

of 15 cities with a population of 200,000 to 500,000 (including Leeds, Bradford, Wirral, Wakefield and Wigan) that together total 6.5 million inhabitants.

METHODOLOGY

Methodological procedure

The delimitation method used in the revision of the EMA study is essentially the same as that used in the first version, although some aspects have been simplified.

The delimitation process uses two basic information sources: a map database of EU municipalities and the statistical data on population, surface area and density of the administrative units of each country, equivalent to Eurostat's level 1 and 2 local administrative units (LAU): municipalities, *communes*, wards, *Gemeinden* or similar units. These sources are incorporated into a geographic information system that integrates them and provides the spatial analysis tools that make it possible to carry out delimitation processes.

The first step, once the records are homogenised and standardised, is to link the statistical data for each of Europe's 87,901 municipalities. Then we select those that have a population density equal to or greater than 250 inh/sq km; these constitute the urban municipalities (10,630 in the European countries studied) to which the delimitation process will subsequently be applied.

Then we select the cities that are eligible as metropolitan agglomeration core cities because they meet the established criteria of having a population greater than 100,000 and a density higher than 1,500 inh/sq km. Once these are identified, a succession of search procedures is put into operation for each city in order to find, out of all its contiguous urban municipalities, the one with the highest population density and incorporate it into its area, thus forming a new area. This procedure is repeated as many times as necessary until the agglomeration is complete, either because no further contiguous urban municipality can be found or because the population density of the agglomeration as a whole drops below the fixed threshold of 1,500 inh/sq km.

The results obtained with this procedure have defined 104 metropolitan agglomerations, i.e., 104 cities around which an urban sprawl has formed that meets the conditions laid down to detect a particular level of metropolitan intensity. They are urban areas made up of contiguous municipalities that form areas with a population greater than 250,000 and a density higher than 1,500

inh/sq km, and have at least one central core consisting of a city with more than 100,000 inhabitants, which provides the name of the agglomeration. Of Europe's 104 metropolitan agglomerations, which are made up of 3,211 urban municipalities, 35 have more than 1 million inhabitants, 27 between 500,000 and 1 million, and 42 fewer than half a million.

In an effort not to overlook any major urban entity, we ought to mention that there is a group of cities each with a population greater than 250,000 which the methodology used does not identify as metropolitan agglomerations. Although these cities constitute notable urban centres, they have low population densities and do not meet the required density criterion (over 1,500 inh/sq km). The 24 European cities in this situation are listed below.

At the end of the study, it is included a list of all European cities with a population greater than 100,000, and as such eligible to be considered core cities and to form a metropolitan agglomeration. For each of them we specify the basic demographic data and its urban characteristics in relation to the criteria established in this study.

Results of the 2000 and 2006 editions

One of the aims of updating this study is to analyse the evolution of the urban reality over the period 2000-2006 by comparing the results of the two editions. However, obviously we can only compare those countries that are common to both reports.

In general terms, most of the European countries have remained demographically steady. Austria and Belgium have grown a 3% and The Netherlands, Luxembourg and Ireland a 6, 7, and 8 % respectively. Spain has had the higher increase with the arrival of 4.4 millions of inhabitants that makes a 11% increment.

In the period studied there has been an increase in the population living in urban municipalities of six and a half million people, which amounts to a rise of 2.7% over the 2000 data. The statistical sources consulted confirm this rising trend and at the same time indicate that the growth corresponds to the migratory flows experienced by all of Europe.

In order to know if the population increments have been homogeneous among all the studied cities, the urban municipalities have been analysed according to municipality size. This analysis shows that the European urban configuration is characterised by the huge number of cities with fewer than 50,000 inhabitants. In these cities (8,423) is where the great majority of people live, more than 90 million, and have registered the

steepest increases in absolute numbers. The more significant growth rates, a 3.9%, are registered in the medium-small cities (495), those with a population between 50,000 and 100,000 inhabitants.

The population's increments in this group of medium and small cities confirm a trend towards more intense growth in the peripheries of big cities rather than in their centers. This data corroborate the deconcentration of the population to the metropolitan surroundings and emphasize the urban sprawl phenomenon in contrast with the compact city, model of the European city.

