At the same time the hinterland can also benefit from the gateway functions provided.

- **Be specific.** The choice of the strategy for a policy centred on a gateway depends on the expected output and also the gateway city and gateway function in question.

Table 1 Geographical reach and thematic orientation of gateways in Europe

				
	Global	**EU**	**National**	**Regional**
Economic & Business 	The hotspots of advanced producer services and the main economic centres are Europe's gateways. The financial sector and, for Europe in particular, the accountancy sector are increasing their significance and power to generate important network connections. Trade and the direction of international trade relations define the gateway profiles of Europe's cities and regions. See sections 1 and 2.1		European cities that trade mainly with other European cities show differences in the geographical orientation. The national urban system and dominance of single cities play an important role in the discussion of economic gateways. See sections 1 and 2.1	Cities as centres for their region are not equally accessible all over Europe. General services of interest are often also concentrated in cities serving a wider area. See sections 3.1 and 3.2
Knowledge 	Research and innovation hotspots which are well connected internationally and integrated into main networks play a major role for Europe's position in the global knowledge society. Some universities function as global / international gateways for Europe. See sections 1 and 2.2		Higher education as well as certain R&D functions are often concentrated in the main cities of a country. Not discussed in this report	Regional centres often serve as gateways for education and health care going beyond the basic level. See section 3.2
Transport 	Europe's large international airports and ports are crucial gateways for the global transport of goods and people. In a European perspective rail and road as well as secondary airports and ports perform important gateway functions. See section 2.3		All modes of transport connections to cities in neighbouring countries but also in their own country. See section 3.1 with special focus on regional airports	The accessibility to the nearest gateway (city or entrance point to a major network) shows the regional dimension of gateways. See section 3.1
Human Attraction 	The attractiveness of cities and regions influences the gateway function when it comes to receiving flows of people. Inward migration, exchange students, and the number of international visitors (tourists) give an indication of the importance of this gateway function. See section 2.4		Domestic tourists are an indicator of the national gateway function as regards human attraction. See section 2.4	Intra-regional migration or tourism to regional centres underline the latter's regional gateway function. Not discussed in this report

2 - Types of Gateways

Europe's gateway cities and regions have an important role to play if the objectives of the Europe 2020 Strategy are to be achieved. However, their potential contributions vary greatly, as gateway cities and regions are extremely diverse.

Gateways are about flows. A gateway is the entrance and departure point or node of a larger network. Flows of goods, people, services, ideas etc. pass through the gateway to and from many other places. The gateway is essential to the networks of flows, but at the same time services its own region or wider hinterland from where the goods, people or services come that feed into the network, respectively to where goods, people or services that arrive from other destinations may continue to move on.

Gateway cities are as different from each other and as diverse as European regions in general. This diversity concerns the geographical reach and orientation as well as the function of the gateway cities. At the same time gateway cities are mutually interlinked in specific networks, which implies that they share common features.

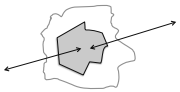
Geographical reach & orientation. While some gateway cities function globally (see map 1), others are gateways in a European, national or even regional perspective. Other gateway cities are geographically rather focused and e.g. function primarily as a gateway towards certain destinations, e.g. Latin America or East Asia.

Gateway functions. In Europe, London can be seen as a universal gateway. Other gateways are likely to have specialisations towards certain functions, e.g. passenger transport, goods transport, advanced business services or research activities. Gateway functions must also be seen in relation to the geographical location of a gateway. The functions and importance of gateways may differ between gateways in the core of Europe and gateways in the periphery. For example, some cities, whether capitals or not, may function as gateway for research, innovation, tourism, migration, or business etc. The importance of such functions may differ. The fundamental point is that the list of possible gateway functions is extensive and represents different needs of different countries or regions.

Table 1 on the geographical reach and thematic orientation of European gateways provides an overview on different gateway functions (shown in different colours) and how these differ depending on whether the gateways are nodes in global, European, national or regional networks (shown by the different lengths of the arrow). The pictogrammes in the table are used throughout the report to facilitate an easy orientation in the text.

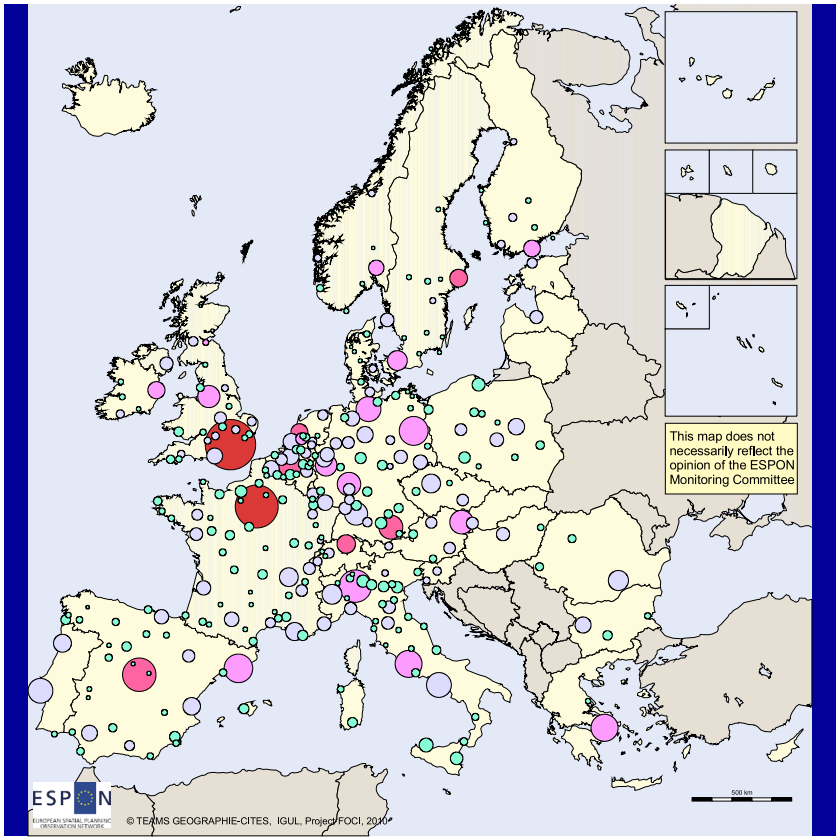
Looking closer at which cities and regions are gateways in Europe, several approaches and ways of understanding gateways can be identified.

2.1 Gateways as important nodes in international business and research networks



A first approach to see where the main gateways are located in Europe is to assess their competitiveness. The participation of European cities in global and European networks shows the relative position of these cities in a global or European context, using the total number of connections in a variety of networks as an indicator (see map 2). Looking at European research networks and global firm ownership shows that London and Paris are Europe's primary gateways of global importance. They are followed by a few cities which are also well integrated in global networks of leading business and research activities: Madrid, Stockholm, Amsterdam, Zurich, and Munich. In the subsequent lower category of network gateways, there are 16 cities comprising a wide range of capital cities but also second tier cities such as Barcelona, Milan or Frankfurt. Following this, the majority of the European cities, 200 out of 271, participate only modestly in these research and economic networks.

Map 2 Cities' participation in global and European networks



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Source : IGUL-LAUSANNE, Rozenblat 2010, Geographie-Cité, Paris 2010

Origin of data: EU 15 and CC's : ORBIS, BVD 2007, CORDIS, UE 2008

Ranks based on the score on the first axis of a principal component analysis :
1
2
3
4
5

Population of the FUA
10000000
5000000
2500000

The ranking of European cities is based on the number of links between a city and other cities within European research networks (CORDIS) and a cities' position in global firm ownership hierarchies (ORBIS). Five different classes exhibit this hierarchical pattern, with 1 as the highest rank and 5 as the lowest.

2.2 Gateways for specific functions and global destinations

Network participation provides a first idea on gateways. However, a more nuanced picture emerges when distinguishing between different geographical orientations of the gateways and between different functions for which a city or region serves as a gateway.

Looking at European gateways towards Asia (see map 3), London has the greatest weight as a global or general gateway, followed by cities such as Frankfurt, Amsterdam, Munich, Stockholm, Dublin, Vienna, Oslo, Copenhagen or Rome. However, there are also more specialised gateways towards Asia. These include ports like Hamburg, Barcelona, Thessaloniki and Genoa; and for advanced services Bratislava and some second tier cities in Germany and the UK.

Looking at European gateways towards Africa and Latin America, Paris has the greatest weight as a global or general gateway, followed by cities such as Madrid, Brussels, Athens, Milan and Basel. More specialised gateways towards Africa and Latin America are the ports of Rotterdam, Lisbon, Barcelona and Marseille, while for advanced services Lyon and Edinburgh are notable, as well as a range of smaller cities.

Generally, regions with low functional weight but specialised in advanced services are located in France, Germany and the UK (shown in orange and yellow on map 3). Cities with a regional profile, but only a small weight of advanced services are mainly to be found in the eastern part of Europe.

