



Co-financed by the European Regional Development Fund

Inspire Policy Making with Territorial Evidence

POLICY BRIEF

Europe's productive cities and metros

Since the very beginning, cities have been not only a place of trade, but also a place of production. Built on the premises that certain characteristics of the industrial sector are particularly important for growth and transformation, recent policy concepts have shifted the emphasis, recognising the importance of industry for regional development. The **New Leipzig Charter** recognises the multifaceted dimensions of European cities, and alongside the **just and green city**, the **productive city** occupies an equally important place, as it ensures a sound financial base for sustainable urban development.

For documenting and highlighting the importance of industry in the economic development of urban agglomerations, this policy brief uses ESPON evidence. In particular, it builds on the idea that industry both serves as a catalyst for research and innovation for local economic systems, being a major driver of productivity and wage growth, and ensures greater resilience when facing various crises.

Retaining industrial activities should constitute an important part of local policymakers' strategies in order to maintain a diversified economic sector or high wages, in general. Industrial policies still remain a process of exploring unknown territory, but should be open to new solutions, experiments and learning: a process in which policymakers and businesses should engage in an intensive dialogue. The results should be city/metro specific, bringing targeted approaches, and boosted by the dynamic of the green and digital transitions, whereby new technologies will change the face of manufacturing, deepening the complex and interdependent relationship with the service sector. The desired size of manufacturing or any other technologically advanced sector has to be in line with general policy goals and strategies with respect to resources and living conditions (ESPON, 2020b).

KEY POLICY MESSAGES

- **From an economic policy perspective:** there is a need to embrace new perspectives when trying to grasp the nature of contemporary manufacturing. There may be a fertile ground for industrial policies aiming to strengthen the metropolitan industrial base, as the decreases in industrial employment in city regions were primarily triggered by high productivity gains in metropolitan industry, and not by deindustrialisation processes. Maintaining high productivity levels will therefore be of central importance in order to keep production in cities.
- **From a structural policy perspective:** this will mean building on existing sectoral strengths of the respective city region, by encouraging spin-offs and knowledge spillovers. In order to promote productive activities in cities in the long run, it is essential to understand both the nature of the manufacturing and the reasons that contributed to its remaining in a specific city. Moreover, promoting an economically healthy environment for the total local economy that fosters innovation and entrepreneurial activities is advantageous to productive activities in the long term.
- **From an urban planning perspective:** identifying and developing sites that are appropriate for manufacturers at the various stages of production, based on regional strategic objectives, could encourage the return of industry to the city. However, first, cities should update their regulatory regimes, which, in most cases, encourage the conversion of industrial land for other functions, as models of mixed use of urban spaces compete with important social issues, such as affordable housing.

1 The innovation cycle in industry and its impact on urban agglomerations

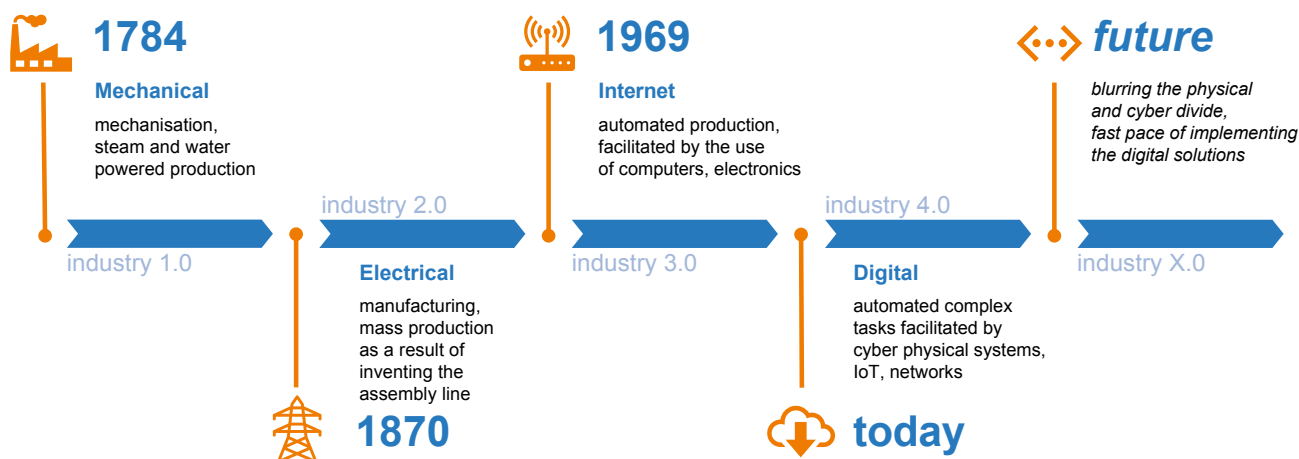
For the past two centuries the industrial revolutions have had profound impacts on urban residents' ways of living and of making a living, shaping both the urban structure and urban development overall. A literature review identifies four major turning points, when different phases of the industrial revolution were triggered, and establishes that we are currently going through the fourth industrial revolution.

The fourth revolution rests on wide-ranging technological fields such as artificial intelligence, robotics, the internet of things, autonomous vehicles, 3D printing, nanotechnology, biotechnology, and (green) energy production and storage, to name just a few. The feeling of disruption within the present technological revolution is deep, since, as is usually the case, it is very difficult to predict the outcome of a revolutionary (or evolutionary) trajectory. Possible developments of the socioeconomic technological transformations are still very uncertain, as extreme and alternative, with positive and negative depictions of the emerging future.

A positive vision of a worldwide interconnected, smart and automated society and production system, in which routinised and low-skilled jobs are replaced by machines, leaving to humankind the decision-making power of control over the machines, counterbalances a negative vision of a civilisation brought close to a 'near workless-world' (ESPON, 2020a).

So far, the fourth revolution has gained rapid momentum, already having significant effects on every aspect of our lives. Looking at the overall economic and technological context, this paper intends to provide a brief overview of the impact of the fourth industrial revolution on the territorial dimensions. It will look closely at the productive city and the role of manufacturing activities in developing long-term sustainable strategies, indicating the implications that the fourth revolution may have on urban and regional planning and policymaking.

Figure 1
The four industrial revolutions



Source: own elaboration

1.1

Deindustrialisation and reindustrialisation: manufacturing in the urban economy

Up until the crisis of 2008–2009, deindustrialisation and tertiarisation were mostly seen as unavoidable side effects of economic development. Maintaining a large manufacturing sector was considered outdated in a fundamental change towards a post-industrial, service-oriented economy, as, since the end of the 1970s, in developed countries, the production of physical goods has lost considerable importance in terms of output and employment. In most European countries, the extent of the erosion of this industry is quite impressive, and this weak manufacturing development was particularly noticeable in those urban areas where, overall, more favourable employment dynamics were recorded, which suggested a shift in weight from manufacturing towards other economic sectors, such as services.

