

Metropolitan Regions in Europe



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It is a really interesting seminar. I was very interested to hear Lewis' presentation and I am looking forward to the other presentations. There is a lot to be learnt here, today. I come from the Federal Institute for Research on Building, Urban Affairs and Spatial development (BBSR) within the Federal Office of Building and Regional Planning (BBR) doing building management in Germany and worldwide. The BBSR is a research institute (150 people), a think-tank for the ministry in charge of planning and transportation.

An inverted approach to understand metropolises: from function to population

I would like to present some of the results of our project "Metropolitan regions in Europe", or as we call them "metropolitan areas". The reason for this naming is that there is an initiative of the big German cities and city regions that form a bottom-up alliance, which they themselves call "European metropolitan regions". In Germany, not to be confusing, we called our study "Metropolitan areas in Europe". But here, today, I will use "metropolitan region" and "metropolitan area" in the same meaning.

Metropolitan regions in Germany were one of our starting points. The definition of such strategically oriented metropolitan regions depends very much on bottom-up processes: who wants to cooperate? Who wants to form a metropolitan region? Who wants to be a part of it? We did a lot of analyses on such cooperative administrative areas but in this study, we wanted to go one step back and analyse the metropolitan areas, based on their metropolitan functions separately from the existing administrative and political units and cooperation patterns. So, we

started with an analysis of problems which is very similar to what Lewis said. The classical approach to identify metropolitan regions usually started with a selection of administrative units with urban characteristics – cities, metropolitan areas, agglomerations... This selection is mostly based on population figures, population size, population density or other morphological indicators like housing, agglomeration of cities... Sometimes larger units, commuting areas, etc. are defined. And only then, as last step, you start adding indicators for "metropolitan importance" and analyse to which degree these urban areas show "metropolitan" characteristics, that means how far they are involved in global processes etc.

Of course, especially in a European context of analysis, such methodology suffers from all problems that come along with the use of administrative areas, e.g. with the diversity and incompatibility of NUTS areas. Also, we have to ask: if we want to analyse metropolitan functions, what role are population and size of agglomeration playing? For example, a small city like Oxford has an immense importance in international network in science whereas you could imagine a 10 million people agglomeration in China with no major "global" or "metropolitan" importance at all. So why start with population? And do we have comparable data in commuting areas, etc.?

So we decided to forget everything about cities, about geography, about territory. Instead, we started with global functions of societies. Modern societies are organised in different subsystems which are based on specific functions and specialisations, obeying their own rules. Five important subsystems which we analysed further are politics, economy, sciences, transport and culture. They are interrelated but have distinct identities. For instance, politics is about power, voting, and majorities, etc. Economy is about money, about market, etc. They are distinct areas following their own rules and logics. The same is true for science, which has other orientations than transports, and culture. It is obvious that all these subsystems are globalising and have their global relations networks. But they also follow their own specific spatial patterns, so the hotspots of science are different from the hotspots of container shipping or from air transport or from political administrations. Sometimes, in world cities like London and Paris, these functions come together but in many other cases, political functions economic functions, cultural functions etc. are separate and cities are specialised on one of few of these functions. They have their own system. One of the aspects of real big metropolitan areas is that you have all the functions in one area.

Our research methodology is a sort of reverse approach. We did not ask: where in Europe are the most significant concentrations of population and what metropolitan characteristics do these areas have? But we asked: where in Europe are the most

significant concentrations of metropolitan functions? How do they constitute a pattern of what we call metropolitan areas?

Nearly 40 single indicators

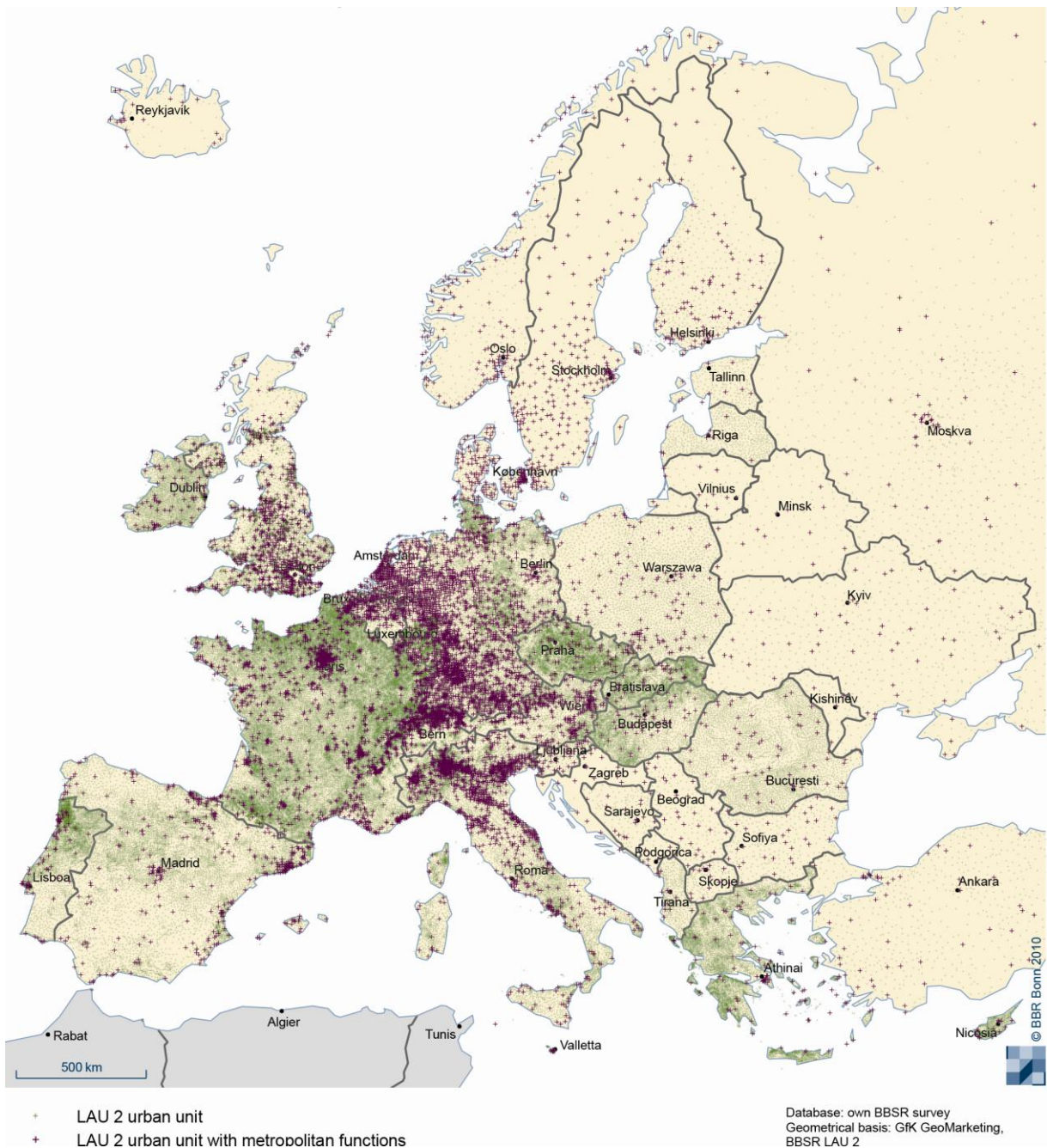
For the analysis, we defined 38 indicators for these 5 functional areas and grouped them into 16 indicator groups. The indicators were combined - in a normalised form - to several summary indicators of metropolitan functions