2 - Types of Gateways

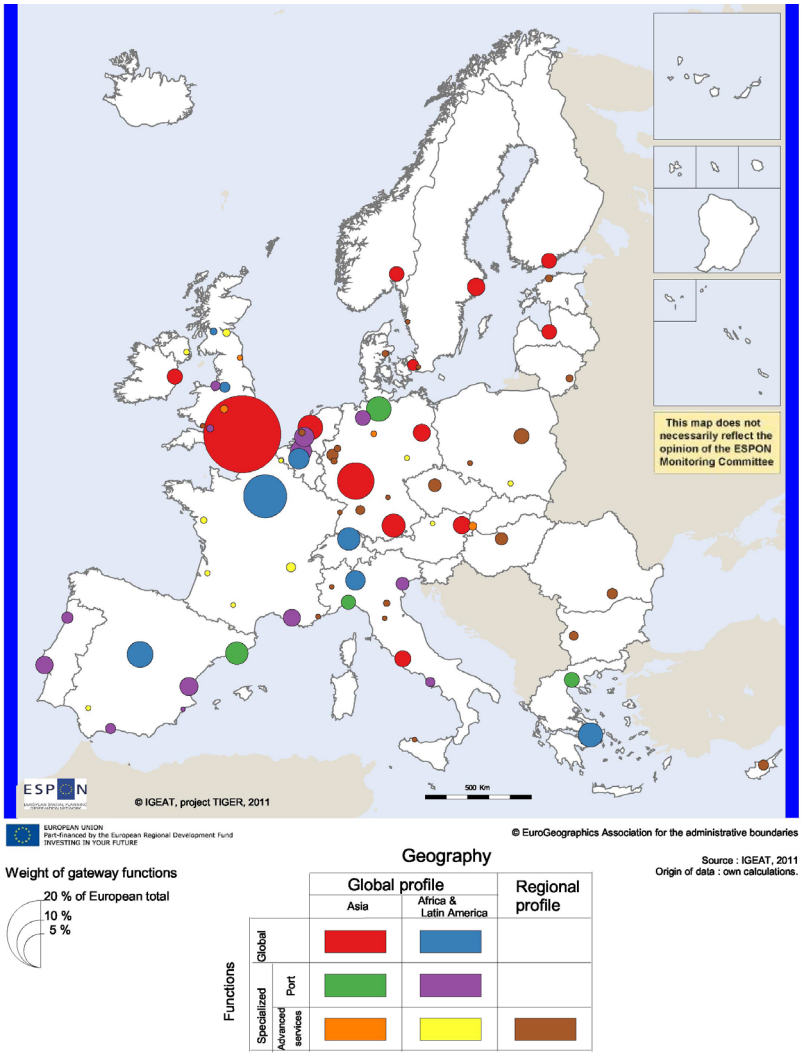
As map 3 shows, few cities serve as general gateways for a range of different types of activities, while most are specialised in specific functions, which makes them either a European or national gateway in their specialist field.

The map shows the profile and specialisation of European cities in global networks as well as their weight in the overall European connections with the world. The colours indicate the prevailing geographical focus and functions, while the size of the circles indicates the city's weight in the overall external European connections. This classification is based on six types of functions, for each of which the total connectivity and extra-continental connectivity have been measured. The following datasets are included:

- Firms in advanced producer services (GaWC), 2008
- Air connections, 2008
- Containers connectivity of ports, 2006
- Foreign quotation on stock exchanges, 2010
- Average of investments in office real estate between cities, 2007-2010
- Location of corporate headquarters, 2008

The final classification is based on a combination of volume, specialisation and geographical focus. The volume indicates the importance and active role of cities in each type of network.

Map 3 Typology of European Gateways



2.3 Gateways for specific functions and different geographical reach

European gateways or hubs can also be directed towards other European destinations. They do not necessarily need to focus on other parts of the world. The different role a gateway city can take in a European and in a global context becomes clear when looking at main gateways that are either extra-European or intra-European oriented with regard to firms in advanced producer services, air connections, container connectivity of ports, foreign quotation on stock exchanges and investments in office real estate between cities.

Cities with gateways functions that are not specialised in one function, but play a more or less important role in several functions are described as diversified gateways.

London is Europe's most important diversified gateway both in an intra-European and an extra-European perspective. It accounts for more than 20% of all extra-European connections assessed.

While Paris plays in the same league as London in terms of intra-European gateways, it has a lower gateway function when it comes to the extra-European dimension. Paris together with Frankfurt represent the European economic centres, which stand for 15% of all extra-European connections assessed.

Amsterdam, Basel, Brussels, Frankfurt, Madrid, Milan, Munich, Stockholm and Warsaw constitute the second league of gateways in an intra-European perspective. Of these only Frankfurt remains in the second league as an extra-European gateway. The others are considered to have lower importance as extra-European gateways.

These are followed by a larger number of cities with diversified or multiple gateway functions, albeit lower numbers of connections and therefore lower importance. In general, the gateway function again tends to be larger or of higher importance in an intra-European, as compared to an extra-European, perspective. There are also some cases which are characterised as diverse gateways in a European perspective but seen as specialised gateways in an extra-European perspective. Examples for this are Lisbon and Barcelona, both of which are in an extra-European perspective mainly gateways with regard to their port functions.

Focusing on gateways that are more specialised, one finds a range of different functions and gateway cities and regions.

Gateways specialised through their port functions are Rotterdam, Antwerp, Hamburg, Bremen, Porto, Malaga, Valencia, Milan, Naples and Thessaloniki.

Gateways specialised in advanced producer services in an extra-European perspective are mainly capital cities in the Eastern part of Europe. At European level, this type comprises territories that are specialised in transnational headquarters. Although they do not function as core gateways, they host major transnational companies. Characteristic examples are the Rhine-Ruhr region in Germany and Turin in Italy.

Gateways specialising in their role in advanced producer services networks, both in an extra-continental and intra-European perspective, are mostly smaller urban areas that can be found all over Europe. Most regional and secondary airport cities serve as specialised air transport gateways.

Overall, the differences between the maps 2 and 3 comparing gateways of Europe in a global and European context are not big. Global gateways are also very important in a European context, while less important gateways share similar functions both in a European and a global level. What differs is the geographical focus which shows that some regions and cities have more important gateway functions in an intra-European than in a global perspective.

2.4 Polycentric networks as gateways

In a macroregional perspective cities in a larger region can also jointly act as gateway through cooperation and a division of labour following the idea of smart specialisation. Together they may appear as a gateway of higher importance than they could individually.

Polycentric development holds particular development opportunities for European cities. There are some examples of European capital cities which jointly function as a gateway in the form of a polycentric network with regard to specific functions in a macroregion. In Central Europe the cities of Bratislava, Budapest, Ljubljana, Prague and Vienna form such a polycentric network.

Athens, Bucharest and Sofia may be a potential macroregional polycentric network for South East Europe. The three capital cities represent already the drivers for the main economic growth in south-eastern Europe.

Polycentric network gateways in Central and South East Europe

Bratislava, Budapest, Ljubljana, Prague and Vienna form a polycentric network. Drawing upon their long history, culture and good cooperation of the countries, all five metropolises try to position themselves as hubs in their geographical context and take advantage of their proximity. All are major nodes and key command and control centres in their respective national urban and regional systems, playing the role of gateways between home country and external world. There are good connectivity potentials both by rail and road, as well as by air between the five metropolises. There are strong economic ties between Budapest, Prague and Vienna. Vienna stands out as hosting more high ranked firm locations and participating in more European research cooperations. Prague ranks first concerning the number of FIRE companies (finance, insurance, real estate); Bratislava performs well in firm networks within the Central European Danube region and Ljubljana plays a stronger role in European research networks. Concerning research projects, Vienna is excellently integrated in European research networks, while Ljubljana, Bratislava and Prague also show promising potential.

Athens, Bucharest and Sofia: A potential polycentric network gateway. The three capital cities represent already the drivers for the main economic growth in south-eastern Europe, but unlike the Central Europe case, they do not demonstrate high cooperation initiatives. Despite their proximity the connectivity between the three capitals is relatively poor, though all three have better connections with other European countries. Athens displays better connectivity with Western Europe by air and rail than the other two capitals. Rail and road connections are mainly internal. In the economic sector, both Greece and Bulgaria are a tourist destination for Romania, and vice versa, while each capital is the most creative city in their country. All three are regarded as islands of competitiveness, since foreign investments in their respective countries are concentrated there. Therefore the cities would benefit from a stronger cooperation, a development of their urban periphery as well as a better integration in the European policies, as the TEN-T corridors. This would create a web of relationships between the three as well as other capitals and peripheries and help unfolding all their potentials.

2.5 Establishing Gateways

Gateways develop based on particular advantages deriving from an area's geographical position and the historic legacy which endows a place with specific activities or well developed links to other destinations. However, gateway functions can also be further strengthened or even initiated by policy interventions and targeted investments in particular types of infrastructure or the support of particular types of (economic) activities. Two interesting examples are Intstanbul, a major agglomeration area becoming increasingly important internationally and reinvigorating as a gateway, and Ireland, which before the financial crisis pursued a strategy to turn itself into an economic gateway.

