

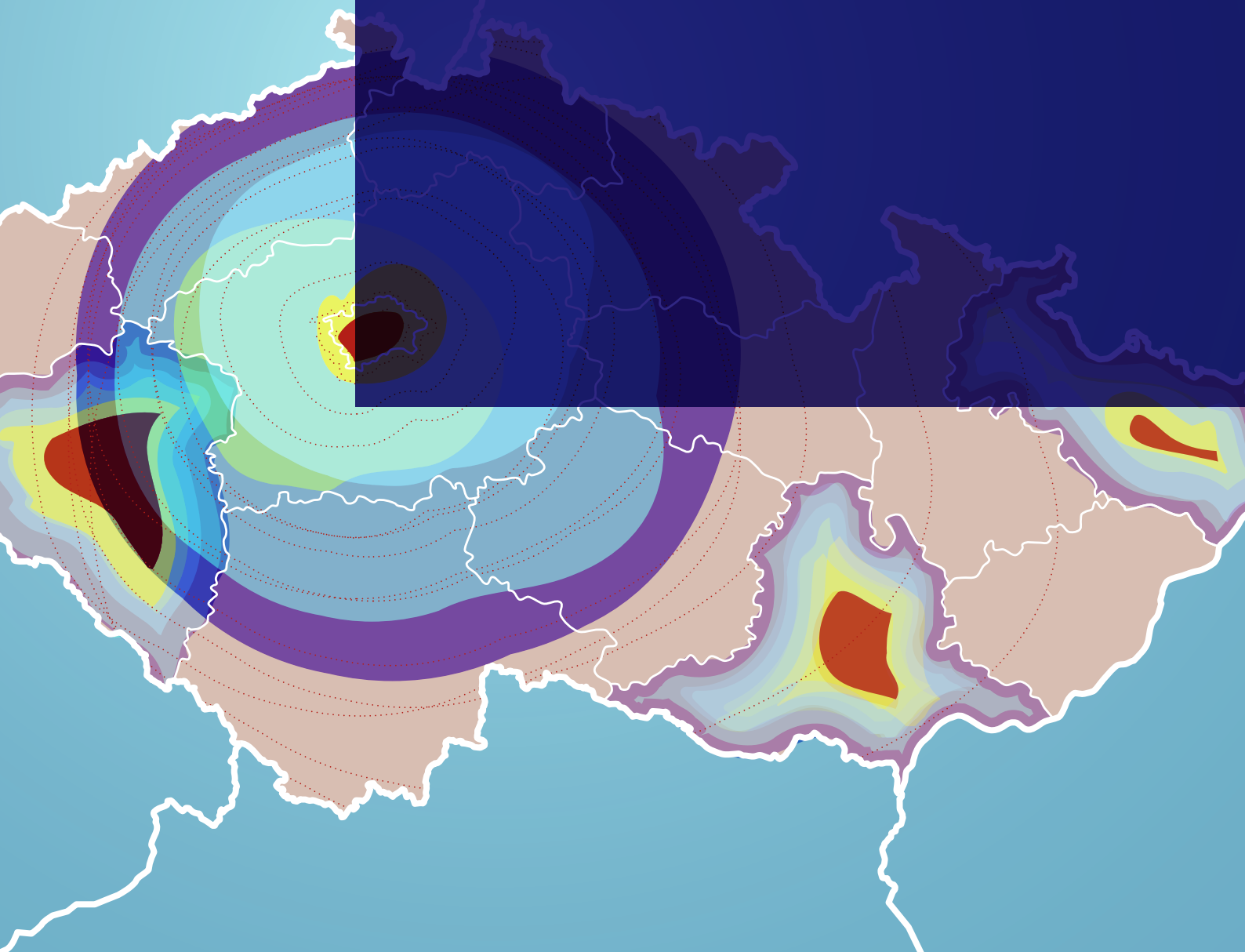


Co-financed by the European Regional Development Fund

Inspire Policy Making with Territorial Evidence

Transnational Brief

# Functionality in metropolitan areas





## Background

### Towards a functional approach in planning metropolitan development

Current urban transformations are fostering the development of metropolitan areas. This is leading to new spatial dynamics which have specific policy implications for urban planners and decision-makers in Europe. To address the challenges of the ongoing metropolitan development in Europe, we need a better understanding of the complex relations between city centres, suburbia and wider peripheries. A key concern in this regard is the response of traditional urban planning practices to the current urbanisation trends that go beyond the core-centric spatial patterns and beyond the jurisdictions of a single administrative authority namely “de facto city” versus “de jure city”. The functional urban developments across municipal borders form complex urban agglomerations and often embed multiple municipalities and sometimes regions or countries.

Local governments are faced with challenges such as suburbanisation, inefficient land use and fragmented spatial planning governance and need specific policy measures that allow them to:

- foster multilevel collaboration beyond a single administrative area;
- achieve a shared vision on strategic urban developments
- ensure efficient infrastructure and services to reduce suburbanisation
- gain political commitment and leadership to address functional developments across different territorial governance levels (cross-national, regional, local).

A major policy issue in the spatial development of cities and metropolitan areas relates to the need for a common vision and collaboration between multiple local authorities. Very seldom does a single local authority have the competency to address on its own the complex urban functions in a large metropolitan area (i.e. transport, land use development, public services).

With the new draft regulation elaborated by the European Commission<sup>1</sup> introducing the concept of “functional area”, the next generation of programmes post-2020 should embed clear approaches to addressing metropolitan developments across multiple administrative areas and local authorities and across different policy issues. This will require new governance models, institutional transformations and political commitment. Moreover, functional developments at metropolitan scale can go beyond regional and country borders which will require a functional planning approach.