A basic decision was made to choose only those indicators that cover the whole European territory in a comparable way. Our target area is basically the Council of Europe, not the EU territory, including Russia, Turkey, the Balkans, etc. It was one condition

that the indicators we chose were available for the whole territory following the same standard definition for all the countries involved. We used only non-official statistical data since we had no pre-defined areas and so no administrative figures. We used data which could usually be exactly geocoded and attributed to municipalities, to so called LAU2 areas.

One first result: there are about 120 000 LAU2 units in this total area. When we geocoded these 38 indicators, 93% of the units had no indicator value at all. So, 8480 units, which is about 7% of these units, did have a 'score' for at least one of these indicators, thus indicating at least some 'metropolitan function'. (Cf. map "Spatial data base" below)

Spatial data base: Local Administrative Units – LAU 2 – Cities



Overview on indicators

Let me give you a brief overview on the five functional areas (politics, economy, science, transports, and culture) and the 16 indicator groups (with a total of 38 indicators).

A detailed description is given in the table next page.

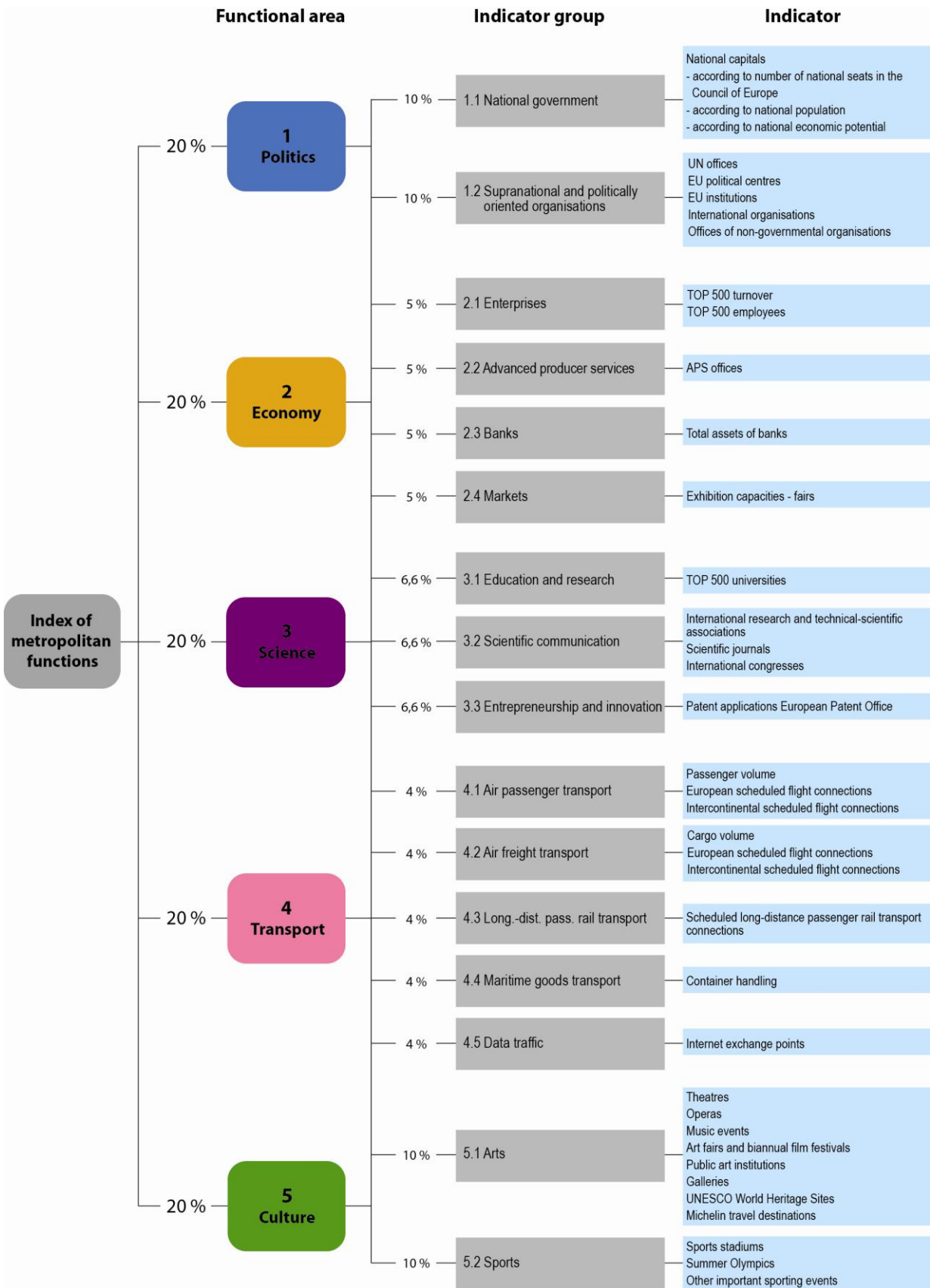
1. For **Politics**, national government functions and supra-national organizations were analysed. National capitals, as locations for national government functions were weighted according to their importance (indicators: population, economic potential, seats in CoR). International government functions were represented through the seats of international organisations such as United Nations, European Union, but also non-governmental organisations and their locations in Europe.