Istanbul: A reinvigorating gateway. During the last decade Istanbul has actively worked on positioning itself as a gateway and strenghtening its gateway functions. The strategy of Istanbul is to make the city more competitive while securing the quality of life and the built environment (historical, cultural and natural heritage). The development of the city is impressive and covers several functions. Tourism flows are increasing: Istanbul is considered a hotspot tourist destination, attracting tourists from Western Europe. Moreover, the increase of the well educated work force and low labour costs are advantages for the city, while its good connections through its main airports create further advantages.

Ireland: Establishing an economic gateway. Gateway policies in Ireland are twofold. National fiscal policy has sought to establish Dublin as a 'gateway' to offshore tax havens. Tax and other incentives were offered to companies which established qualifying operations in the IFSC (International Financial Services Centre) in order to attract a share of the rapidly growing financial services and their support activities. This move, backed by lighter and more flexible regulation has proved successful and attracted companies, financial institutions and investments, that relocated their headquarters to Dublin. So an international gateway was established. Furthermore, the Irish National Spatial Strategy in 2002 prioritised not only Dublin but other gateways too, as it aimed to achieve a greater balance of socio-economic growth between regions, partly through the concentration of development in nine national 'gateway' centres of critical mass. Despite this ambition the primacy of Dublin continues to increase.

3 - Global and European Gateway Functions

A number of more specialised gateway functions have been discussed already. ESPON results provide a more nuanced understanding of specific gateway functions at global and European level.

3.1 Economic and Business Gateways

Gateways play an important role in the economic sector. In this case gateways can be cities and regions which host a large number of enterprises that are well interlinked globally in terms of business networks or ownership relations. Also when looking at trade flows certain gateways appear, where a lot of trade with specific other destinations is taking place.

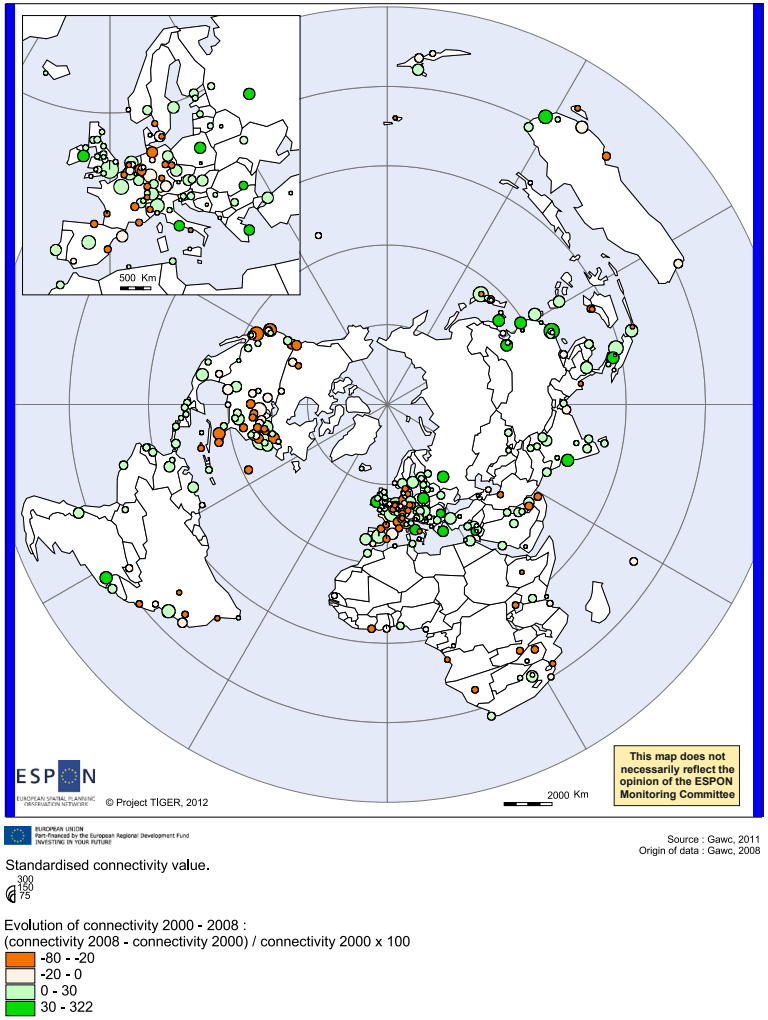
Gateways in the area of advanced producer services

London, New York, Paris and Hong Kong are major global gateways when it comes to global business connectivity. In this context, connectivity describes the sum of business connections between a given city and other cities in four sectors of advanced producer services: accountancy, advertising, banking/finance and law (see map 4).

London: Europe's only global business network gateway. Until the start of the economic crisis the global position of London, New York, Paris and Hong Kong remained stable. In terms of business network connectivity, London and New York have the strongest links. Indeed, London is the only global gateway in Europe.

Eastern European cities are taking some steps forward and are well connected to the two European global

Map 4 Cities connectivity in advanced producer services and its evolution between 2000 and 2008



centres, i.e. either London or Paris. For example, Warsaw and also Prague and Budapest have significantly increased their city connectivity, without diminishing the importance of London and Paris.

Next: Chinese and Indian global gateways. In the wake of the financial crises there has been a considerable re-balancing of city connectivity at a global scale, between 2000 and 2008 (see map 4). 60% of cities worldwide gained connectivity to global service networks between 2000 and 2008. There has also been an increasing concentration of connectivity in the Pacific Asia region, especially in Shanghai, Beijing, Seoul and Sydney. In future the role of Chinese and Indian cities may become even more prominent, as both countries are increasing the connectivity of their globalising major cities. This trend is likely to continue with on-going urbanisation and economic development in these regions.

European gateways on their way. In Europe, Dublin, Rome, Athens, Bucharest and Warsaw increased their network connectivity in the field of advanced producer services between 2000 and 2008. As regards the 'connectivity growth rates' they are followed by Madrid, Paris, London, Stockholm and many cities in the centre and western part of Europe. On the other hand, some cities e.g. in Spain, France and Germany have experienced a decline of their connectivity rates during that period.

Accountancy important in Europe. Financial services networks have an especially important role in generating and maintaining business concentration. In this particular field New York and London have retained their dominant network position. However, other sectors also generate important service network connectivity. In Europe e.g. accountancy has been an important generator of global network connectivity, especially for London and Paris, but also notably, for cities across eastern Europe - Warsaw, Bucharest, Prague and Budapest.

Overall, looking at the dynamics of cities, which economy is based on business activities (in advanced producer services: accountancy, advertising, banking/finance and law), European cities still have opportunities to develop their potential and gradually change their position in the world.

Gateways for international trade

Trade relationships are an important dimension of the economy. European cities and regions have different trade orientations. Due to different historic legacy and geographical positions, European regions are specialised in different geographical orientations concerning the trade of goods. At a very general level, it is possible to distinguish between cities and regions which have a predominantly European trade profile, i.e. where most of the trade relations are within Europe, or those which have a rather non-European trade profile with a substantial part of trade with partners outside Europe (see map 5).

Global trade profiles mainly in UK, Switzerland and Mediterranean. Global trade profiles can be found mainly in cities and regions in the UK and in Switzerland (see map 5). These two countries show a strong orientation to northern America and Asian trade markets. Furthermore, trade profiles oriented towards the Middle East and northern Africa can be found especially in southern Spain, some regions in southern France and various Italian regions. In these cases, geographic proximity and history certainly play a role.

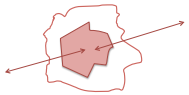
European trade profiles with clear east-west characteristics. Geographical position and historic legacy also play a crucial role for European trade profiles (see map 5). Countries that joined the EU during the last three accession rounds are mainly characterised by trade profiles oriented towards eastern Europe including the former USSR. Cyprus and Malta are exceptions in this group as the only Member States of the last accession rounds that have a western oriented trade profile. The trade profiles of Portuguese, the main Spanish and Belgian and some French regions have a strong west European orientation. A somewhat more moderate west European orientation can be observed in many other west European regions.

Between European and global trade. There are also some countries that actually are in-between and have an average profile. This means that they share an average orientation of their trade towards Europe, but also have strong relations with distant developed countries of Asia or northern America, as well as northern Africa and the Middle East. Large parts of Germany, northern Italy, Finland and Greece belong to this group.

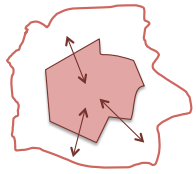
Stock exchanges as gateways for international trade

Financial flows concerning stock markets are another indicator for European gateways in global trade. European cities are attractive for both European as well as non-European foreign issuers. The key connection points in Europe are London, Paris, Frankfurt, Luxembourg and also Stockholm, Oslo, Zurich and

Milan, followed by Madrid, Vienna and Warsaw. The city of London dominates, attracting issuers from many countries.