This transnational brief reviews relevant concepts and findings developed within ESPON research that can stimulate the debate and policy making on practical approaches to the functional development of metropolitan areas. Key issues addressed include: (1) a definition of functional development, functional urban areas and metropolitan areas; (2) approaches to define the relevant territorial scale for addressing functional developments within metropolitan areas; (3) governance and institutional aspects in dealing with the challenges of functional urban areas and the planning of metropolitan areas.

### Defining functionality at the metropolitan scale

As previous ESPON research indicates, there is no one single definition of metropolitan areas that matches ongoing urbanisation trends, functional developments, administrative borders and existing planning practices and perceptions of actors (ESPON SPIMA<sup>2</sup>).

The most common definition of a metropolitan area is that of the OECD which defines a metropolitan area as a social, economic, geographical and political space characterised by shape, size and nature and by the interactions between individuals and organisations (OECD, 2013). Metropolitan areas can present a monocentric or, more often, a polycentric structure of an urban agglomeration. The latter is determined by the existence or formation of historically distinct and administratively and politically independent urban areas, located in close proximity that have the potential to be connected through urban infrastructure and

<sup>1</sup> Proposal for a regulation of the European Parliament and of the Council on the European Regional Development Fund and on the Cohesion Fund COM(2018) 372 final

<sup>2</sup> <https://www.espon.eu/metropolitan-areas>

urban functions. The merging of cities into metropolitan areas results, therefore, either from a process of incorporation when dominant cities extend their sphere of influence over a larger territory by incorporating smaller cities, or from the fusion of smaller cities as a result of a continuing upscaling of urban activities.

Both forms of metropolitan areas require spatial planning policy and instruments that adequately address the degree of integration between a variety of urban functions and between the local authorities of the core cities and surrounding municipalities (OECD, 2012). Key considerations to be made are whether these units are defined on the basis of administrative boundaries, continuity of the built-up area or functional measures such as commuting patterns and the size of components to be aggregated.

Several methodologies for identifying metropolitan areas have been developed at the national and international level (Brezzi et al., 2012). The definition of a metropolitan area will differ notably depending on the methodology used. Three common approaches are currently used to identify metropolitan areas and are presented in Table 1.