2. For **economy**, we chose four groups: location of top 500 enterprises, advanced producer services, banks, and markets (exhibitions and fairs).

3. The **science** indicator group consists of education and research (top 500 universities), scientific communications (like scientific journals, international scientific congresses) and innovation (in terms of patent application for the European Patent office).

4. In **transport**, we analysed air transport, separate for passenger and freight transport, long distance rail transport, maritime goods transport (container handling), and data traffic (internet exchange point as physical infrastructures for internet connections).

5. And last but not least: **culture**. There we have two indicator groups: arts and sports. For arts we combined several assets like theaters, opera, galleries with international hotspots for music events and cultural tourism (UNESCO heritage sites, Michelin travel destinations). The second group refers to locations of big sport events (sport stadiums, Summer Olympics, and others)

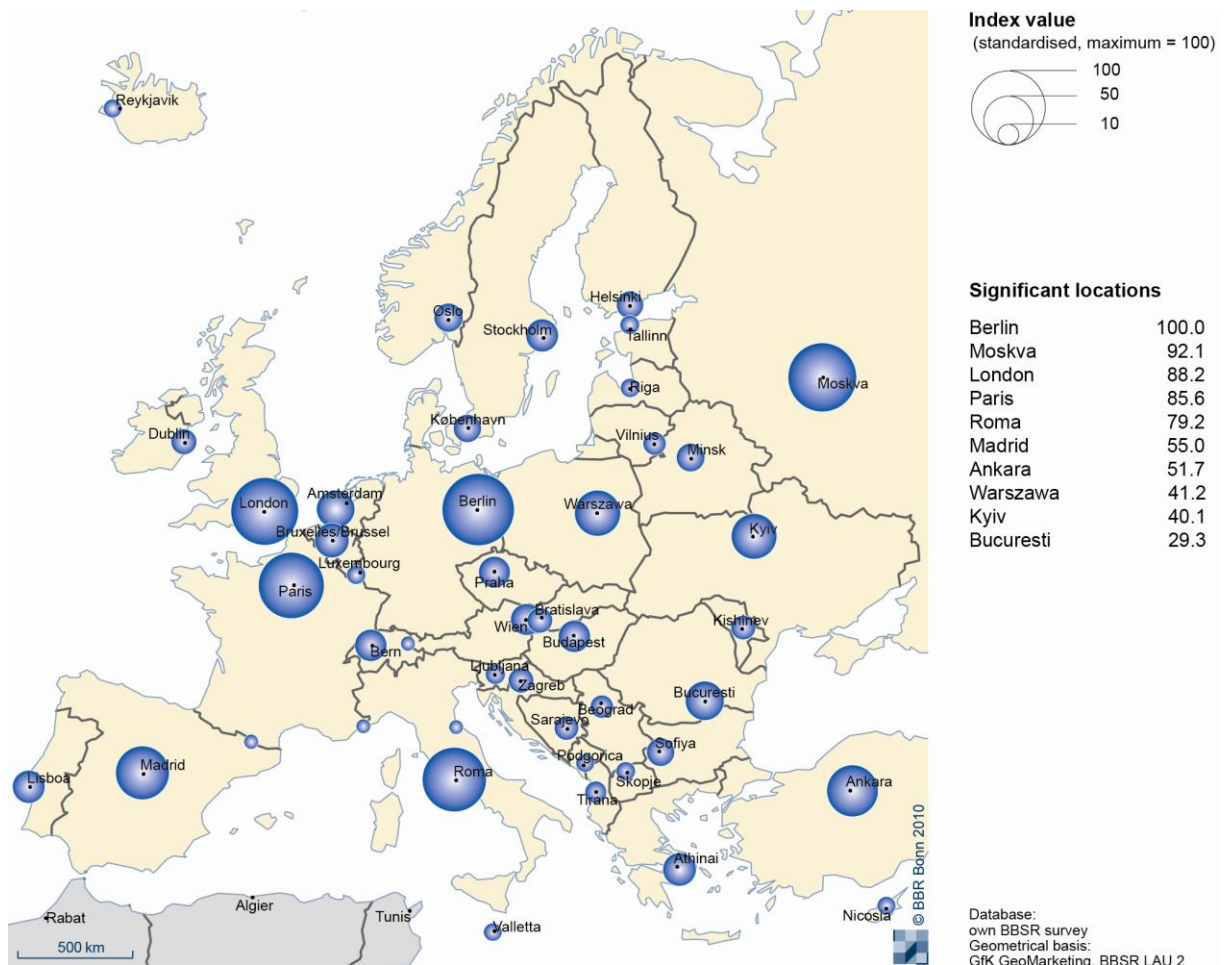


Politics: mainly concentrated in Paris and London

Political functions are concentrated in Brussels, Paris, and London. Berlin and Moscow are among the top ranking capitals because of their country's population size and national economy. Smaller cities like Vienna, Geneva and Luxembourg are ranked among the leading political centers because of their international organizations. Regional centers

(like Munich as capital of the federal state of Bavaria) are not considered because we had to concentrate on the international and national policy functions. The regional level is so diverse in Europe that we could not attribute comparable regional political functions for the whole territory.