Despite the fluctuations, core metro regions remain key locations, accommodating modern, innovative industries. This is due, on one hand, to the increasing integration of service and manufacturing functions in the industrial value chain, and, on the other hand, to the increasing use of hybrid industrial production methods. This has led to a situation in which growing demand for major small-scale, customised, production required within urban centres is doubled by complementary industry-related services that are located in the broader metropolitan areas; this has also led to an increase in demand for activities related to the implementation of the circular economy and the provision of public goods in urban centres.

The post-crisis experience has steered the reassessment of the role of urban manufacturing, as metropolitan areas with a strong industrial base seem to have been more resilient, suggesting that its presence is a prerequisite for innovation and growth (ESPON, 2020b).

In this favourable context, some industrial activities have returned to urban agglomerations in Europe, and, while the nature of this return differs substantially from what happened in the previous decades, one can still acknowledge it as an important revival. New urban production focuses on creative, knowledge-intensive and customised production, thriving on small-scale production that has remained within city borders; this has also happened for industries with local supply functions.

Interlinkages between industry and services are increasing, as the former begins to play a particularly important role in technological progress and globalisation (trade and outsourcing), recoupling production and consumption. This also means that incompatible industrial activities have already left European cities, as employment-, land- and emission-intensive production companies have largely moved away from the big cities. In turn, this has led to developing a closer functional relationship between the urban cores and their surrounding regions.

This situation has also reinforced differences between metro regions, as the patterns of industrial development differ clearly in smaller metro regions, as well as in regions that are not capitals (or that are located in countries that joined the EU in 2004 or later), highlighting the economic importance of institutions, history and policymaking. These different industry developments in different metropolitan areas reflect the different locational disadvantages and reveal the following.

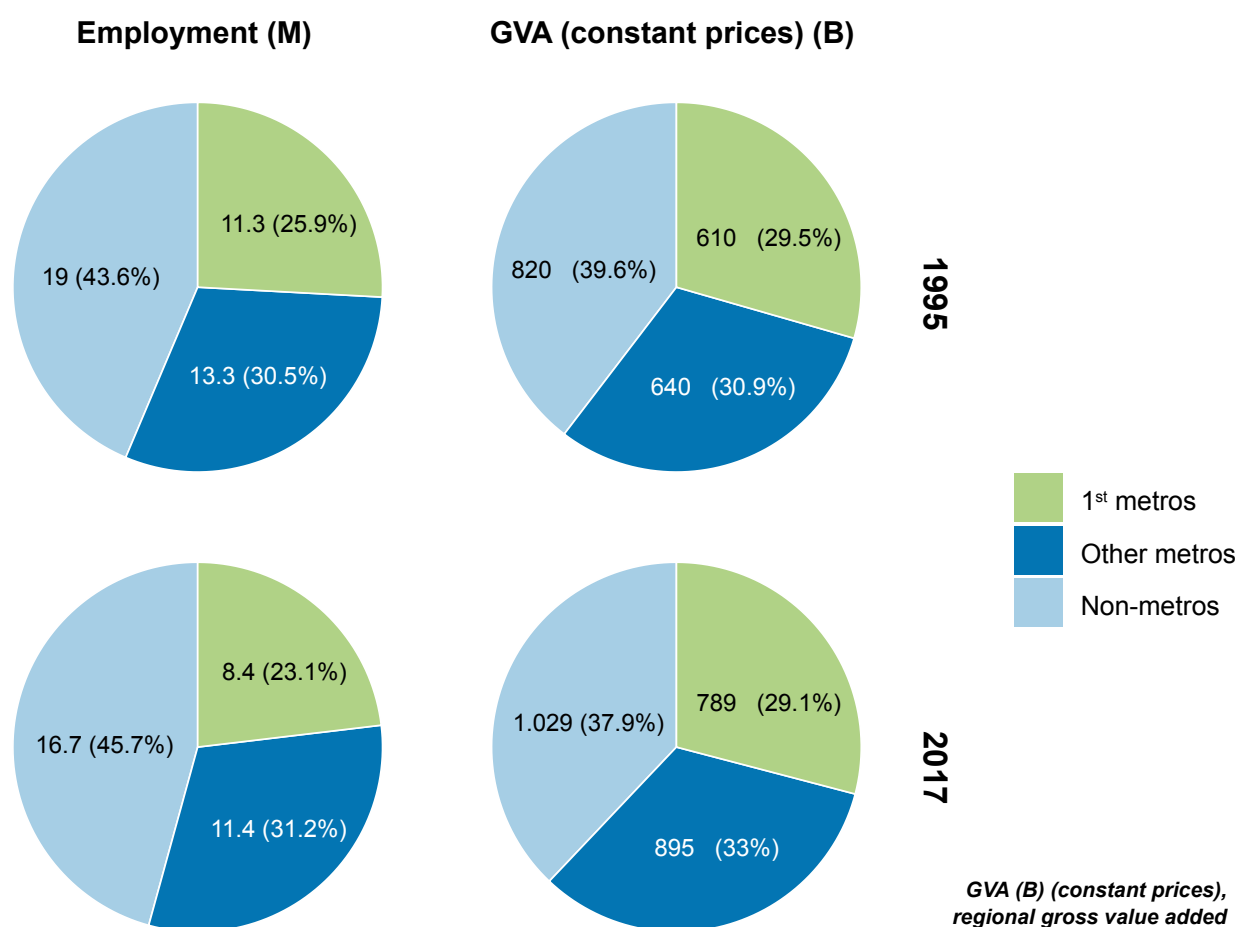
- Capital metropolitan areas are more specialised in public service provision, such as utilities (e.g. electricity, gas and water provision, remediation of waste materials) and logistics (e.g. wholesale trade, warehousing, water transport, air transport).
- By contrast, in metropolitan areas that are not capitals there is a (disproportionately) strong presence of different industries such as machinery and equipment, and of car, basic metals, textiles and leather production.
- Metro regions that are not capitals, and small and medium-sized metropolitan areas, did not experience as radical a decline in employment in production as large metropolitan areas did, keeping their much broader industrial bases (in terms of localised branches).

1.1.1

But why keep and develop industrial activities in cities/metropolitan regions?

Evidence shows that the majority of European industry is still located in metro regions (in a functional definition), in terms of both employment and value added (see Figure 2), and justifies a special focus on industrial development and its future prospects (ESPON, 2020b).