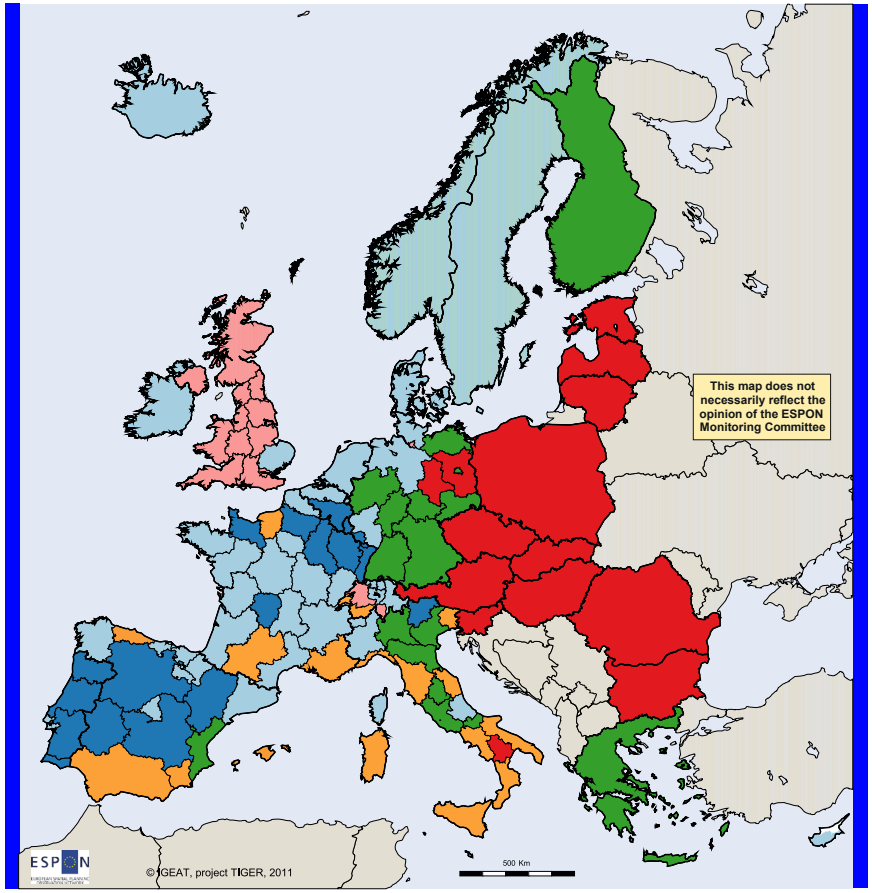


London, Luxembourg, Madrid and Paris attract non-European foreign issuers. London and Luxembourg to a higher extent, and Paris and Madrid to a lesser extent, have the biggest number of non-European foreign issuers. Cities and regions from other European countries, as northern Italy, Norway and Sweden, Germany and Austria follow. The origin of the foreign issuers is different in each of these countries. London for example is the most broadly connected European city having its greatest number of links with US cities, especially New York and Houston, and Canadian cities, as Vancouver or Toronto. Between 20% to 40% of the issuers in London and the majority (between 60% and 90%) of the issuers in Luxembourg come from the Western Pacific and Eastern Asia. France, Belgium and the Netherlands have a high percentage of foreign issuers from north America, while Madrid based non-European issuers come mainly from south America.



Northwest Europe attracts European foreign issuers. European issuers prefer to have their shares listed on European markets, especially firms from northern and eastern Europe. Great Britain concentrates the largest number of European foreign issuers, having London as a strong economic centre. Luxembourg comes second in terms of European foreign issuers, and also Frankfurt holds an important position. The numbers of European foreign issuers are lower in Madrid, Milan, Stockholm, Oslo, Paris or Vienna.

Map 5 Typology of the geography of trade at regional and country level



3.2 Knowledge Gateways

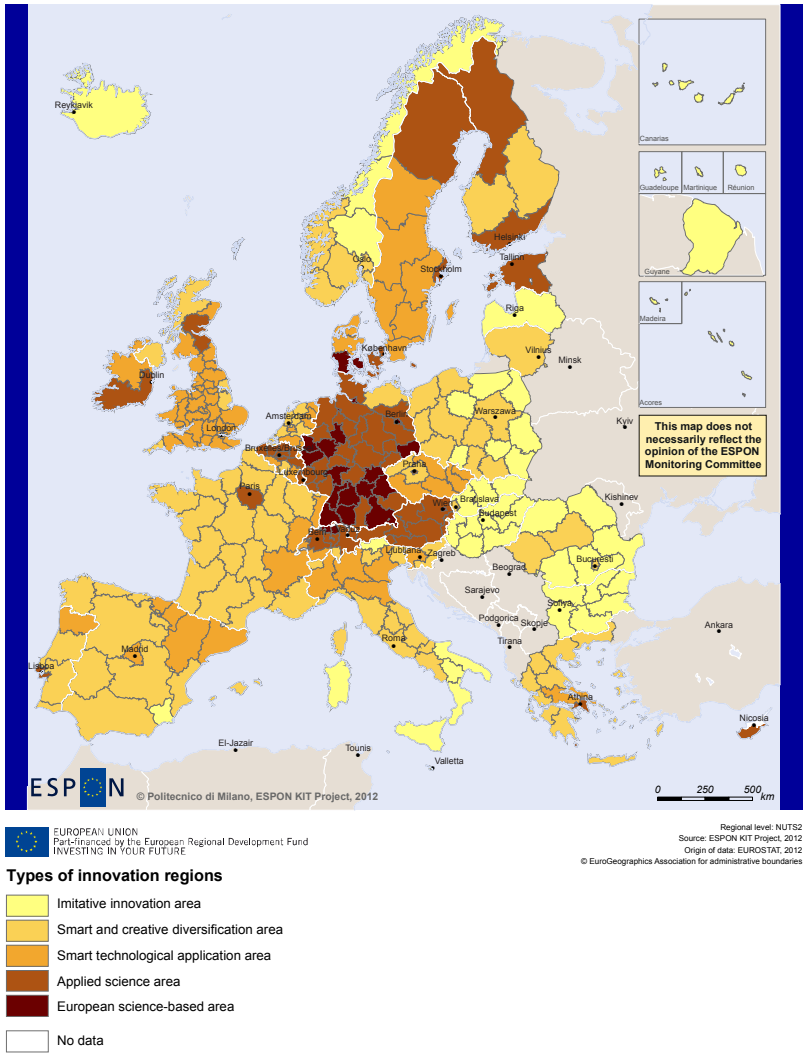
Some gateways serve as main hubs into larger global networks of knowledge and innovation, and are key nodes through which latest R&D insights flow. The general typologies of gateways discussed above already included some information on participation in research networks.

In addition the presence of highly qualified researchers and good research facilities, along with established collaboration patterns (e.g. linked to co-patenting or labour mobility), help to shape gateways for knowledge workers. The patterns of innovation (see map 6) provide an aggregated picture of a wide range of such aspects. With regard to the territorial patterns of innovation in particular two types of regions seem to function as international gateways:

European core hosts many innovation gateways. Regions with high R&D endowment, a high degree of knowledge and strong links to regions with a similar knowledge base, are mostly located in Germany, along with Vienna, Brussels, and southern Denmark. Furthermore, regions strong in knowledge production and R&D in applied science, with a high degree of knowledge coming from regions with a similar knowledge base (see applied science area in map 6), are mostly located in central and northern Europe, namely in Austria, Belgium, Luxembourg, Switzerland, Germany, Estonia and some capital regions in other countries. Many of these important gateways for innovation are located in the European core.

Gateways translating external knowledge. In terms of gateways the “smart technological application areas” are also interesting as their high product innovation rate, and

Map 6 Territorial patterns of innovation in Europe



high creativity, are based on translating external basic science and applied science knowledge into innovation. Many of these regions can be found in northern Italy, the UK and Sweden.

3.3 Transport Gateways

Air, port, rail and road connections play an important role for the transport of goods and people. In particular global flows of goods and people rely on international gateways such as airport and ports.

For national and regional gateways, connectivity through rail and road is more definitive. However, investments in advanced infrastructure may help these national and regional gateways to increase their importance by improving connections to the main European or global transport gateways. Chapter 4 on national and regional gateway functions provides some examples.

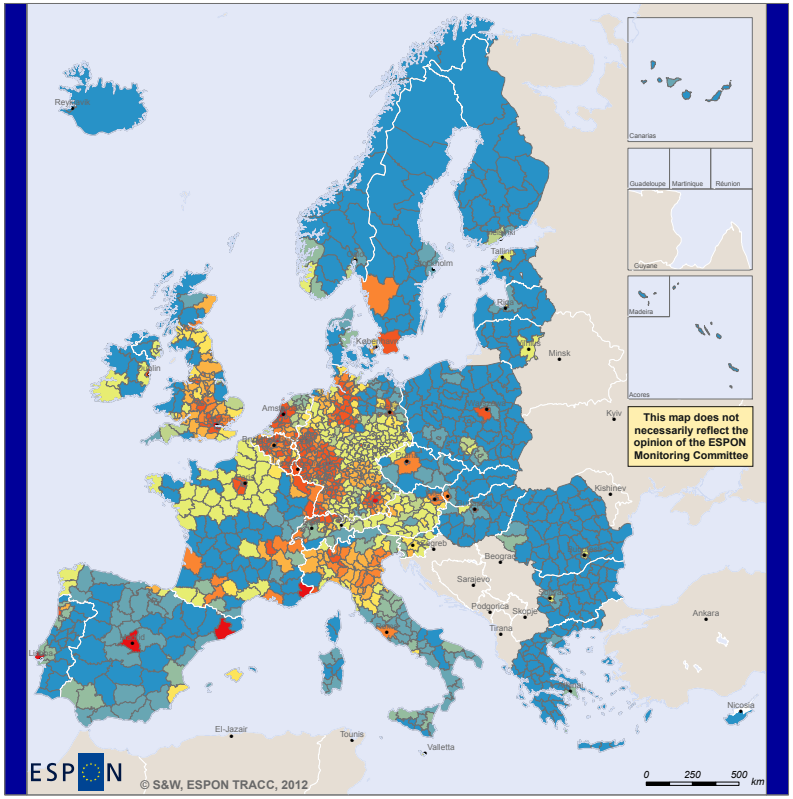
Airports are crucial linkages for global flows of people and goods of high value or goods that need to move quickly between different parts of the world.