Index of metropolitan functions – functional area “politics”

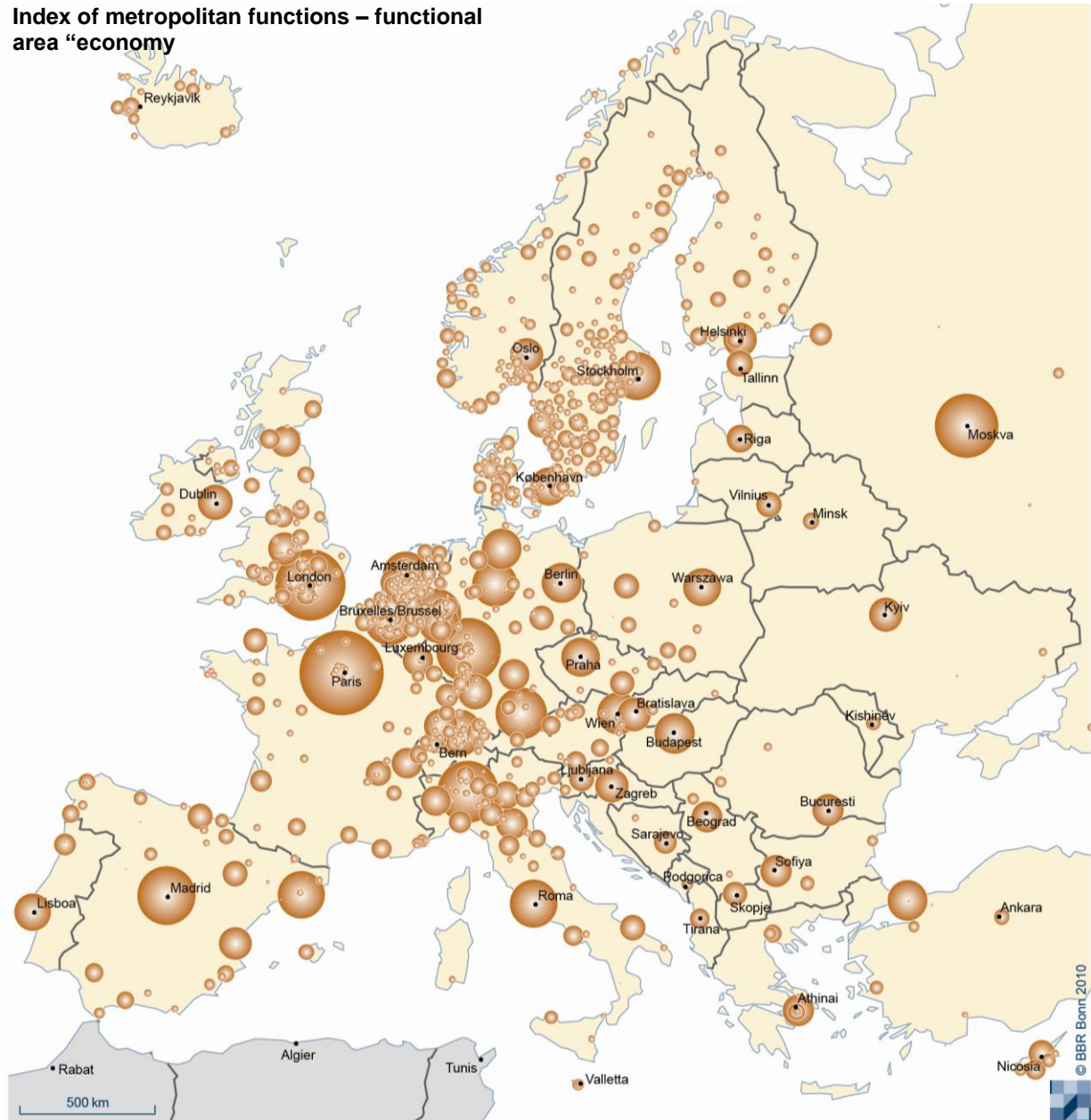


Economy: Paris and London in the top list, Frankfurt stands out as a financial centre

The spatial pattern of economic functions differs from politics. Not Berlin but Frankfurt, not Rome but Milan are among the top 10 locations in Europe. Not surprisingly the most important economic functions

are concentrated in Paris and London. Munich, Dusseldorf and Barcelona, for instance, are further secondary cities among the top-ranked areas in the field of economy and economic functions in Europe.

Index of metropolitan functions – functional area “economy”



Index value

(standardised, maximum = 100)



Significant locations

Paris	100.0
London	70.5
Frankfurt am Main	59.9
Moskva	56.6
Milano	53.7
Madrid	48.9
München	38.7
Bruxelles	36.2
Düsseldorf	35.9
Barcelona	32.9