Figure 2
Importance of metropolitan regions¹ in European industry, 1995 and 2017



Source: ESPON (2020b), based on Annual Regional Database of the European Commission's Directorate General for Regional and Urban Policy (ARDECO) database (Joint Research Centre of the European Commission).

More than half (54%) of the workforce in European industry (Statistical Classification of Economic Activities in the European Community (NACE) B–E) is employed in metro regions, adding up to around 19.8 million people. They generate value added of approximately EUR 1.7 billion, and almost two thirds (64 %) of the industrial output of the whole EU. Within these metro regions, even the largest and most densely populated cities are still key locations for industrial production, where 8.4 million industrial workers generate approx. 30 % of European industry output. Nevertheless, the importance of metro regions as industrial locations seems to have hardly diminished in the last quarter century: while the metro regions' share in European industry employment has fallen by 3 percentage points since 1995, their share in industry output has risen slightly (+1 percentage point) (ESPON, 2020b).

Looking closely, certain characteristics of the industrial sector that are particularly important for regional or local growth and transformation can be identified: (1) higher growth in manufacturing is linked to higher growth in the total economy; (2) manufacturing labour productivity growth is positively correlated with manufacturing output due to learning effects; and (3) growth in manufacturing output ripples positively to productivity growth in the total economy (ESPON, 2020b).

Thus, from an economic perspective, it may be argued that the industrial sector is a source of important externalities for overall economic development. Some specific features of industry that play a special role in overall economic development are listed below, as they may legitimise sector-specific economic policies on a metropolitan scale.

¹ The ESPON MISTA (2020) project analysed 289 metropolitan regions, out of which the **first metros** category is composed of 58 'first-tier' metropolitan areas (i.e. regions that host national capital and/or have more than 1.5 million inhabitants). For more information, please visit: <https://www.espon.eu/mista>

- **Industry as a nucleus of research and innovation:** industry, and especially manufacturing, plays a central role in corporate research and innovation and thus in technological progress.
- **Industry as a productivity driver:** the advantages of increased efficiency are linked with metropolisation, pointing to (productivity-enhancing) agglomeration and to selection effects, as (especially in industry) only the most productive firms may be able to cope with the higher land and labour costs typically found in dense urban areas.
- **Industry and manufacturing as an inflation dampener:** higher efficiency gains in manufacturing are reflected directly in the prices of manufactured goods, expected to decline relative to services.
- **Industry as a well-paying employer:** higher efficiency should also be reflected in higher sectoral wages.
- **utilities and logistics sectors,** whose development is mainly influenced by the growing urban populations and the increased necessity for mobility and to access public services;
- **high-tech and high-skilled manufacturing branches,** whose development is mainly driven by high wage locations that also provide strong location advantages for technological innovations/transformations;
- **consumer-oriented branches** with a high degree of product differentiation, which also profit from population growth as well as the increased desire of consumers for locally produced goods.

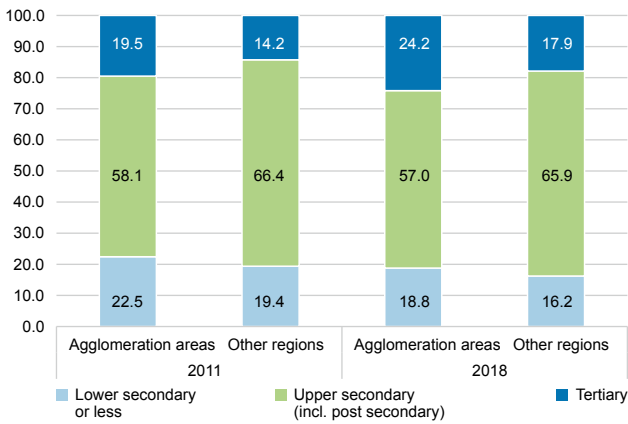
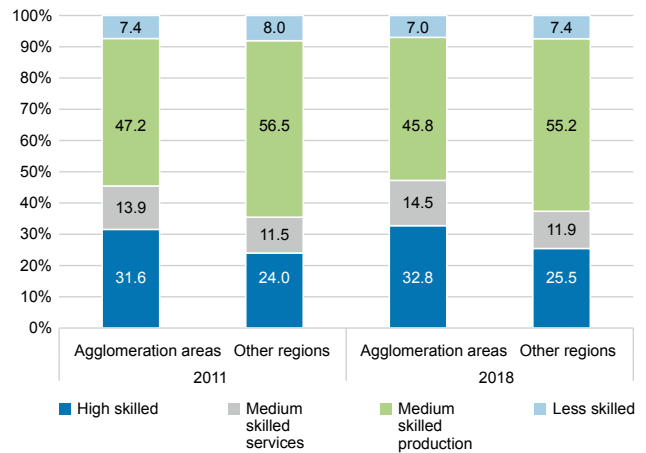
However, to explain the heterogeneity of the production sector within (and between) cities and metro regions, some important factors should be considered, such as products produced, geographical extent of markets, size of enterprises and technologies used. This leads to the assumption that in these areas it is unlikely to find equally favourable conditions for similar production industries, or even parts of them, and that different places' advantages can host or sustain only certain activities.

Recent economic growth trends suggest that some forms of production will return to city regions. The return of production to cities is not restricted to logistics, utilities and some high-tech industries, but also applies to some divisions in consumer goods production and other (less) technology-intensive sectors, being mainly affiliated with hand-crafted, design-oriented, high-quality production for local high-income demand.

As a result of increasing functional specialisation, for European cities, employment in production is much more strongly focused on service occupations than in other regions. Given this, it can be expected that the following sectors and branches are likely to experience notable growth rates in the future:

Moreover, urban agglomerations enable the diffusion of product–service systems and sharing economies, and industrial areas are the only possible setting for several circular economy strategies, ranging from industrial symbiosis schemes to product remanufacturing. These are more likely to spring up in territories where a diverse industrial ecosystem is already in place (industrial symbiosis) or where the products are originally manufactured (giving way to remanufacture as well). Industrial regions in decline may also find opportunities in the emerging markets for secondary raw materials thanks to the availability of industrial plots, old factories and other facilities that could host circular processes, including material storage/transformation/recovery (Tsui et al., 2020).

In addition, for some branches of manufacturing, increased regional and functional specialisation within production activities can be expected. This should give rise to a number of services and high-skilled jobs in urban regions (and in particular in their urban cores), and contribute to the continuous development of production activities in the environs of urban regions (rather than in their cores). This happens because, in metropolitan areas, manufacturing employment has been more strongly affected by the general trend towards an increasing share of high-skilled employment, and by the high share of employed people with a medium-level (upper secondary or vocational) education in urban manufacturing. As a consequence, in urban regions, manufacturing is a more important employer for both high-skilled and low-skilled workers than in other EU regions.