APPROACH	CHARACTERISTICS
<b>Administrative approach</b>	Defines metropolitan areas on the basis of legal boundaries and of additional criteria such as population size or population density. Metropolitan areas identified using this approach can be easily used by public administrations in terms of governance issues since metropolises are contained within administrative boundaries.
<b>Morphological approach</b>	Defines metropolitan areas based on the aggregation of continuous built-up areas that fit certain criteria of population density or the proportion of the municipalities covered by urban settlements. This approach provides a definition of metropolitan areas which is better suited for environmental issues such as land-use change or greenhouse gas emission or housing development and transportation policies. Currently, GIS techniques based on aerial or satellite imagery are being used to identify metropolitan areas worldwide.
<b>Functional approach</b>	Defines metropolitan areas on the basis of flows between a core area and its surrounding territories. Travel-to-work commuting flows represent the flow information generally used for this approach (Functional Urban Area). Small administrative units, such as municipalities or census tracts, are the territories generally used to construct the core and the hinterland of metropolitan areas.

**Table 1. Approaches for defining metropolitan areas.**

## Functional approach to metropolitan development

Of the different approaches, the functional approach captures more effectively the socio-economic characteristics of a city. The social and economic area of influence of metropolitan areas often does not fit within administrative boundaries or continuously built-up areas, being either larger or smaller. The functional approach, on the other hand, has the advantage of capturing urban area interactions, and thus identifies self-contained socio-economic urban units. Additionally, the functional approach is capable of defining the extension of metropolitan areas over time while the administrative approach captures static urban forms.

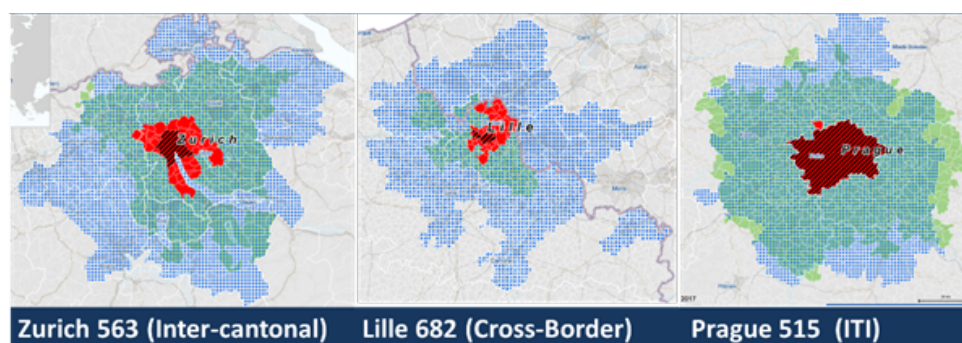
The functions-based definition of metropolitan areas (i.e. commuting patterns) proved to be effective in delineating both the densely inhabited urban cores and the hinterlands of the cities. This methodology can be extended to all countries for which commuting data from censuses or travel surveys are available. The wide application of this methodology can generate the basis for building new comparable indicators of urbanisation trends and the quality of life in cities and is becoming an increasingly important issue in the EU's Regional Policy agenda.

Against this background of the functional methodology, the OECD, in collaboration with the EU (Eurostat and the European Commission - DG REGIO), has developed a more harmonised definition of Functional Urban Areas (FUAs) as “functional economic units”, thus overcoming previous limitations linked to administrative units (Dijkstra & Poelman, 2012; Brezzi et al., 2012; OECD, 2013). Within this definition, the building blocks for delineating a FUA are the smallest local administrative units (LAU2) for which national commuting data is available. This methodology is an example of how geographic/morphologic information and census data can be used together to gain a better understanding of how urbanisation develops across administrative borders and territorial scales.