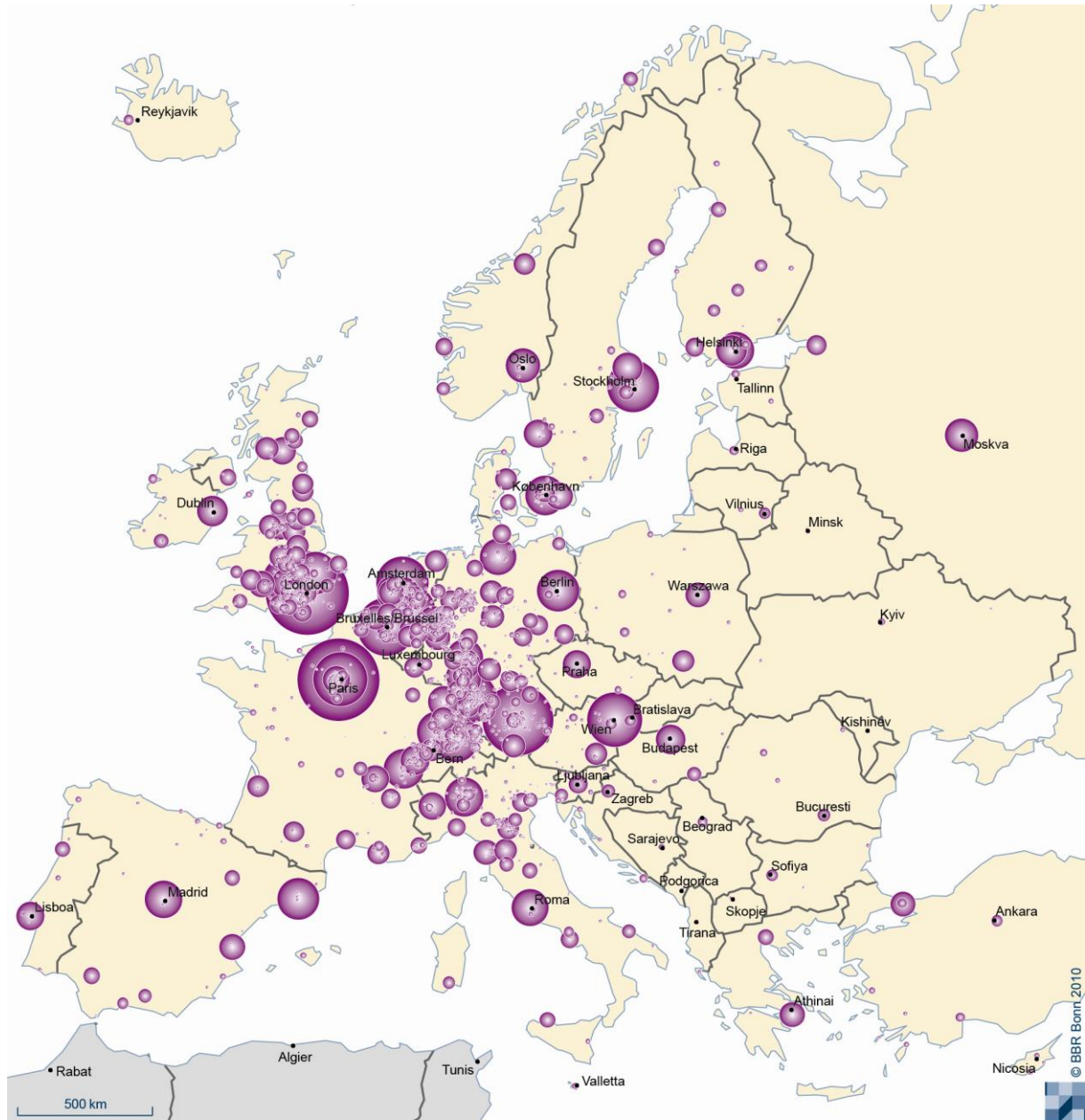
Database: own BBSR survey
Geometrical basis: GfK GeoMarketing,
BBSR LAU 2

Science: Paris and London very near together, accompanied by cities with a university tradition

Again Paris and London are very near together at the top of the hierarchy in Europe. Yet smaller cities like Bagnolet, Eindhoven and Oxford prove to be

important science locations in Europe, because of their excellent universities and/or as international research centers in technology...

Index of metropolitan functions – functional area “science”



Index value
(standardised, maximum = 100)



Significant locations

London	100.0
Paris	99.3
München	72.4
Bruxelles	49.8
Wien	44.0
Bagnolet	42.5
Eindhoven	42.1
Amsterdam	40.0
Stockholm	39.7
Oxford	37.2

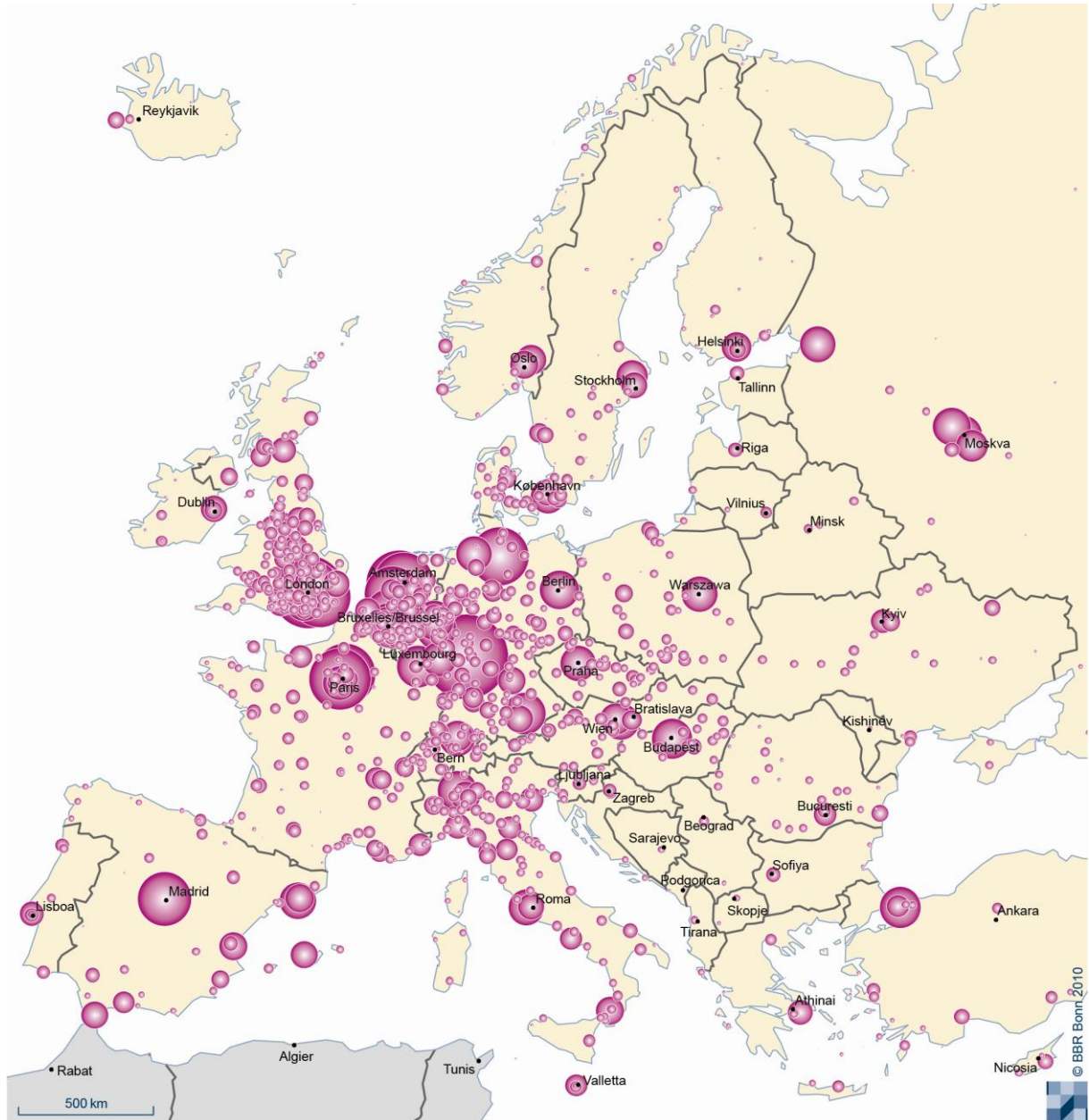
Database: own BBSR survey
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Transports: a widespread share thanks to the railway system