Ports are important for the global transport of freight that comes in large volumes and is less dependent on rapid deliveries.

Gateways for international air traffic

Concentration of important global gateways in the core of Europe. Cities or regions with an airport that offers direct flights to (other) global hubs serve as global gateways. As can be seen from map 7 in particular regions in the European core benefit from international airports from where large numbers of

Map 7 Flights to intercontinental destinations reachable within 5h time, 2012



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Regional level: NUTS-3
Source: RRG GIS Database
S&W Flight Network
Origin of data: S&W Accessibility model, 2012
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Number of intercontinental destinations for which flight departures are reachable within 5 hours travel time

- 0 - 20
- 21 - 40
- 41 - 60
- 61 - 80
- 81 - 100
- 101 - 120
- 121 - 140
- 141 - 160
- 161 - 180
- 181 - 200

international destinations can be reached within five hours. Central parts of the UK, Belgium, the Netherlands, large parts of west Germany, single regions in France and northern Italy profit most from the good international air connections and gateway functions of these larger airports.

Gateway function of airports of capital cities and major urban areas. Capital cities such as Lisbon, Madrid, Copenhagen, Warsaw, Rome or Prague benefit also from international airports from where large numbers of international destinations can be reached within five hours. Good global connectivity can be found in south-western Europe also in non-capital cities, such as Barcelona. Those regions benefit from serving several global destinations on their own and from having good access times to other European intercontinental hubs.

The different case of the northern, southern and eastern peripheries of Europe. In contrast, for peripheral regions in northern, southern and eastern Europe it is usually only the capital regions which have higher global connectivity. Despite being capital cities and important gateways at national level, cities such as Athens, Sofia, Bucharest and Stockholm do not function as global gateways.

Gateways for international sea transport

Ports have always played an important role for connecting cities and regions both nationally as well as all over the world. They are important hubs for freight transport. When it comes to international sea transport, it is important to consider both sides of the gateway function. On the one hand a port has global links and destinations, and on the other hand the port connects to its hinterland. A port can fully exploit its gateway function and act as a hub for transporting goods from its wider hinterland to the rest of the world and vice versa, only when both sides of the gateway function operate smoothly.

North Sea Region hosts Europe's main gateways for global sea transport. Europe's main container ports are Rotterdam, Hamburg, Antwerp and Bremerhaven. In particular the port of Rotterdam stands out for its influence on several other northern European ports, serving both as a maritime hub and a continental gateway.

Port connectivity to the hinterland matters. The geographical position of a region strongly influences its connectivity potential. In most cases, for a European exporter, the accessibility to European intercontinental ports is more critical than the connection from the European port to the overseas port. In other words, it is not the navigation time for deep sea shipping that matters, but the time and cost of the European leg of the shipment. Therefore, although the port of Genoa might be closer than Le Havre to the Shanghai hub, and as a result the shipping time will be less, the port of Le Havre is more important and convenient for the Paris region, which is among the most accessible European regions. While other competitive hubs like Algeciras or Tangiers are better located geographically on the Suez-Gibraltar route, the ports of Barcelona and Valencia could strengthen their maritime gateway function for southern Europe because of their transport connections within Europe.

North Sea Region ports have the best European legs. Map 8 shows how reachable major European container ports are. The focus is on 72 hours of sea shipping on inland waterways. It shows high levels of accessibility around the North Sea, but it shows also that large parts of Spain (including Madrid), many Mediterranean regions, Irish regions and regions in Romania can benefit from good inland waterway connections to major sea ports.

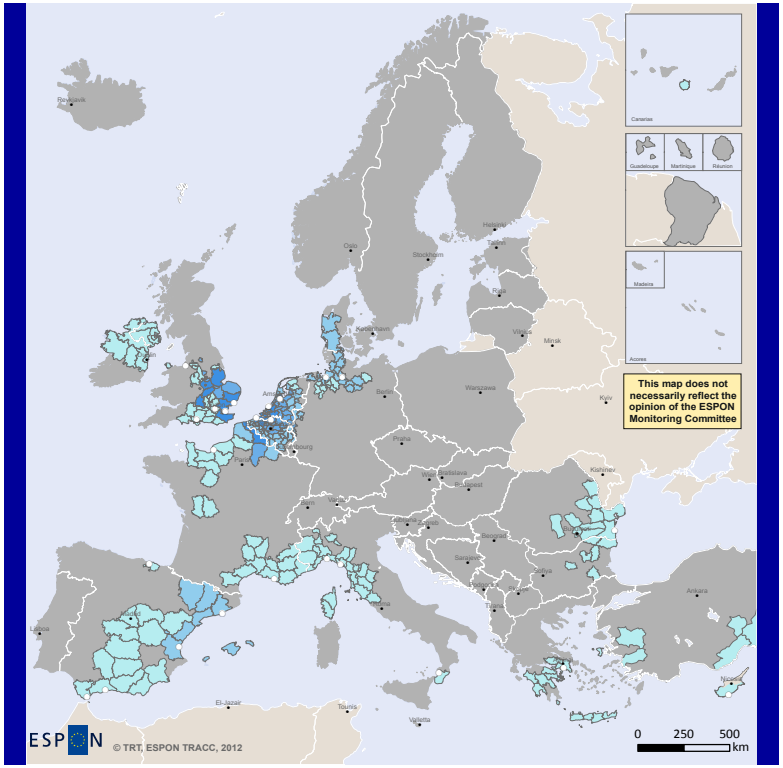
New infrastructure holds potential for new gateways. Regions with poorer inland infrastructures may nevertheless have good connectivity potential. On the one hand they may benefit from a favourable geographical position, as is the case, for example, in the Balkan area and Northern Norway. On the other hand they may profit from the distribution of other transport centres, such as rail intermodal centres. Indeed, accessibility can change when major improvements are made to a port to attract new traffic. An example for this is the port of Gdansk, where the opening of direct services to China increased the port's activities, and holds the potential to make Gdansk an intercontinental hub port in Europe.

Transport is a chain of different modes. Maritime transport is a convenient mode of transport especially for larger volumes of freight over longer distances, while road is more efficient for smaller or individual shipment. At the same time, although maritime transport is dominant for freight transport between Europe and Asia, land routes, mainly by rail and truck, exist and might develop in the future. If that happens, new gateways will be created.

3.4 Attraction Gateways

Gateways are also locations where products, services or people arrive to and then spread throughout the region or even further. In the latter sense, regional attractiveness can be understood as a gateway function.

Map 8 Global freight connectivity: Intercontinental container throughput of European sea ports, 2007-2009



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Source: TRUST Accessibility Model (TRT 2012), Maritime Network: TRUST Model, Road/Rail Network: TransTools (2005), IWW Network: RRG GIS Database, Intercontinental container throughput of ports (Eurostat data 2007-2009)
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Global freight connectivity (2011):
Intercontinental container throughput (Ths. TEU) of European sea ports reachable within 72h Sea Shipping/Inland Waterway travel time (3 days)

- 0 - 4 000
- 4 001 - 10 000
- 10 001 - 15 000
- 15 001 - 20 000
- 20 001 - 25 000
- 25 001 - 30 000
- 30 001 - 35 000
- 35 001 < ...
- n.a.

- *Capital cities*
- *Intercontinental Container Seaport (>250000 TEU/year)*

Looking at migration, exchange students or tourism can provide insights into the attractiveness of an area.

Tourism gateways

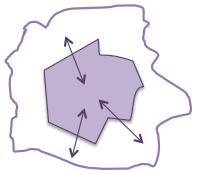
Tourist visits provide a good indication on how attractive an area is and thus acts as a gateway attracting people from other parts of the world, Europe or the own country.

Cities in the European core remain attractive. In total figures the countries with the largest number of annual visitor arrivals are Germany with 128 million, France with 124 million, Spain with 100 million and Italy with 94 million (all these figures are the total of the three years 2006-2009). Zooming in to the regional level, main European hotspots are the southern part of Spain, Catalonia, Paris and the lower Rhone valley and regions of northern to central Italy. The Mediterranean Arc still holds a top place in the rating, including resort areas and islands, as do a range of major urban centres such as Paris, London, Amsterdam, Berlin, Barcelona and Istanbul. Overall, the cities and regions in the core of Europe attract a large number of visitors and can be seen together with other major urban centres, large parts of the Mediterranean and some northern regions in Scotland and Scandinavia as main tourist gateways.