Figure 3**Employment structure of the productive sector in European agglomeration areas by qualification and occupation (2011 and 2018)****Education structure****Occupation structure**

Note: Figure excludes the following countries: Belgium, Bulgaria, Denmark, Greece, Hungary, Ireland, the Netherlands, Norway, Portugal, Spain, Sweden and the United Kingdom. Educational structure is classified as follows: high-skilled = International Standard Classification of Education (ISCED) 5 or more; medium-skilled = ISCED 3 and 4; low-skilled = ISCED 2 or less. Occupational structure is classified as follows: high-skilled = International Standard Classification of Occupations (ISCO) 1–3; medium-skilled services = ISCO 4 and 5; medium-skilled production = ISCO 6–8; low-skilled = ISCO 9.

Source: ESPON (2020b), based on EU-LFS microdata.

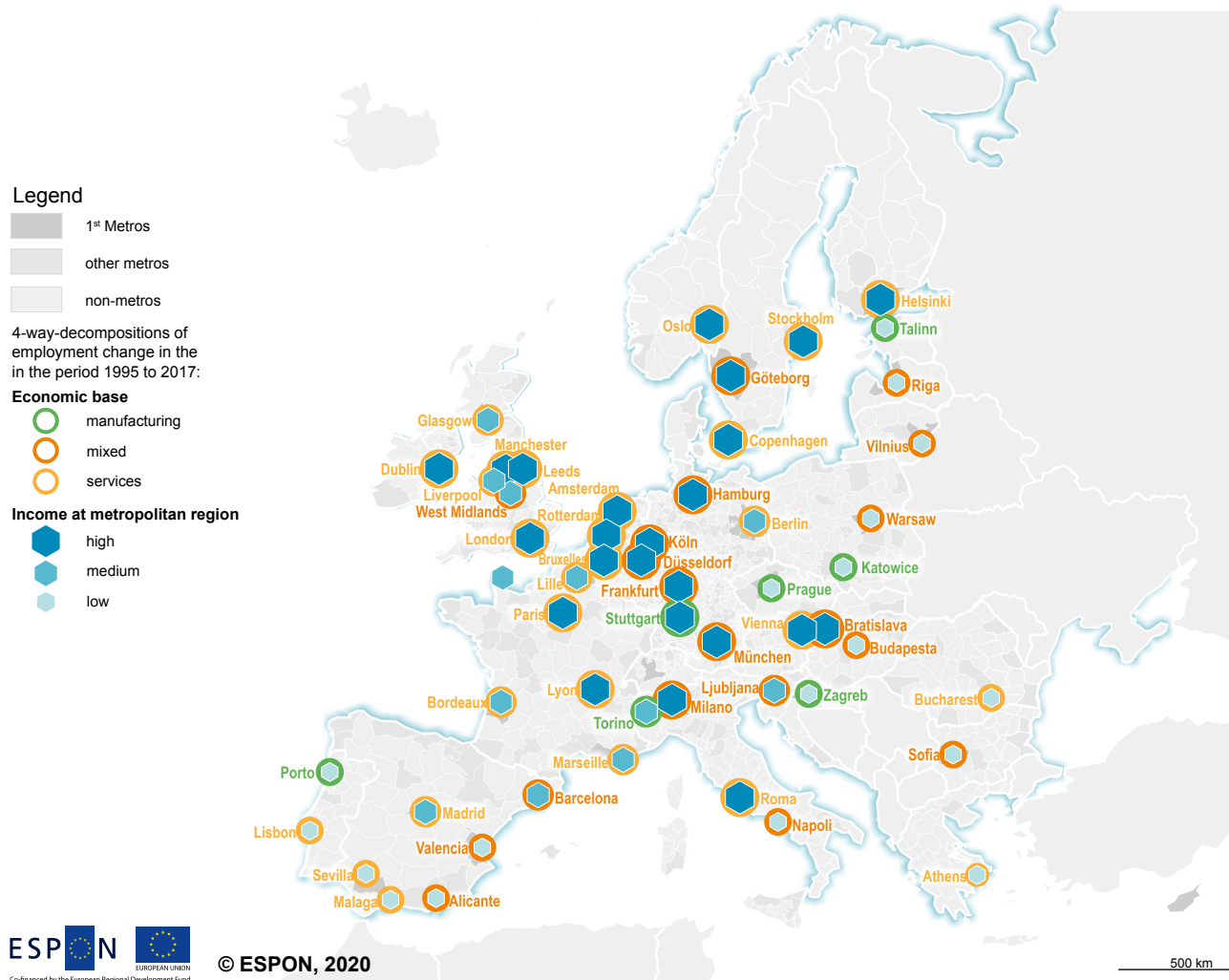
1.2**The manufacturing typology of metro regions**

Metropolitan areas could be clustered by types of industry development, looking at the components of employment change, thus indicating different paths for different economic policy approaches. For the metropolitan overview, ARDECO datasets were analysed, leading to a clustering of these areas in four subgroups, as follows: (1) industrial upgrading/strong metro environment, (2) industrial upgrading/weak metro environment, (3) deindustrialisation/strong metro environment and (4) deindustrialisation/weak metro environment. The analysis suggested that employment change was the result of industrial upgrading rather than of the deindustrialisation process (as sectoral job losses result solely from productivity gains and thus a decline in labour intensity) (ESPON, 2020b).

The analysis reflected that a quarter of Europe's major metro regions (including capitals and large cities) were characterised by industrial upgrading in the period 1995–2017, following a combination of productivity gains and an increasing industry share. In the remaining (40) major metro regions, deindustrialisation phenomena formed a significant (although usually small) component of industry employment change in 1995–2017. However, half of these regions benefited from a strong metropolitan environment that curbed industry employment losses. The rest combined deindustrialisation with a weak metro environment. This group mainly includes metro regions in the countries that joined the EU before 2004 with medium and higher income levels and (often) a mixed or service-based economic structure (ESPON, 2020b).