Transports are very widespread because of the railway system. The global importance lies in air transport, in shipping, etc. London, Paris, Frankfurt,

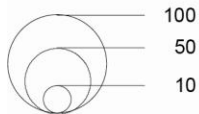
Rotterdam, Hamburg are among the top areas in Europe.

Index of metropolitan functions – functional area “transport”



Index value

(standardised, maximum = 100)



Significant locations

Frankfurt am Main	100.0
London	74.5
Amsterdam-Schiphol	63.6
Paris-Charles de Gaulle	53.8
London-Heathrow	53.6
Paris	53.4
Amsterdam	49.3
Hamburg	48.3
Rotterdam	43.2
Madrid	42.2

Database: own BBSR survey
Geometrical basis: GfK GeoMarketing,
BBSR LAU 2

Culture: some capital cities compensate their weaknesses in other fields

Again London and Paris are very high, but cities like Athens, Rome, Berlin rank high without real

international economic function but high cultural values.

Index of metropolitan functions – functional area “culture”



Index value
(standardised, maximum = 100)



Significant locations

London	100.0
Roma	61.5
Paris	57.5
Moskva	53.5
Barcelona	53.2
München	51.4
Berlin	49.9
Wien	43.0
Helsinki	38.9
Athinai	38.2

Database: own BBSR survey
Geometrical basis: GfK GeoMarketing,
BBSR LAU 2

Summarised results

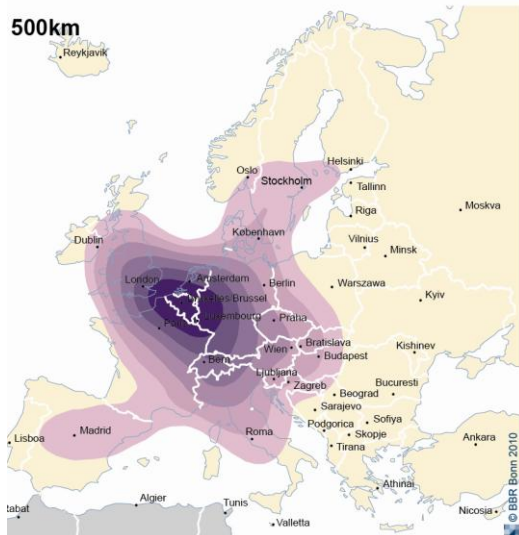
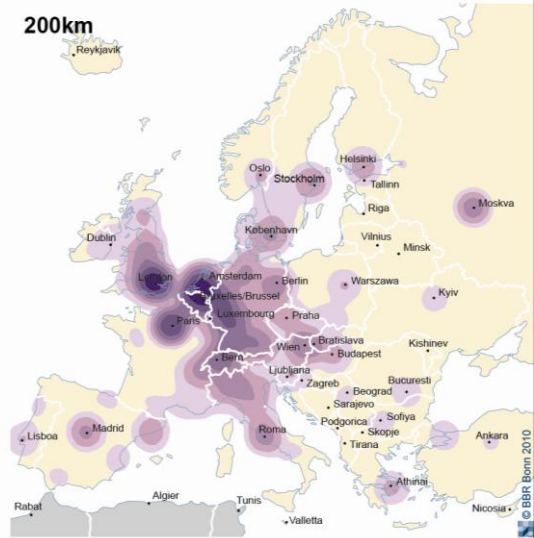
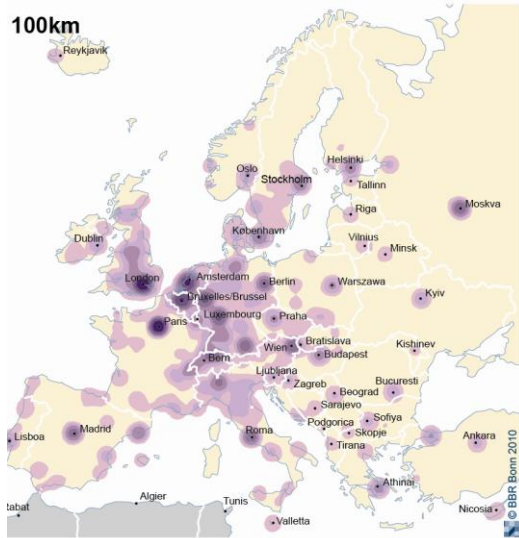
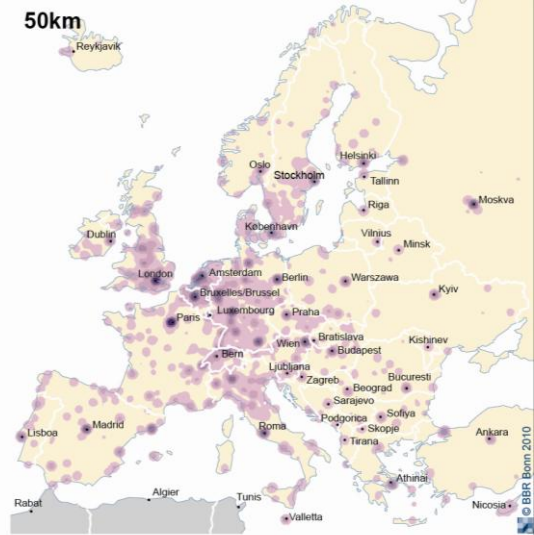
The top 480 of the 8480 LAU-2 units represent 78 % of all the metropolitan functions.