A comparative ranking of metropolitan agglomeration is drawn up with 81 MA, 7 being excluded in respect to the 2000 edition for various methodological reasons⁵. If we observe the demographic variations of the 81 agglomerations as a whole, we find that approximately half have grown larger and have gained population, while 25% have kept stable, without significant changes, and the remaining 25% have undergone population losses in both absolute and relative terms.

The demographic balance shows an increment of 2,3 million inhabitants, that is a 2% growth respect to the previous edition. Those agglomerations that show increases mostly do so by spreading out territorially and incorporating new urban municipalities around their edges rather than through the demographic increase of their built-up areas. There are 10 MA that grow more than 100,000 inhabitants and it should be noted that Madrid, Barcelona and Valencia are the cities with the stronger increments, with absolute demographic increases of 800,000, 500,000 and 226,000 inhabitants, a reflection of the Spanish demographic dynamism in recent years.

The MA losing population more significantly are Liverpool-Manchester (-400,000 inhab.), Rome (-330,000 inhab.), Cologne (-200,000 inhab.) and Sunderland (-140,000 inhab.). These losses can not be only attributed to demographic elements, for example the decrease of population density is some municipalities, but to the disappearing of municipal contiguities due to technical questions of the delimitation process.

If we focus in the study of all MA's central cities we can see that the demographic balance of the whole is positive on 350,000 inhabitants. Of all this group the Spanish cities are the ones that attract our attention: Madrid with 274,000 inhab. followed by Barcelona with 88,000 inhabitants and Valencia and Palma de Mallorca with 57,000 inhab. The cities with greater losses are the Italian: Roma with -160,000 inhab., and Torino and Genoa with -46,000 inhab.

Thus, if we study the comparable agglomerations we see that the most populated continues to be London, with more than 12 million inhabitants and a slight demographic increase over the previous edition. Then comes Paris, with an increase of 175,000 inhabitants; this change places it above the Cologne agglomeration, which has lost population. Liverpool-Manchester falls one position due to population loss and gives way to Amsterdam-Rotterdam, which has gained 269,000 inhabitants. Milan and Madrid maintain their respective positions, both of them increasing their populations both in number of inhabitants and in number of municipalities. Next, Barcelona occupies eighth place, moving ahead of Naples in the ranking: both cities have gained population, but whereas Barcelona has gained 510,000 inhabitants, Naples has grown by only 12,700.

In order to gain more insight into the dynamics at work in Europe's metropolitan areas over the last 6 years and furthermore observe their demographic evolution, it is also interesting to analyse the relationship between the core city and its immediate surroundings, and to see what changes it has undergone.

As a general trend, it can be observed that there is a predominant loss of weight by the core cities with respect to their surroundings: 60% of comparable MA peripheries gain weight in relation to their respective central cities. This phenomenon depicts a scenario of metropolitan deconcentration that is characteristic of the evolution of many European cities with residential mobility from the denser, more compact city centres towards the outskirts with looser, and more disperse residential fabrics and affordable properties. This phenomenon is perfectly visible in the agglomerations of Paris, Milan and Naples, where the core cities lose population and density to their areas of influence. There are other agglomerations where both the core cities and their surrounding areas gain population, but proportionally the increases are more intense in the metropolitan hinterland. This is the most frequent dynamic among agglomerations such as those of Lyon, Lisbon and Barcelona.

However, there is also another trend in the evolution of agglomerations, in which precisely the opposite phenomenon occurs, i.e., a certain process of urban concentration, noticeable in the increased weight of the core cities with respect to their surroundings. Brussels, Lille and Leipzig are examples of core cities that are gaining population and density while the rest of the municipalities in their agglomerations are losing weight. In yet other agglomerations, such as Stockholm, Aachen and Bordeaux, both the cores and their hinterlands gain weight, but the core city grows to a greater extent.

Urban growth phenomena in European cities tend to follow long-term cycles of demographic development. Although this study has been updated in a relatively short lapse of time (6 years), the analysis of the results points towards the existence of expansive urban dynamics in the agglomerations of the European Union.

Comparison with other sources

The difficulty of understanding the complexity of the urban reality advises a certain level of external validation of the results obtained in this study in order to contrast and, if possible, consolidate the methodology applied.