Map 1

Types of industry development in major European metro regions – economic base and metro income levels (results from four-way decompositions of employment change in the individual metro regions, 1995–2017)



© ESPON, 2020

500 km

Territorial level: NUTS 3 (version 2016)
 Source: ESPON MISTA Project, 2020
 Origin of data: Eurostat, 2019, ESPON 2019
 © Eurostat for administrative boundaries

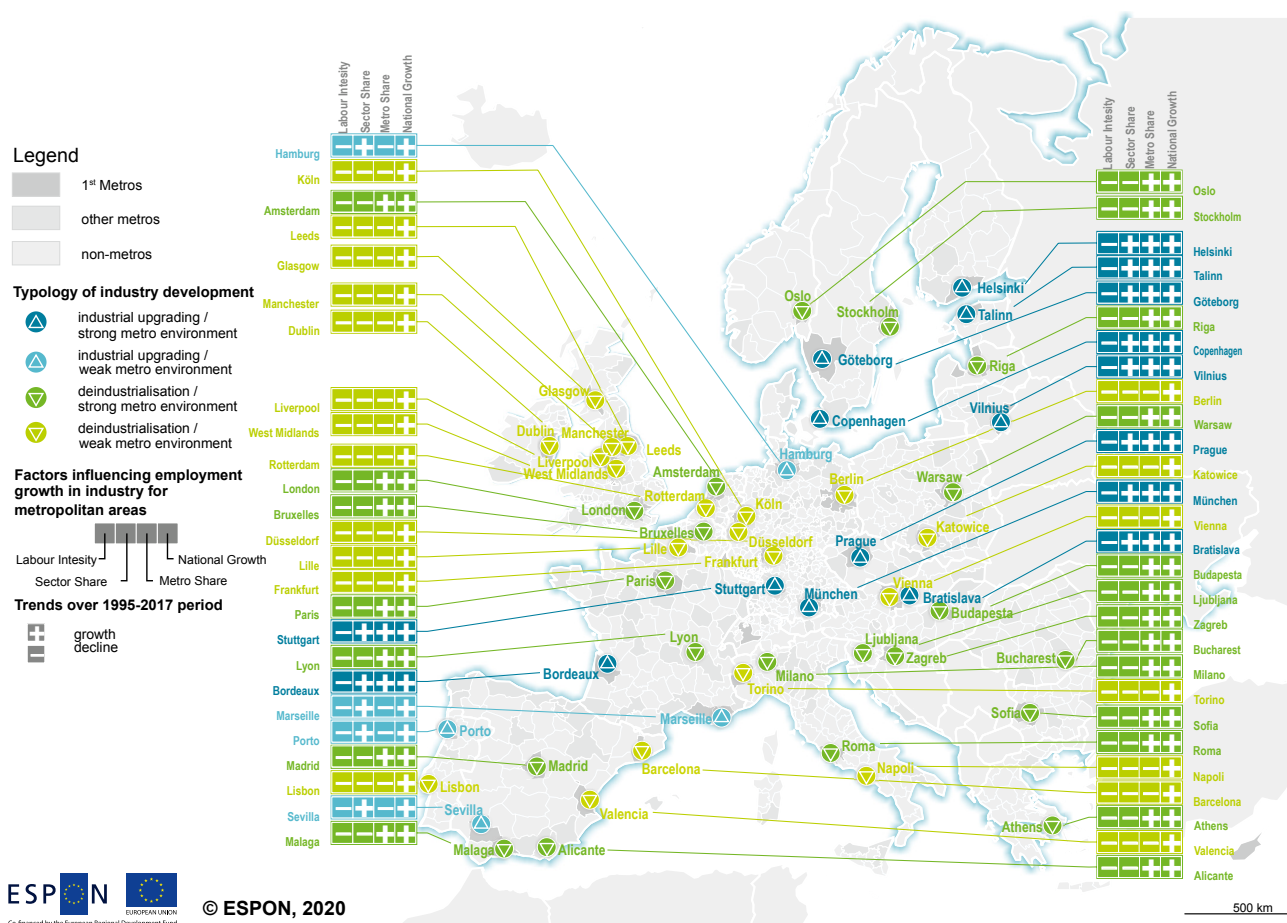
1.3 Factors influencing employment growth in industry for metropolitan areas

Over the entire period from 1995 to 2017, the employment share of industry declined in all major European metro regions. On a weighted average, some 10.4 % of total employment was still in industry in 2017. Such an averaging approach, however, masks the considerable differences in industrial development among the individual major metro regions. Although this metro group consist only of capitals and large agglomerations and should therefore be

reasonably homogeneous, industry's share in employment varies between 25 % and less than 5 %. In an effort to contribute to the ongoing discussion on the determinants of deindustrialisation, different types of industry development at the level of metro regions were distinguished, based on the importance of these determinants. Therefore, in order to decompose the overall employment changes in industry, it has been analysed by looking at four components that are related to (1) sector-specific output developments; (2) productivity gains; (3) the aggregate performance of the region in question; and (4) overall national developments (ESPON, 2020b).

Map 2

Types of industry development in major European metro regions: labour intensity, sector share, metro share and national growth (results from four-way decompositions of employment change in the individual metro regions, 1995–2017)



ESPON © ESPON, 2020

Territorial level: NUTS 3 (version 2016)
 Source: ESPON MISTA Project, 2020
 Origin of data: Eurostat, 2019, ESPON 2019
 ©Eurostat for administrative boundaries

What the results of the analysis done for the period 1995–2017 reveal is that there are considerable differences but also remarkable regularities in the determinants of employment change between individual metro regions. In particular these include the following (shown in Figure 4) (ESPON, 2020b).

- A positive economic growth effect (**dark blue**) can be identified for all major metro regions. This is because, over the last quarter century, economies of the EU countries have grown on average. The magnitude of this effect is in many cases quite considerable and highlights the importance of the national economic environment for regional industry development.
- The labour intensity effect (**light blue**) is negative throughout most metro regions. This indicates that changes in productivity play a decisive role in the development of industrial jobs in urban agglomerations. Here, too, the differences between metro regions are considerable, with