The Pentagon gathers half of the functions

On a country base, the big countries such as Germany, UK, France, Italy and Spain score better with metropolitan functions and the famous good old

Pentagon has about 50% of all the metropolitan functions.

Interesting is the position of the small countries if you relate the metropolitan functions to the population size of the country (i.e. metropolitan functions per 1 m population): Luxemburg is far ranking at the top followed by Switzerland, very international oriented, then Norway, Germany and France.



Density categories according to distance categories



Density of metropolitan functions according to search radiuses

Database: European Spatial Monitoring System, Eurostat REGIO, own BBSR survey
Geometrical basis: GfK GeoMarketing, BBSR LAU 2

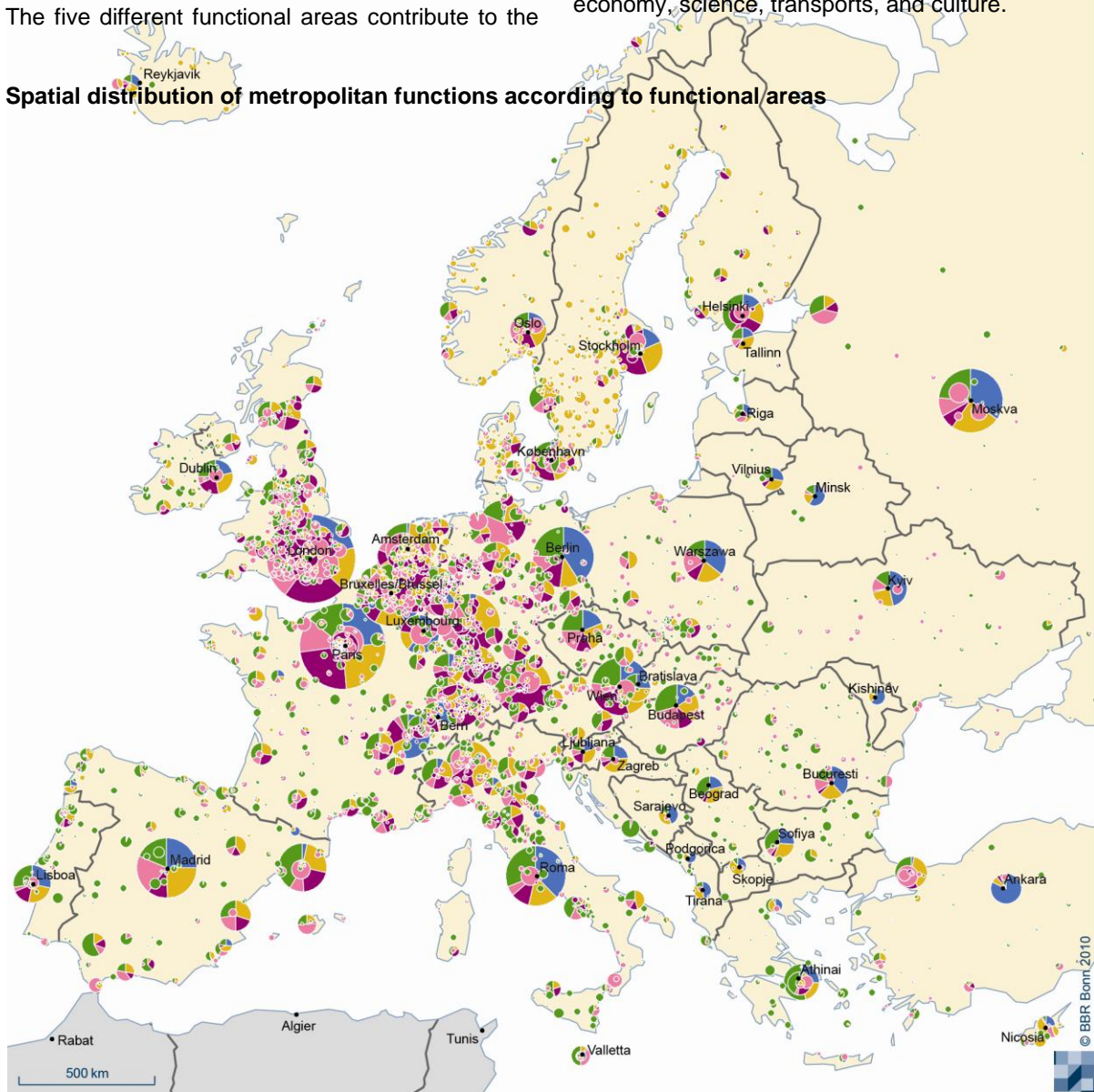
Taking account of travel time, based on 60-minute travel time, we identified 125 metropolitan areas. On a European macro scale, the area between London, Paris and Benelux has the overall highest value of density functions.