Out of the various reference sources consulted that provide information on urban dynamics, we have selected three works: the European Union's Urban Audit project, the Geopolis database supplied by the Statistical Institute of France, and the World Urbanization Prospects (WUP) study conducted by the United Nations on urban agglomerations. These three sources analyse the urban phenomenon according to different criteria. The Urban Audit uses functional criteria to define urban areas around major cities; Geopolis uses physical criteria of urban occupation of the territory such as morphological contiguity; and lastly, the United Nations WUP study combines both these methodological approaches by taking into account both contiguity and functional relations.

As the reader will see below, the delimitations obtained in the EMA study are in general a little larger than those based on physical criteria and a little smaller than those that use functional criteria.

Urban Audit – Eurostat

This is a joint project by the Directorate-General for Regional Policy (DG Regio) and Eurostat to facilitate the comparison of the urban areas of the EU. The Urban Audit contains information on 258 European cities and the quality of life of their inhabitants regarding the economy, employment, transport, education and so on. In addition to providing data on the core city, it also takes into consideration Larger Urban Zones (LUZ), which are defined as the "functional urban regions" (commuting zones) around the core city. In order to ensure data availability, both the Urban Audit and the EMA work with the existing administrative limits in the urban area under study.

In general, the values given in the Urban Audit are slightly higher in the cases of Berlin, Hamburg, Katowice, Munich, Warsaw and Turin, very similar for Madrid, Barcelona, Lisbon and Budapest, and lower for Milan, Naples and Lille. In the case of

the metropolises of Cologne, Liverpool-Manchester and Brussels-Antwerp, the results are fairly similar if compared with the sum of the different cities that make up the EMA agglomerations.

Geopolis 2005

This is a database supplied by the Statistical Institute of France, with information on the cities of the world. Its definition of metropolitan areas is based on physical criteria. It considers that an *urban unit* consists of one or more municipalities with a total population of more than 2,000 in which the built-up areas are separated by no more than 200 metres. If the urban unit spreads over more than one municipality, it forms an urban agglomeration. This study was conducted by the University of Avignon following and updating the methodology set forth in *NUREC - Atlas of Agglomerations in the EU* (1994).

In general terms, the population figures on agglomerations offered by Geopolis are lower than those obtained by the EMA, and are higher in only 7 cases. The biggest differences occur with the largest agglomerations, such as London, Amsterdam-Rotterdam, Liverpool-Manchester, Milan and Naples. These differences can be attributed to the fact the contiguity criteria for built-up urban areas are very restrictive, as 200 m is a relatively short distance within a consolidated urban fabric.

United Nations World Urbanization Prospects: The 2005 Revision

With a view to making demographic projections for urban and rural areas in all the world's countries, this study identifies those urban agglomerations that have a population of at least 750,000, plus all state capital cities. An *urban agglomeration* is defined as the actual population living in a contiguous territory with high urban densities, regardless of administrative divisions. A *metropolitan area* is considered as the contiguous territory with high levels of urban residential density, together with their surrounding areas, with lower densities, that are under the direct influence of a core city by means of public transportation, the road network, service's infrastructures, commuting, etc.

This definition of the urban agglomeration coincides with that in the present study, in that urban density is regarded as the defining factor of the urban phenomenon. In some cases the population figures given by the WUP study are very similar to the results obtained with the EMA methodology; for example, those for Paris, Madrid, Barcelona, Athens, Rome, Lisbon, Warsaw, Turin, Lyon, Porto and Prague. However, in other cases the figures diverge considerably, and in general

EMA study detects larger conurbations than those defined by the WUP, as in the cases of Cologne, Liverpool-Manchester, Brussels and Lille.

1 This report was published in Papers. *Regió Metropolitana de Barcelona*, No. 37. Institut d'Estudis Regionals i Metropolitans de Barcelona. Barcelona, June 2002.

2 Bulgaria and Romania are not included because they joined the EU on 1 January 2007, after the completion of the study.

3 The 10 countries that joined the EU in January 2004 (Poland, Hungary, Czech Republic, Slovakia, Slovenia, Lithuania, Latvia, Estonia, Cyprus and Malta) and Greece, which could not be included in the previous edition due to lack of data.

4 In the present edition, 1,263 administrative units with urban municipality condition have been added. In these municipalities, that belong to the countries that joined the EU in 2004, live 45 millions of inhabitants.