However, local authorities often use a variety of delineation approaches (ESPON SPIMA 2018). This results in a challenging decision-making process about the appropriate scale for addressing urban development. In order to counter this problem, the ESPON SPIMA (2018) project investigated and developed the definition of a “Metropolitan Development Area” (MDA). The MDA is a tailor-made approach for delineation of functional developments at the metropolitan scale. It captures several aspects of metropolitan development, including perceptions of the local authorities about the relevant spatial scale of the area and the key urban trends.

### MDA: a tailor-made functional approach to define a metropolitan area

The MDA is a functional approach for delineating a metropolitan area, developed from the study of ten metropolitan areas in Europe. The approach helps to define a metropolitan area by a tailor-made assessment of different spatial scales of urbanisation indicating key urban trends and based on the aggregation of local urban trends data at LAU2 level.



**Figure 1.** Examples of MDA delineation and number of municipalities (blue=MDA, green=FUA, red=MUA)

Next to the spatial extent of key urban trends (i.e. land use change, population growth, GDP, mobility and accessibility, environment and nature areas) the MDA also takes into account the perception of the local and regional authorities on the most recently considered or agreed upon spatial configuration of the metropolitan area. In some cases, the MDA is based on a legally binding territory with fixed formal borders, while in other cases, it has more fluid borders and/or lacks a clearly defined scale. Some MDAs are based on the extent of the transport infrastructure networks while others represent institutional arrangements between regions and municipalities such as existing strategic plans or collaborative arrangements between local actors.

The MDA approach uses GIS tools to map key urban trends per local administrative unit (LAU2) and makes a breakdown of data at the scale of a Morphological Urban Area (MUA) and a Functional Urban Area (FUA). While there are areas that are within the FUAs, some areas are outside the FUA and others have a number of FUAs that are outside the MDA (ESPON SPIMA 2018) (Figure 1). The MDA can be particularly beneficial in local policy making as it enables the relevance of the potential or already existing delineations of the area based on key urban trends and indicator to be assessed. Therefore, planners can assess the “spatial fit” of the metropolitan area delineation, visualise its overlap with FUAs and MUAs in order to support the spatial planning strategies. Moreover, such a functional mapping approach allows more extended analysis (if data is available) on the degree of urban sprawl with socio-economic indicators that can also include institutional and administrative factors in the spatial development and the formation of urban functional networks.

## Spatial configuration of functionality at the metropolitan scale

The MDA is a functional approach for delineating a metropolitan area, developed from the study of ten metropolitan areas in Europe. The approach helps to define a metropolitan area by a tailor-made assessment of different spatial scales of urbanisation indicating key urban trends and based on the aggregation of local urban trends data at LAU2 level.

The functionality of metropolitan areas is often based on its spatial configuration. This configuration indicates how people and economic activities are distributed across urban space and raises important issues of efficiency in terms of public service provision, face-to-face interactions among economic agents, transport, and environmental issues connected with patterns of land development (e.g. urban sprawl). Metropolitan areas can be characterised as: (1) monocentric, i.e. concentrated urban functions in a single dominant core urban area; (2) polycentric, i.e. one or more core urban areas with extended functions to secondary urban centres; or (3) a monocentric area with potential for polycentric development. Table 2 shows examples of ESPON research describing the types of areas and the structural relation between MDAs and FUAs.

METROPO- LITAN AREA	TYPE MA BASED ON SPATIAL CONFIGURATION	TYPE OF MA BASED ON THE RELATION OF THE SELECTED MDA TO THE FUA
Brno	Monocentric	Within the FUA; FUA is larger
Brussels	Polycentric	Partly overlapping, equal in size to FUA
Lille	Polycentric	Largely overlapping, much smaller than FUA
Lyon	Polycentric	Largely overlapping, much larger than FUA
Oslo-Akershus	Polycentric	Largely overlapping, larger than FUA
Prague	Monocentric	Overlapping, equal in size to FUA
Terrassa	Polycentric (satellite of Barcelona)	Within the FUA, much smaller than FUA
Turin	Polycentric	Largely overlapping, larger than FUA
Vienna	Monocentric	Within the FUA, much smaller than FUA
Zurich	Polycentric	Largely overlapping, much larger than FUA