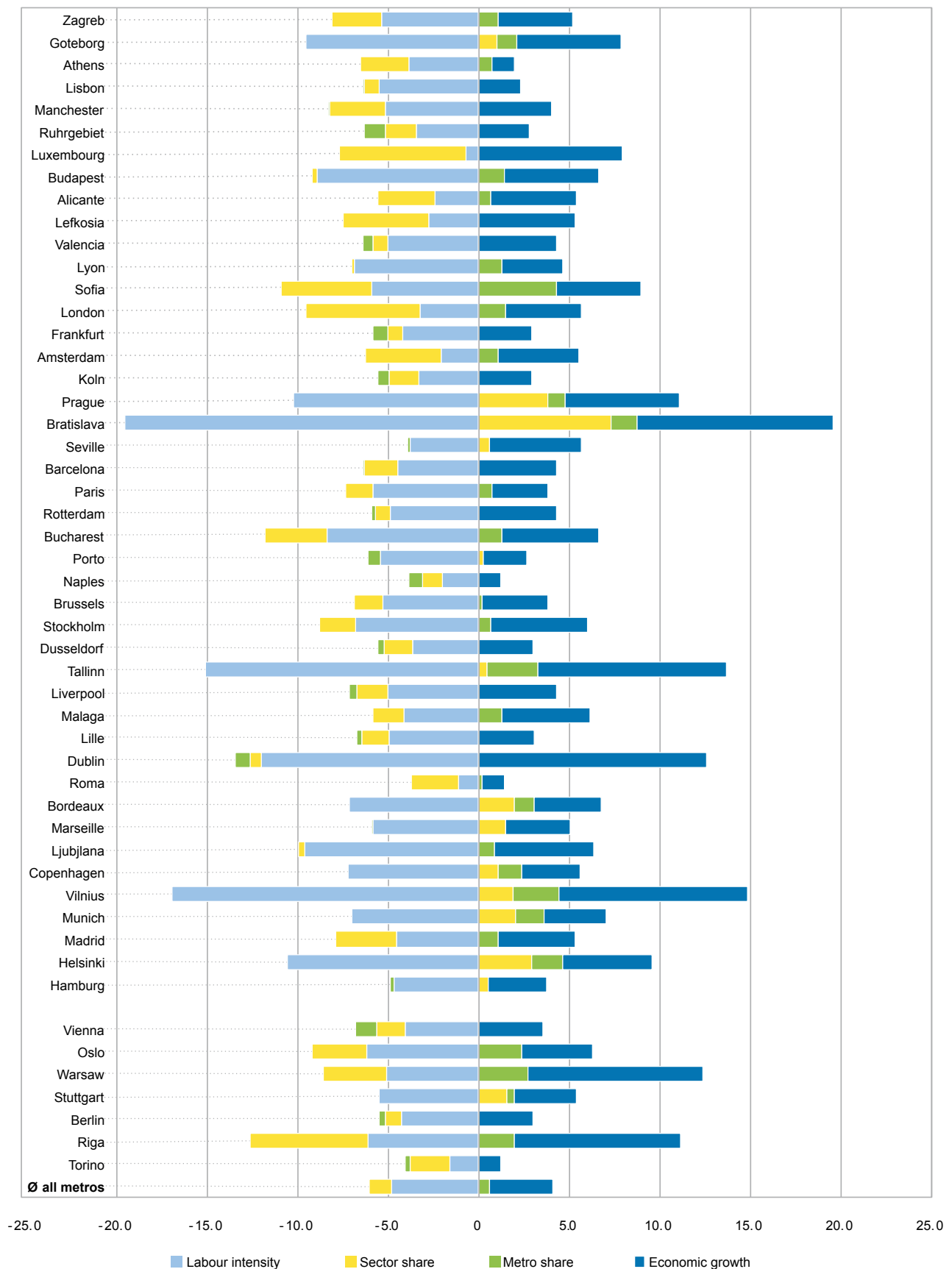
a particularly large (negative) contribution to industrial employment change in the agglomerations of the central and eastern European countries, where economic restructuring during the first years of transition to market economies involved significant labour shedding.

- Neither the sector share effect (**yellow**) nor the metro share effect (**green**) follows a single trend. In some metro regions, a favourable development of the industrial sector in terms of its output contributes to employment in the production of tangible goods (positive sector share effect), while in other metro regions (the majority) industry employment losses (also) result from this real deindustrialisation. Similarly, the dynamism of the metro environment supports the development of industry employment in some metro regions, while it clearly curbs it in others.

However, the overall picture is very heterogeneous, as Figure 4 shows.

Figure 4

Components of employment change in metropolitan industry: individual major metro regions four-way decomposition, 1995–2017; contributions of the different components (percentage points)



Source: ESPON (2020b), based on the ARDECO database (Joint Research Centre of the European Commission).