5 The cities that have been excluded are: Nancy because it has lost population and falls short of 100,000 inhabitants and Dresden because its density has fallen below 1,500 inh/sq km, neither city therefore reaching the threshold values established to be considered the "core city" of an MA; and Saint-Étienne, Halle, Kingston upon Hull, Plymouth and Stoke-on-Trent because they fail to form an agglomeration of more than 250,000 inhabitants around them, as a result of population decreases in the municipalities of which they are comprised.

DATA ON EUROPEAN LARGE METROPOLISES

Amsterdam-Rotterdam

General aspects

This agglomeration is very extensive: it has two dense cores (Amsterdam and Rotterdam), 12 cities with 500,000 to 100,000 inhabitants, and about 100 municipalities of various sizes. It accounts for 40% of the Dutch population and a quarter of the country's municipalities, and is known as the *Randstad*. No institutional structure exists that includes all the municipalities of the agglomeration.

Amsterdam City Council

The city council is governed by an executive comprising a *burgemeester* or mayor appointed by central government and a college of *wethouders* or aldermen elected by the municipal Council. The Council is formed by 45 members elected every 4 years and is the organ of political representation of the citizens. The city is divided into 14 neighbourhoods, each with its own neighbourhood council dealing with local services and affairs.

Rotterdam City Council

The municipal Council is the organ of political representation of the citizens and is made up of 45 members elected every 4 years. The Council elects the aldermen (*wethouders*), who together with the mayor (*burgemeester*), appointed by central government, form the executive power. The city is divided into 11 neighbourhoods, each with its own neighbourhood council dealing with local services and affairs.

Metropolitan area

There is no political structure to coordinate the policies of the metropolitan agglomeration. Central government has fostered several attempts at an integrated management of the metropolitan areas of Amsterdam and Rotterdam which have been unsuccessful (the creation of administrative bodies such as suburban councils and city-provinces). The Ministry of Housing, Spatial Planning and the Environment has, on the other hand, played a very active role in the regional planning of the *Randstad*, by passing several development plans and directives. Provinces (supramunicipal bodies) are also responsible for drafting regional plans. However, they have no political or legislative autonomy; their responsibilities are limited to exerting regulatory power, especially with reference to the areas of regional planning, the environment, infrastructures and regional development. Despite the absence of a metropolitan institution, this region functions as an integrated whole thanks to its infrastructures and communications (particularly the network of motorways). Cooperation exists without

institutionalisation, especially in economic promotion. For example, the *Regio Randstad* network, an association for the promotion of the competitiveness of the region, operated from 2002 to 2007.

Other bodies and public enterprises

GVB (Amsterdam Transport): public body that coordinates public transport in Amsterdam and its neighbouring cities. Includes bus, tram, underground and ferry services.

Rotterdam Development Corporation (OBR): local public agency that works to promote economic development, new investment and tourism in the city of Rotterdam.

Websites of interest

Amsterdam City Council:

www.amsterdam.nl

Rotterdam City Council: www.rotterdam.nl

GVB (Amsterdam Transport): www.gvb.nl

Rotterdam Development Corporation:

www.rotterdam.com

Athinai / Athens

General aspects

The agglomeration of the Greek capital has a central core, Athens, three more municipalities with a population of over 100,000, and some 60 municipalities of greatly varying sizes. The *Capodistrias* reform of 1997-98, which entailed the merging of municipalities and the restructuring of the regions and provinces (or prefectures), did not include the metropolitan agglomeration of Athens. This area still awaits a reform to simplify the coordination of metropolitan policies.

Athens City Council

The mayor is the highest authority and head of the municipal council, the organ of political representation of the citizens, which is formed by 41 councillors elected every 4 years. The city is divided into 7 districts, each with its own district council composed of 15 directly elected members acting in an advisory capacity.

Metropolitan area

There is no coordinating body for the metropolitan agglomeration, but rather a great institutional fragmentation that has been a subject of political debate for years, without any decision having been reached to simplify the institutional framework. Traditionally, the state has managed the affairs of the capital. In recent years there has been a process of decentralisation with the creation of administrative regions with certain powers (*peripheria*) and the introduction of a system whereby posts at the level of provinces (*nomoi*) are elected by the people. In practice, all levels of government (central, regional, provincial and local) are involved in metropolitan policies, without there being any true