The importance of tourism and thus its gateway function cannot only be seen in total numbers, but should also be viewed in relation to the actual population size of a city or region.

Considering the gateway importance or reach, a distinction between domestic and international tourists reveals different territorial patterns.

Gateways for international tourism: Mediterranean & Alps. Seen in relation to a region's population size, international tourism is especially important in the Alps and the Mediterranean Arc, with coasts, islands and mountain regions at the forefront (see map 9). In relation to the local population, sparsely populated areas in Iceland, the north of Norway and the north of Scotland have large numbers of tourists. Amongst capital cities, Prague, Vienna, Budapest, Amsterdam, Bratislava and Budapest are those with the highest shares of tourists in relation to their local population.

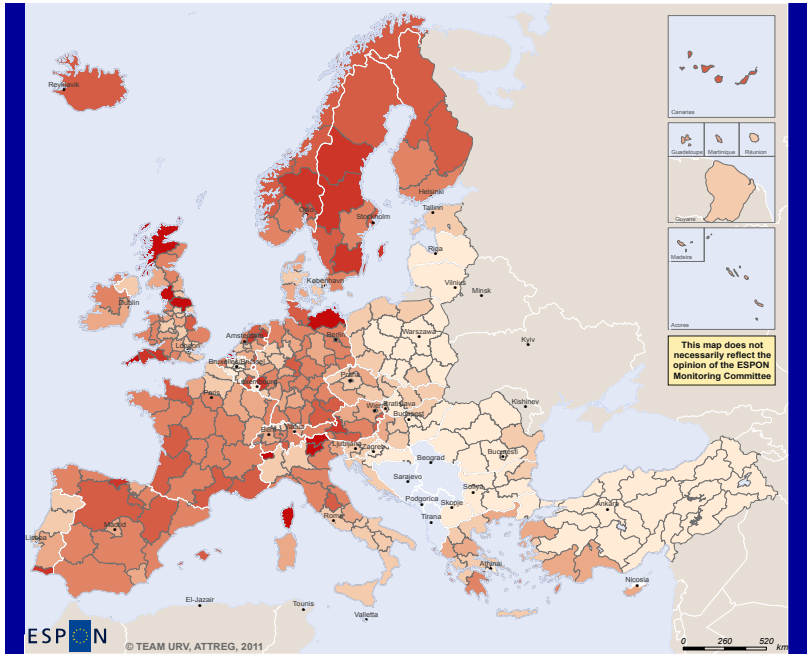


Gateways for domestic tourism: rural and coastal areas. Seen in relation to a region's population size, domestic tourism privileges mainly rural and coastal areas within each country (see map 9). Furthermore, national tourism is much more prominent in western Europe than in most of the countries that joined during the last three rounds of EU accession and Turkey.

Migration gateways

Migration is another attractiveness indicator. Cities and regions attracting migrants (be it for short or long term) are also functioning as gateways for receiving mobility flows. Therefore migration types such as the brain drain, (i.e. a career driven migration), or the silver age drain (a more touristic linked migration of older generations), gradually gain more importance. The reasons for migration differ and are subject to the age of the migrants and the country of origin. They can be related to business and employment opportunities or to education (mainly for young workers), or to cultural, health, or change of lifestyle reasons, as well as to climate change or even political reasons (especially for migrants of EU neighbouring countries).

Map 9 National and foreign tourists per 1,000 inhabitants, 2006-2009



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Regional level: NUTS 2
Source: Own calculation by A. Russo and I. Smith on EUROSTAT data + Turkish statistical institute + Statistical office of FYROM + national statistical institute of Croatia.
Origin of data: EUROSTAT tourism and population data + Turkish statistical institute + Statistical office of FYROM + national statistical institute of Croatia
Author: A. Magarolas
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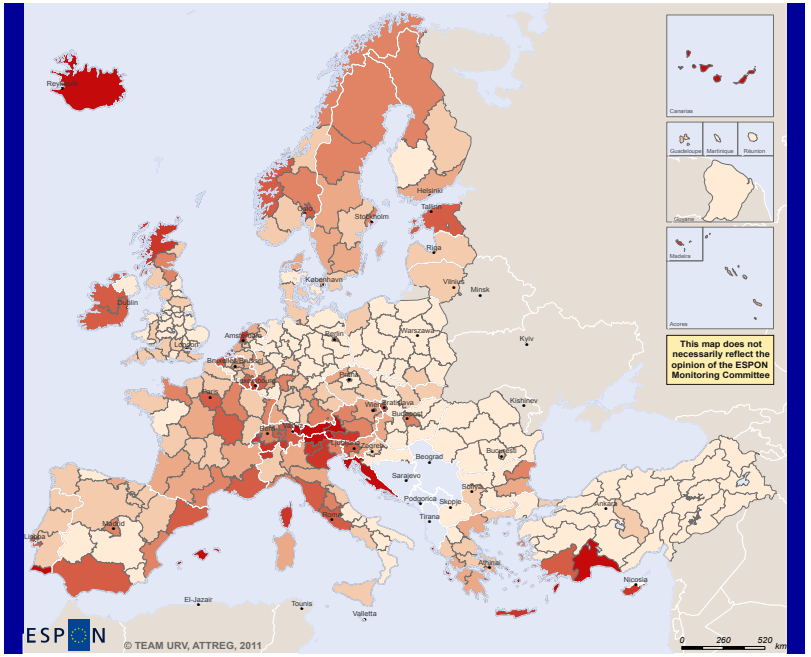
N. of tourist arrivals per 1,000 head of population *

- 26,0 - 375,3
- 375,4 - 750,5
- 750,6 - 1125,8
- 1125,9 - 1688,7
- 1688,8 - 2251,7
- 2251,8 - 2814,6
- 2814,7 - 5028,7
- NO DATA

* Ratio of total number of tourists (nationals) arrived at any types of accomodation by 1,000 head of population. Tourist data averaged over 2006-09 period; population data averaged over same period.



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Origin of data: EUROSTAT tourism and population data + Turkish statistical institute + Statistical office of FYROM + national statistical institute of Croatia
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N. of tourist arrivals per 1,000 head of population *

- 2,3 - 205,8
- 205,9 - 411,7
- 411,8 - 617,5
- 617,6 - 823,3
- 823,4 - 1582,5
- 1582,6 - 3019,0
- 3019,1 - 9374,6
- NO DATA

* Ratio of total number of tourists (foreign) arrived at any types of accomodation by 1,000 head of population. Tourist data averaged over 2006-09 period; population data averaged over same period.

The population density of a country, city or region is a decisive factor for the accurate measurement of the tourist flows. It shows the size of the “floating” tourist population in relation to that of the “stable” population of the region. The first map shows the national and the second the foreign tourists per 1,000 inhabitants. In this case, the numbers are relative and highly dependent on the population. The population number is the reason why, for example, Iceland has a higher number of international than domestic tourists, while the Mediterranean regions which are in principle favourable touristic destinations show accordingly an opposite change.

4 - National and Regional Gateway Functions

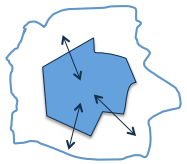
National and regional gateways do not have a great influence on the wider European and global context, but are important for the national and regional level. They can either be intermediate gateways linking up to international gateways, or can serve as gateways for flows of goods, services and people within a country or region.

4.1 Transport and connectivity functions

Cities are the most dynamic transport gateways. Urban transport-connectivity characterises these gateways. At national and regional level road transport dominates. However, there are cases where other transport modes play an important role, especially high-speed rail and regional airports.

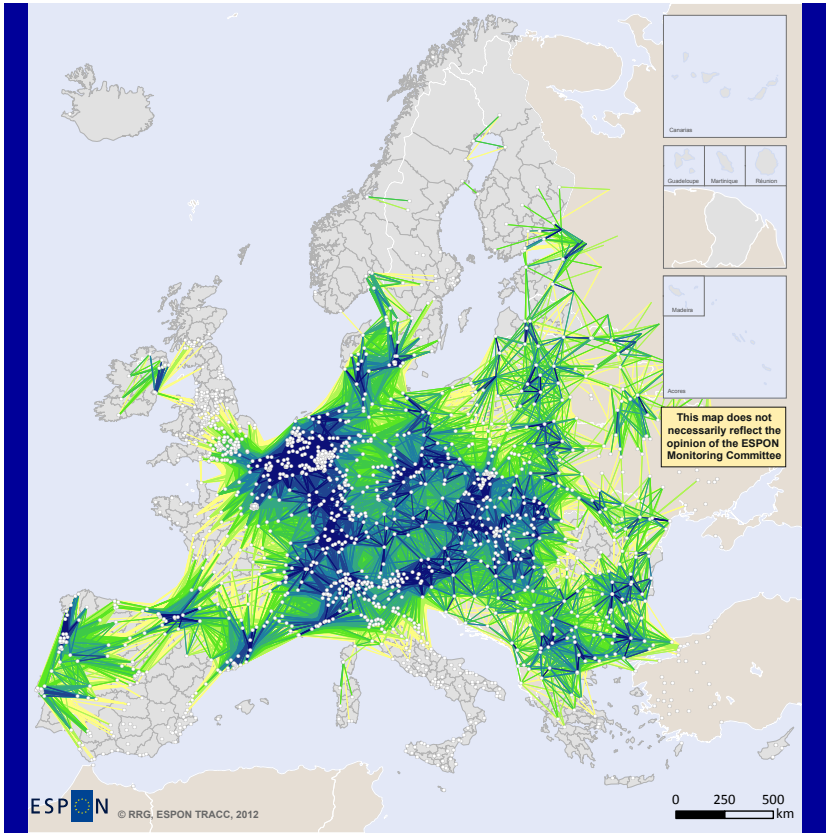
The urban gateway function of road transport takes various expressions. On the one hand there are the connections between different cities as hubs in a system. This image is further strengthened when looking at various international or national transport modes and where the entrance points to their networks are. On the other hand cities have functions serving their wider region or hinterland and in this respect the (mainly road) transport between a city and its hinterland is important.