**Table 2. Relation between MDA and FUA (ESPON, SPIMA, 2018)**

## Planning, governance and institutional aspects

### Planning

Metropolitan planning as such is not yet firmly institutionalised in the spatial planning systems and is allocated across the fragmented competences of national, regional and local levels. Metropolitan planning and governance are often a “problem without an owner”. Meanwhile, the core cities are keen on internalising the metropolitan spatial plans as they reflect mostly their own interests. The decentralisation and subsequent devolution of decision-making power to the local level has often led to a misinterpreted independence of the local authorities in spatial planning that has isolated the local authorities from a wider, regional, context of territorial governance. With the emergence of a stronger regionalisation and “metropolitisation” of urban territories there is a need to revive the interest of the local authorities in shared territorial governance. ESPON research indicates that planning for metropolitan areas should be based on key principles of spatial planning governance, embedding three key planning elements: strategic (metropolitan strategy), statutory (legal framework) and collaborative planning (Figure 2).

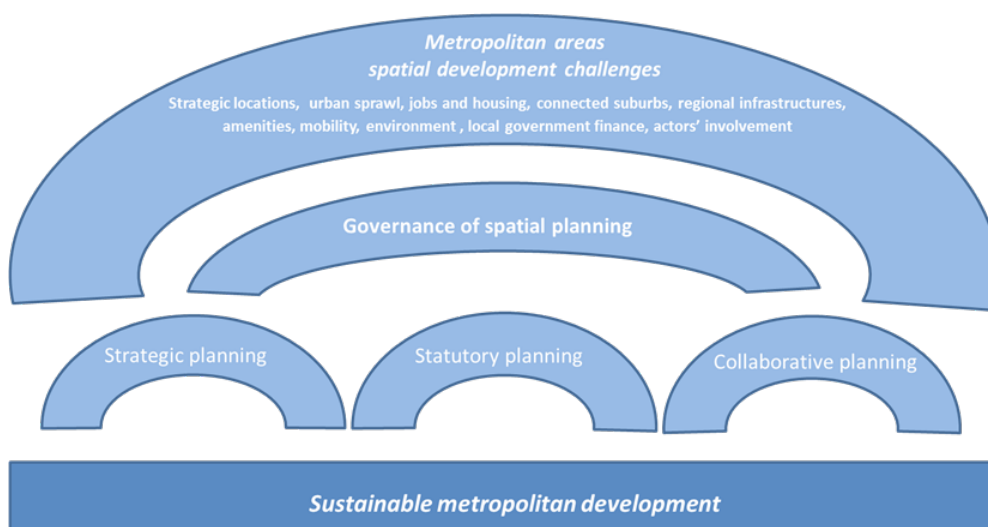


Figure 2. Spatial planning governance at metropolitan scale.

## Governance

As indicated by the experiences of metropolitan areas in Europe, a more effective metropolitan governance process is highly needed. This depends on the effective coordination and collaboration established between the formal hierarchical levels of governance (vertically) and across the policy issues and sectors (horizontally). Such a governance process will allow shifts from solely procedural and hierarchical decision-making to a more flexible model of governance such as shared governance.

Shared metropolitan governance requires sufficient capacities to reach agreements across differences as to what the challenges are, the purpose of the strategic spatial plans, and the way that the consequences of these strategies such as the costs and benefits of policy interventions should be addressed. Shared governance is key in developing metropolitan strategies and collaborative actions between a large number of stakeholders: municipalities, regional authorities and federal/national governments, business and civil society. Shared metropolitan governance is seen as the way forward in coping with tensions between decision-making processes and democratic power. Figure 3 illustrates a model of shared metropolitan governance, with potentially relevant interplays between the vertical and horizontal governmental structures and new forms of inter-governmental interactions.