The regions formed from these metropolitan functions are **125 metropolitan regions counting for 80% of the metro functions**. This account for 10% of the total surveyed area with a concentration of 330 million inhabitants (65% of European population including the European part of Russia and Turkey)

The five different functional areas contribute to the

relative position. World cities, like Paris, are strong in all five areas. Other metropolitan areas have more selective and specific strengths in international functions. For instance, in terms of economic power, Berlin is not playing a particular role in Europe; however, scores in politics and culture are comparatively high. There are, however, also smaller metropolitan regions with balanced results in the five functional areas. Oslo, Helsinki and Budapest, for instance, are among those smaller metropolitan areas that have a relative even distribution among the five analysed functional fields of politics, economy, science, transports, and culture.

Spatial distribution of metropolitan functions according to functional areas



Index value

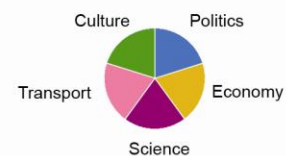
(standardised, maximum = 100)



Significant locations

London	100.0
Paris	93.7
Bruxelles	53.9
Moskva	52.0
Frankfurt am Main	47.2
Berlin	46.8
Roma	45.8
Madrid	45.6
Wien	42.8
München	40.4

Shares according to functional areas



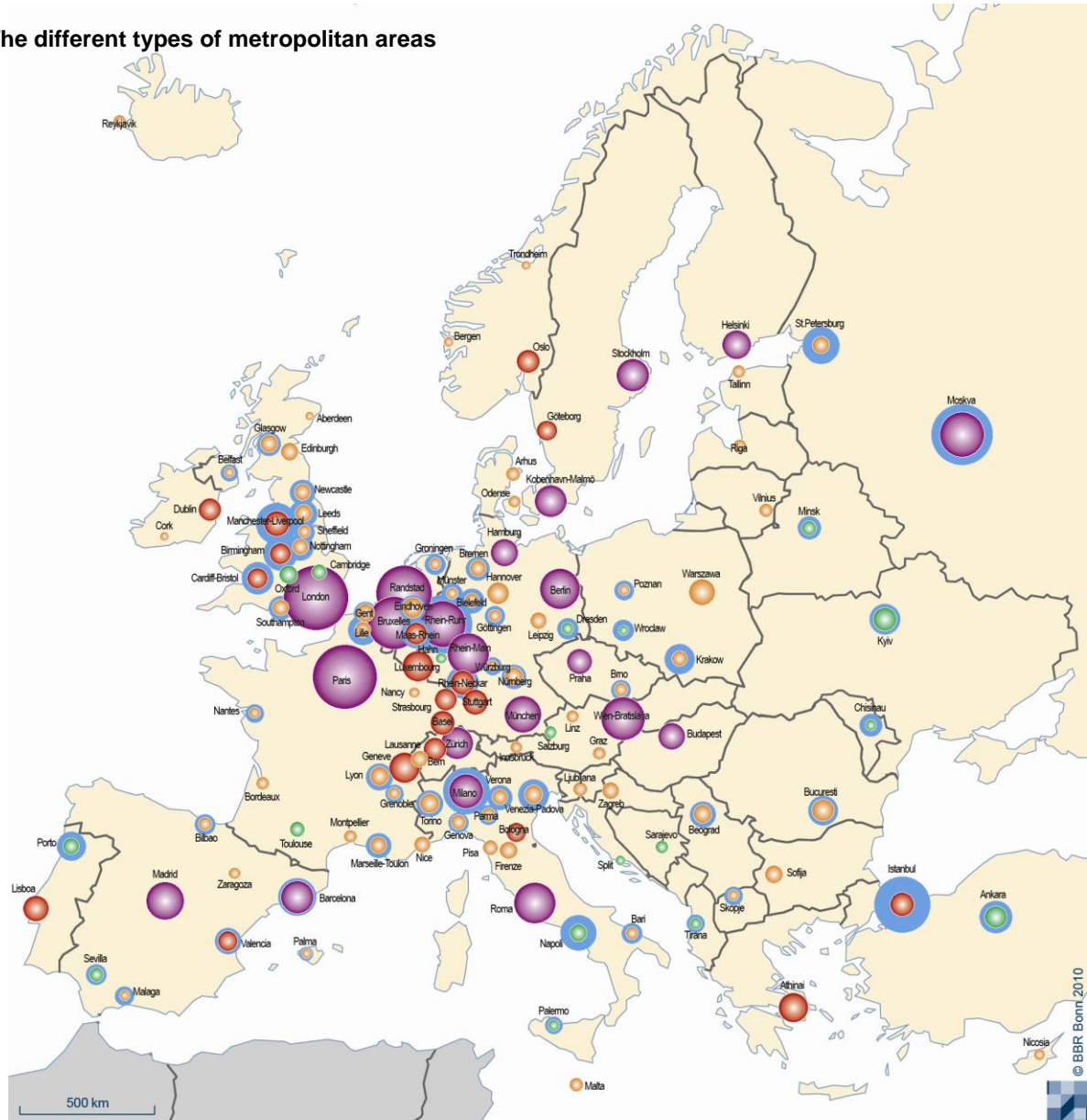
Database: own BBSR survey
Geometrical basis: GfK GeoMarketing, BBSR LAU 2

This variety and functional diversity is shown in the map below "The different types of metropolitan areas". This map also compares the weight of metropolitan functions with the sheer size of population.





according to the 5 areas of metropolitan functions it does not play the role one would expect from the population size. It is the same for Naples, for instance, or for Moscow

Istanbul ranks first in terms of population but compared to other metropolitan areas in Europe,

The different types of metropolitan areas

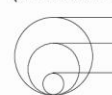



Types of metropolitan areas

-  Type 1: metropolitan areas with a great variety of functions
-  Type 2: metropolitan areas with a considerable variety of functions
-  Type 3: metropolitan areas with a limited variety of functions
-  Type 4: metropolitan areas with a limited variety of functions and large degree of specialisation

Index value of metropolitan areas

(standardised, maximum = 100)



 metropolitan areas with a surplus of importance of the population

Database: own BBSR survey
Geometrical basis: GfK GeoMarketing,
BBSR LAU 2