Gateways to cities in neighbouring countries



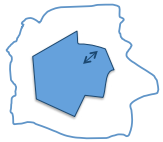
Looking at international city-to-city links that take a maximum of 5 hours by road provides a first picture of the gateway function of a city as regards linking cities in neighbouring countries.

Map 10 Urban connectivity, 2011



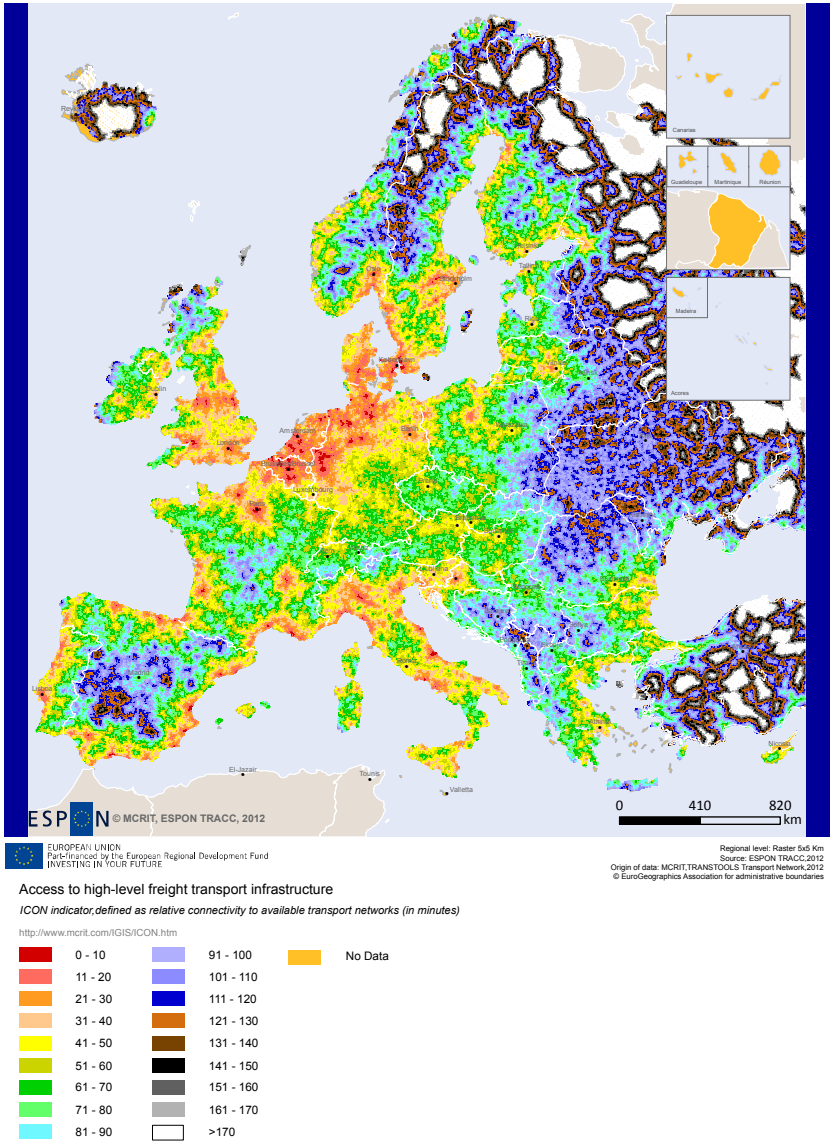
Benelux cities are the best gateways for neighbouring city networks. Cities in the Benelux countries and towards northern France and western Germany have the largest amounts of connections to other cities in neighbouring countries. Map 10 shows that the relations within the Benelux countries and towards northern France and western Germany are very dense. Accordingly, cities in these areas benefit from high accessibility levels and good urban connectivity. Other highly accessible gateways link Portugal and Spain, Spain and France, and France and Switzerland and Italy. There are also many fast city-to-city relations in eastern Germany and Poland and the Czech Republic, and among cities in Austria and Slovakia and Hungary, as well as between Italy and Slovenia and Croatia. Within eastern Europe the level of city-to-city relations is much lower as compared to western Europe, and where such links exist travel times are on average much longer. Similarly, international urban connectivity between the Nordic Countries is poor. While cities in the northernmost territories are generally well connected by flights to the capitals, they are not well connected between themselves.

Gateways or entrance points to major transport networks



The entrance points to high-level transport infrastructure such as motorways, railways, airports and ports are also mainly in or close to cities. However, there are considerable differences between cities in Europe and to what extent they can serve as gateways towards high-level transport infrastructure (see map 11).

Map 11 Access to high-level freight transport infrastructure by 5x5 grid cells, 2012

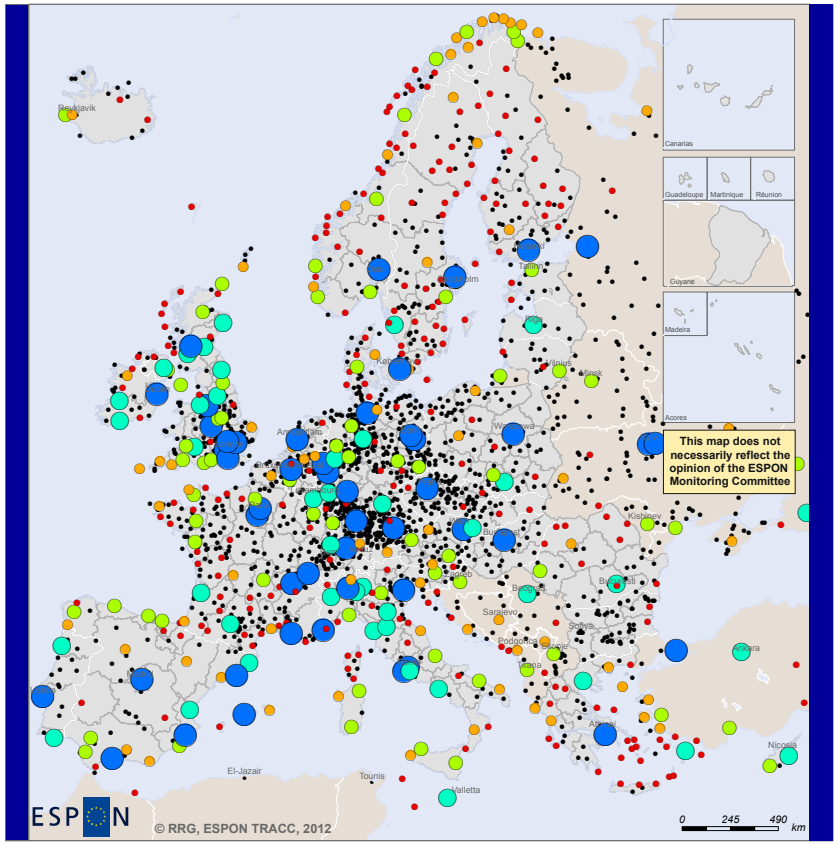


Best access to passenger transport gateways is in the core. Core areas in Europe have better access to high-level passenger transport infrastructure than peripheral regions, as they tend to have denser motorway networks, good rail networks and are where air hubs are concentrated. This implies that citizens in core regions are more likely to seamlessly travel in Europe or easily access global transport gateways. They offer higher availability of transport services, of direct point to point connections to other European cities, and shorter trip legs on local and regional road and rail networks. Outside the core, national capitals (e.g. Warsaw, Madrid, Helsinki) and major tourist regions (e.g. the Spanish Mediterranean coast and islands, Naples) have high regional connectivity.

Best access to freight gateways is along the Atlantic rim. The best connectivity for freight gateways is recorded in the Atlantic rim between the Benelux countries and Germany due to the presence of the largest container ports in Europe, in addition to the denser motorway and freight networks. As Mediterranean ports are better positioned in the international shipping routes to Asia, their importance could increase in the future, if port capacities are expanded and better connections are provided with the European hinterland.