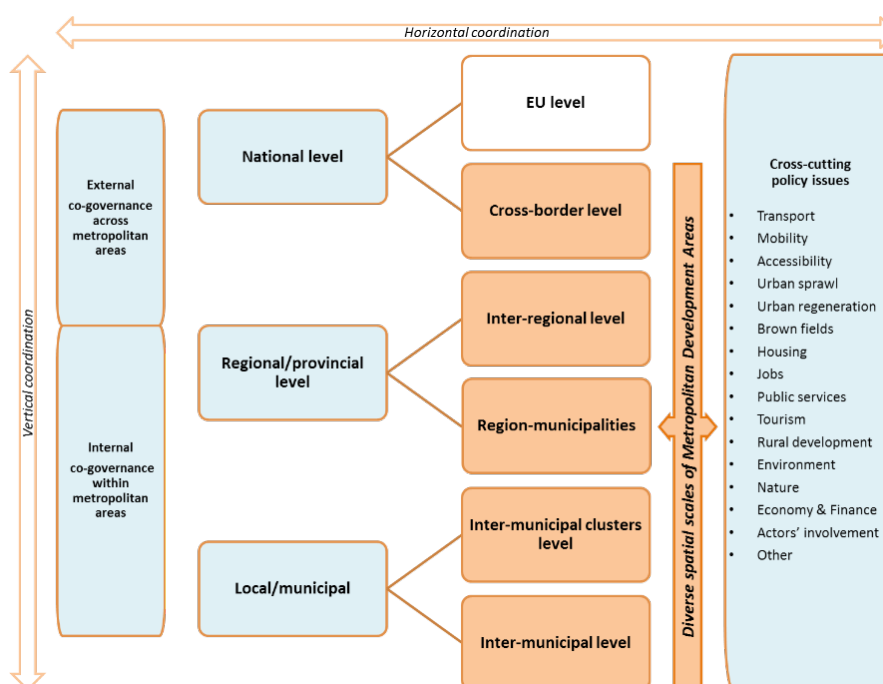


Figure 3. Shared governance across governmental levels (vertical) and policy issues (horizontal).

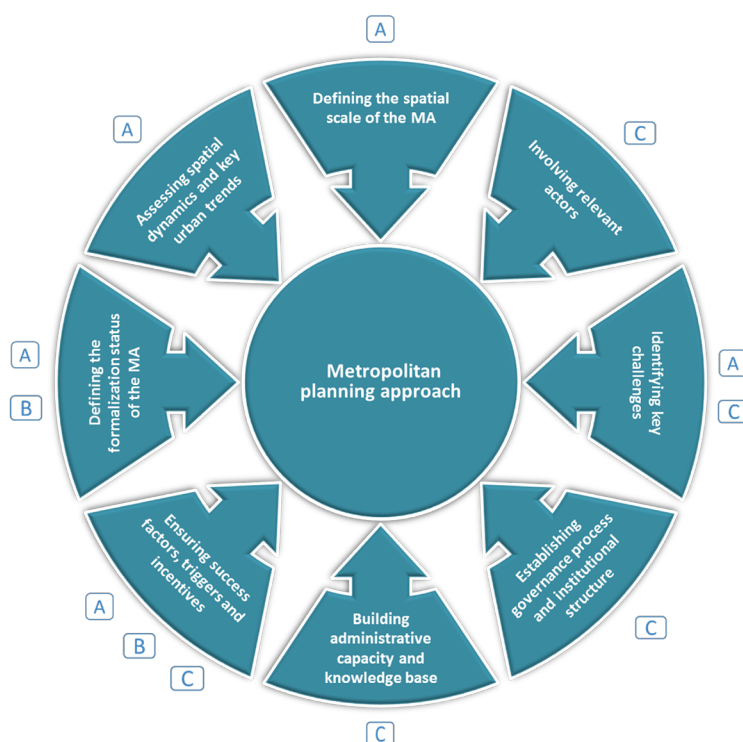


## Institutional aspects

Metropolitan planning and functional developments are not firmly established in the national, regional and local institutional frameworks. Among the different local authorities and regions there are three distinct ways in which metropolitan governance currently takes place, namely formal (based on legislation by a higher level of government), semi-formal (based on agreement between a number of actors and informal (based on informal collaborations. The status of the metropolitan areas varies greatly across Europe and represents a number of options for its legitimisation. In some cases, the formalisation of a straightforward metropolitan administrative level of authority seems to be the most suitable way forward. In other cases, co-governance between several administrative levels with a more informal and flexible status is seen to be the most workable. In other cases, a mix of approaches can be used.