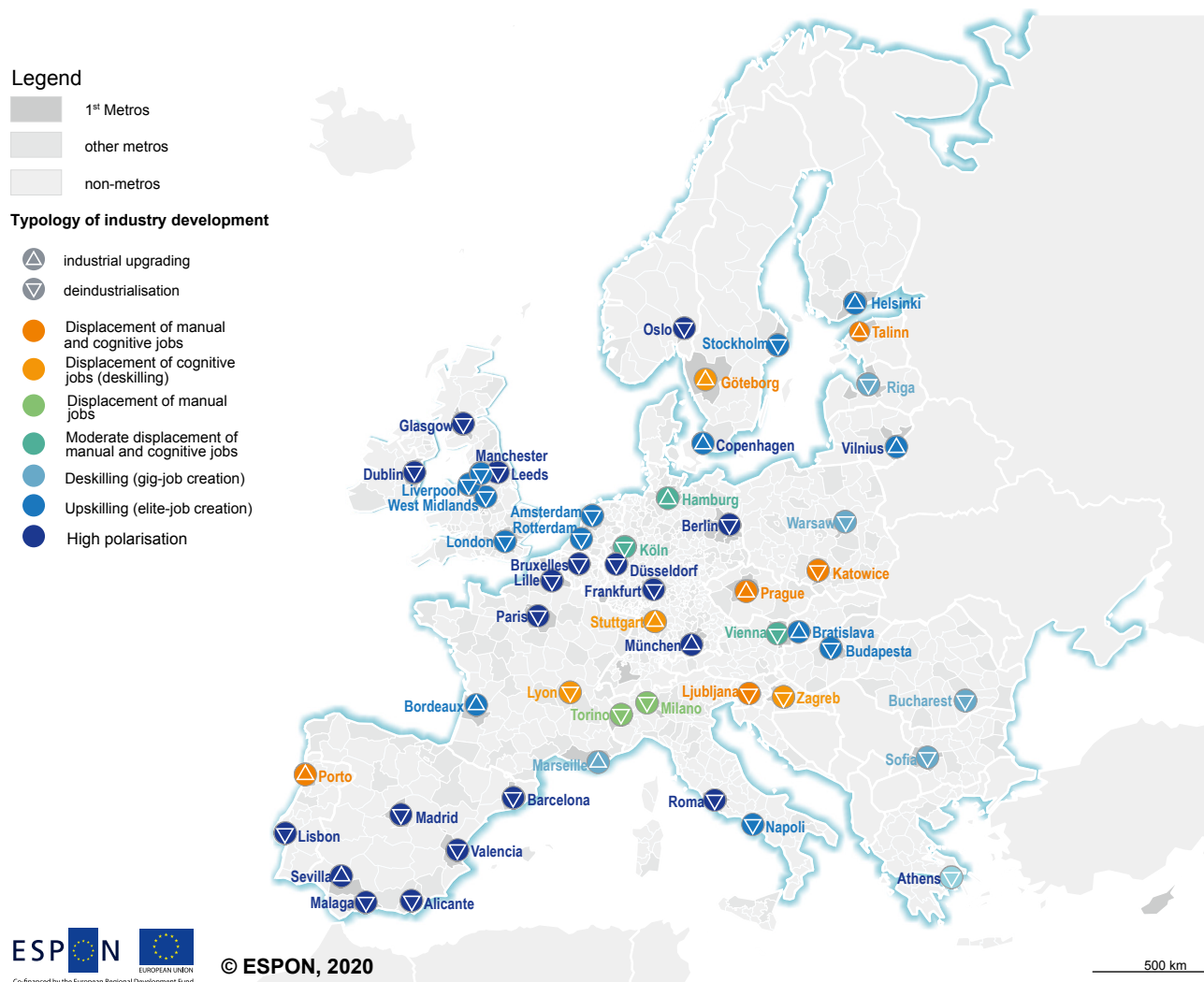
BOX 1

The social impact of technological transformation in the manufacturing sector (ESPON, 2020a)

Regarding employment², it seems that only the adoption of robots in ‘technology’ sectors generates a negative impact, suggesting that robots replace jobs when adopted in technology-manufacturing sectors. The introduction of robots in ‘induced’ sectors does displace low-skilled jobs. This effect is especially strong in manufacturing-related transformations, i.e. in Industry 4.0 and robotisation patterns. This effect is prevalent across all regions, regardless of their transformation pattern, highlighting complex intraregional sectoral interdependencies. But the introduction of robots in both technology and induced sectors also displaces high-skilled jobs, with an especially strong effect in manufacturing-related transformations, confirming the potential of the new technologies to replace jobs that require a high level of skills and competencies and are less routinised. This regional typology is extremely important, as the regional context significantly favours spillovers towards metropolitan areas.

Map 3

Regional job creation and job displacement by skill level, 2013–2018 (regional extrapolation to metropolitan level)



© ESPON, 2020

Territorial level: NUTS 3 (version 2016)
 Source: ESPON MISTA 2020, ESPON T4 2019
 Origin of data: Eurostat, 2019, ESPON 2019
 © Eurostat for administrative boundaries

² For more information, please visit: <https://www.espon.eu/transregecon>

Within each type of technological transformation, the impact of technology adoption on low-skilled and high-skilled employment is certainly not evenly distributed and can vary according to the intensity of technology adoption. By looking at the degree of adoption and its impact on employment at the same time within each type of technological transformation, regions can be defined as follows.

- **Regions with no adoption and no labour market effects** have both an adoption and an impact below the average of their group. The regional economy and labour markets seem neutral with respect to the ongoing technological transformation.
 - **Regions with high adoption but limited labour market effects** have a lower than average impact and a higher than average adoption rate. In the case of manufacturing-related technological transformations, displacement of jobs through robots takes place but only moderately, suggesting the existence of sheltered labour markets and limited displacement of jobs.
 - **Regions with high labour market effects** have an impact higher than the group average, regardless of their adoption rate, suggesting the existence of local labour markets that are highly responsive to technology adoption. In the case of manufacturing-related technological transformations, displacement of jobs through robots takes place at high rates.
-

2 Preserving land for manufacturing in metropolitan areas

Every region has its own unique composition of land uses and trying to understand the dominant features is more than challenging. Using ESPON evidence (ESPON, 2020c) it was possible to group European NUTS 3 regions in order to reveal their urban characteristics, dividing them into categories relevant for the topic of productive cities. Thus a clustering³ becomes available, generating the following results.

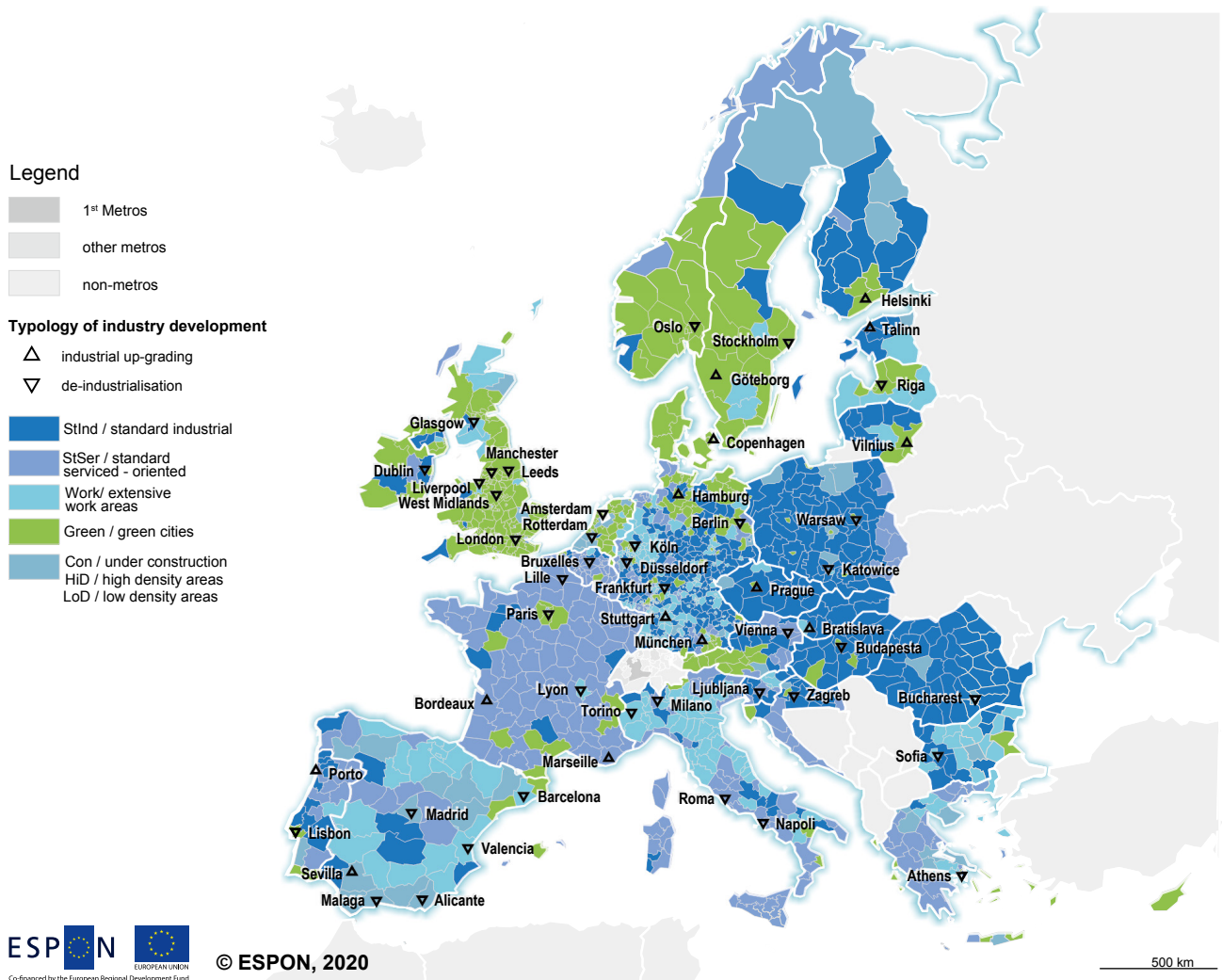
1. Standard industrial cities (StInd) are characterised by a large proportion of urban fabric and a large industrial sector, even though with a small proportion of industrial and commercial areas. This cluster is the most predominant and, in many respects, close to the average for all European regions.
2. Standard service-oriented cities (StSer) are quite similar to cluster 1 with respect to urban land use, but differ in that they have a large service sector and an above-average proportion of infrastructure.
3. Cities with extensive work areas (Work) are characterised by a high proportion of land devoted to industrial and commercial areas; they also have a large industrial sector.
4. Green cities (Green) are characterised by a high proportion of urban green and a large service sector.
5. Other categories:
 - (I) Cities under construction (Con) are characterised by high proportions of construction areas and infrastructure.
 - (II) High-density areas (HiD) (a very small cluster comprised of 15 cities) are highly urbanised NUTS 3 regions, with the highest densities of population and employment, the highest proportion of urban fabric and the largest service sector.
 - (III) Low-density regions (LoD) are characterised by the highest proportions of mineral extraction and dump sites, as well as the lowest densities of population and employment and a relatively large industrial sector.