Access to regional airports. Regional airports are another example of gateways to major transport systems. They are especially important in sparsely populated countries where there are long distances between cities, as in Finland, for example. Regional airports also play a vital role in countries where there are considerable transport barriers e.g. in terms of sea, such as in Greece. On map 12, the regional airports are the small red and orange dots serving less than 10 destinations.

Map 12 Airports – number of destinations, 2011



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Airports:
Number of destinations served

- 1 - 5
- 6 - 10
- 11 - 25
- 26 - 50
- 50 < ...
- Airports without scheduled flights

Example: Jyväskyla regional airport

Zooming in on Jyväskylä in central Finland shows both the role and fragility of small regional airports. The airport serves as a gateway towards Helsinki and Tallinn and operates a few charter flights to holiday destinations. The main users of air traffic in Jyväskylä are business travellers and foreign visitors to congresses and other events. There are several national and international events organized annually in Central Finland. However, the supply of flight connections from Jyväskylä has been unstable due to unprofitability. Currently, the flight operators are supported financially (including through marketing activities) by the city of Jyväskylä and regional authorities, in order to maintain this regional gateway function. The nearest airports outside Central Finland are located in Kuopio, Tampere and Varkaus (120-150 km from Jyväskylä). Being dependent on travelling to them would probably adversely impact on the local and regional development in Jyväskylä.

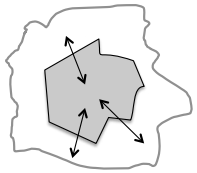
Urban gateways serving their hinterland

Regional gateways are important nodes in functional urban-rural areas. Access to, and availability of, public and private services and functions provided in urban nodes are crucial for citizens' daily life. If such functions are not offered in small towns and villages, or rural areas, people require easy access to them in nearby cities. The greater the number of cities that can be reached from a given location in reasonable time, the greater are the opportunities for economic and social activities and for general interactions.

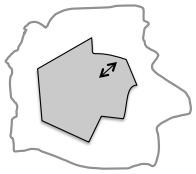
In this respect areas with long travel times to urban centres and/or low population density face particular development challenges.

Access to urban gateway functions is best in the core. The analysis of raster data for both road and rail highlights the agglomerated areas in Europe as places with a high availability of urban functions. The accessibility of urban areas (with more than 50 000 inhabitants) is highest in the Ruhr area, England, Paris, in the Benelux countries and in northern Italy. Some capital city regions in other countries (for instance Stockholm, Madrid, Budapest or Athens) also stand out, as do some other regions based on large conurbations such as Oslo-Gothenburg-Malmö-Copenhagen, Barcelona-Valencia-Murcia, Lyon, Saxony, Naples, and Upper Silesia. The surroundings of these areas have good access to the urban gateway functions, whereas in many other parts of Europe such access is more difficult.

4.2 Gateways to services of general interest



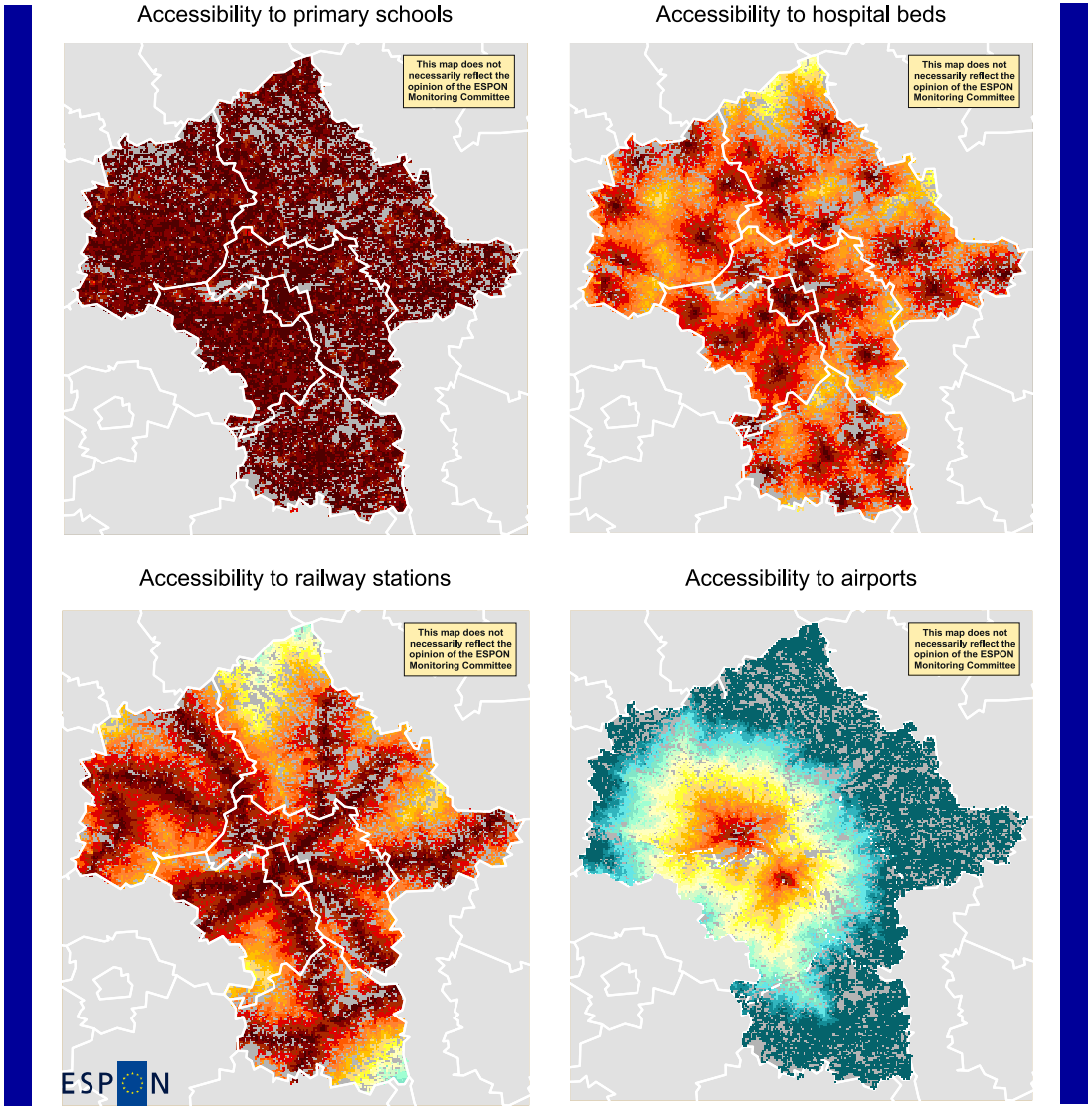
Highly specialised services in major cities. Cities are generally the most important gateways at national and regional level and in many countries these are primarily the capital cities and to a certain extent also the secondary cities. Cities are major nodes and key command and control centres in their respective national urban and regional systems, playing the role of gateways within the country and the wider region. This is also true with regard to services of general interest. Services of general interest are provided at different geographical scales from very local to national. In particular highly specialised services, which are used less frequently or by fewer people, show more centralised territorial patterns. In these cases capital cities and second tier cities often function as gateways to these services. This is among others the case for international airports, highly specialised hospitals and universities.



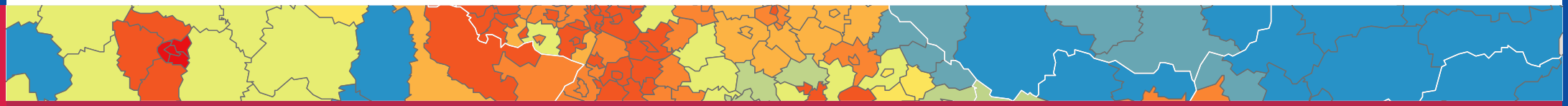
Also smaller cities serve as gateways. It is not only capital cities and major urban agglomerations that serve as gateways for services of general interest. Generic services, which are used very frequently by a large group of people, for example services related to childcare or basic health services, are usually provided locally, as close to the users as possible. Indeed, a large number of smaller cities provide services of general interest for a wider territory and thus function as a gateway to e.g. the education or health care system.

The access to selected services in the Polish region of Mazowsze (see map 13) illustrates how differently the local or regional gateways for these services are distributed. In the case of primary schools, there are so many primary schools that it is difficult to speak of a gateway function. Hospital beds are more concentrated in the cities in the region. Access to railway stations is clearly fed along the main railway lines and Warsaw as the main node in the railway system becomes visible. Access to airports is then clearly focused on the two airports of Warsaw.

Map 13 Gateways to services of general interest in Mazowsze (Poland)



The map shows the accessibility to four services of general interest in the region of Mazowsze, Poland: primary schools, hospital beds, railway stations and airports. The accessibility is measured in minutes that are needed to reach the services by car.



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ESPON shall support Cohesion Policy development with European-wide comparable information, evidence, analyses and scenarios on framework conditions for the development of regions, cities and larger territories. In doing so, it shall facilitate the mobilisation of territorial capital and development opportunities, contributing to improving European competitiveness, to the widening and deepening of European territorial cooperation and to a sustainable and balanced development.

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