## Guidance for metropolitan planning approach

The metropolitan planning approach developed by ESPON SPIMA (2018) aims to ensure a spatial fit between the spatial scales of functional developments and the institutional structures in place. The approach consists of eight action areas embedding strategic (A), statutory (B) and collaborative (C) planning (Figure 4).



**Figure 4.** Eight action areas in the metropolitan planning approach.

### Box 3. Benefits of a metropolitan planning approach.

- Achieving synergies and complementarity between sectoral policy issues
- Preventing the duplication of planning efforts by different authorities,
- Optimising current organisational structures and planning procedures.
- Achieving a greater understanding among actors, including political bodies, of the potential mutual benefits and joint solutions in coordinated action.
- Strengthening institutional capacities and knowledge-based evidence



Metropolitan planning approach promotes shared governance and other important principles such as making trade-offs between efficiency gains and responsiveness, accountability, coordinated division of responsibilities, stakeholder involvement, leadership by the local governments and legitimacy.

## Examples of a MDA in Prague and Brno

Among the metropolitan areas in Europe, Prague and Brno (the biggest in the Czech Republic) represent a unique experience with metropolitan planning and governance. The metropolitan areas have been delineated with the support of the EU funding instrument - Integrated Territorial Investments (ITI). The ITI projects supported the formation of temporary management bodies that assisted the development of metropolitan development strategies.

Prague and Brno have somewhat similar challenges to face, including continuing suburbanisation that is causing typical problems such as traffic intensification, shortages of public services and inefficient use of fertile land. Both areas are dealing with a transformation in population distribution and land use from core areas outwards where also affordable housing has become a key concern. The need for an optimal allocation of core infrastructure often results in tensions between municipalities. Brno is part of a larger region, i.e. the South Moravian Region. Prague is a region on its own surrounded by the region of Central Bohemia. The challenge for Prague is in dealing with tensions in institutional cooperation between the two regions (see Box 4). The most important issue for both areas is to follow up the strategic process initiated by the ITI-projects. This process should be based on shared governance between the institutional structures of the regions and the municipalities. In the next few years, a stronger information base (common dataset) needs to be developed to support the development of a firmly established metropolitan planning approach. The communication between relevant actors needs to be strengthened along with the development of metropolitan strategic plans. Within a changing institutional and political environment Prague and Brno have a new window of opportunity that may offer solutions and new perspectives in metropolitan planning.

### Box 4: Example of Prague's metropolitan area delineation functional method

The most recent delineation of Prague MA was made in 2014 within the Integrated Territorial Investment (ITI) activities. The strategic debate about the definition of the Prague MA, addressed the question whether a certain district belongs to the Prague metropolitan area or not. To answer this question a combination of three key indicators was applied:

- Commuting to work or school indicators (Census 2011)
- Residential suburbanisation zones(2012)
- The intensity of movements across 14 administrative districts of MEPs based on mobile phone data (2014)(MEP: a category of administrative units used for the delineation of the metropolitan area)
- The percentage of municipalities whose residents (the ones that spend their nights there) spend on average at least 1 hour (2 hours) in Prague a day – (2014 mobile phone data)

There were thresholds defined of how many of the municipalities in a certain district must reach a critical value in order to belong to Prague MA. The combined evaluation method indicated the inner and the outer perimeter of the metropolitan area. This has triggered strategic debate about the MA and has spurred coordinating actions among the experts and the ITI management.

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