Although it might be argued that many of the metropolitan areas analysed are comprised in the first two clusters (StInd and StSer), the land reserved for commercial or industrial use forms a relatively low proportion of urban land use – only 14 % of total land use across Europe. These approximately 3 million ha of land (or 0.6 % of all land) are not all the land used for production of GVA, but still account for a large share of GVA in industry and commerce, and of jobs. Although countries do not run on industry and services alone, these sectors do get efficient economic returns from land.

However, retaining industrial activities in urban areas is becoming more challenging, and changes in land use across the ESPON territory favour other urban functions, according to analysis of Corine datasets (over the 2000–2018 period). Out of the 1.26 million ha converted to urban use in the 2000–2018 period, 450 000 ha was first registered as construction sites. Of the approximately 1.2 million ha that was converted to some form of urban use, 35 % became urban fabric (predominantly residential), 37 % industrial (including business parks and offices), 17 % infrastructure (including airports) and 11 % urban green. Over time, the rate of urbanisation has decelerated somewhat (partially explained by the EU expansion of 2004 and the economic crisis of 2008).

³ The cluster analysis of NUTS 3 regions is based on the composition of their artificial land use classes (urban fabric, industrial/commercial, infrastructure, urban green, construction and mineral extraction/dump sites) as well as their population density and proportion of jobs in agriculture, industry, construction and services. A complete discussion of methodology and results is provided in Annex 1 of the SUPER report (ESPON, 2020c). For more information, please visit: <https://www.espon.eu/super>

Map 4 NUTS 3 clusters based on their dominant features in land use



© ESPON, 2020

Territorial level: NUTS 3 (version 2016)
Source: ESPON MISTA, 2019, ESPON SUPER, 2019
Origin of data: Eurostat, 2019, ESPON 2019
©Eurostat for administrative boundaries

In 2000–2018, the industrial area per capita indicator saw an overall increase in metropolitan areas despite deindustrialisation trends or population decrease in core cities (a trend manifested over two to four decades). This growth is largely related to developments in employment, with some variations: (1) increase in industrial/commercial land and decrease in employment; (2) decrease in employment and no decrease in industrial/commercial land; (3) increase in employment and limited increase in industrial/commercial land.

Summing up, the presence and development of industrial (and manufacturing) activities within urban areas are largely influenced by a variety of factors, of which perhaps the most predominant are:

- increased demand for residential development (caused by population growth) that is consuming industrial land and, in turn, endangers the number and diversity of jobs;
- increased real estate pressure, reflected in the price of industrial land in urban areas or high rental costs;
- dispersed locations of manufacturing, requiring a commuting workforce, which can cause traffic problems;
- lack of (suitable) plots of land for new development and limited contiguous developable land;
- abandoned brownfield sites as a result of industry leaving or undergoing a strong reorganisation of production, which are becoming subject to either conversion or environmental regeneration.

3

Main takeaways for the future of productive cities and metros

The relationship between cities and industry, and manufacturing in particular, is as complex as it is long-lasting, and is dependent, to a certain extent, on innovation cycles. Changing its path and processes, industry has left many urban areas. As a result, in the past few decades a wave promoting urban renewal and revitalisation has swept Europe, as the spaces that were once occupied by industrial activities have become vacant. Land-use policies have become dominated by residential, office, commercial or leisure functions, leaving behind the productive ones. This attitude has pushed the productive economy out of the city to its outskirts or further afield within the metropolitan areas, sometimes creating a spatial and social mismatch between living and working conditions.

However, policymakers or local stakeholders are reevaluating this approach, as, in the face of various crises, urban agglomerations that retained their productive activities within reach and promoted a diversified economy proved to be far resilient and have been able to soften the aftershocks.

The evidence collected validates the role of industry as a 'productivity machine' for metro regions, which continues to be of central importance to the European production system as a whole. At the same time, it has shown that there are significant differences (ESPON, 2020b):

- **Within and between metro regions:** the vast heterogeneity between city types, paired with the equally huge differences between individual metro regions, highlights the importance of city-specific, distinctive factors that may be rooted in specific policies, institutional differences or history affecting industrial development (e.g. the presence of the headquarters of a large industrial enterprise).
- **Within and between industry groups:** the heterogeneity of the production sector in metro regions should be carefully considered in terms of the products produced, geographical extent of markets, size of enterprises and technologies used. This leads to the expectation that there may be substantial heterogeneity among cities with respect to their locational advantages, and evidence confirms that this applies to both the specialisation of metro regions in specific production branches and functional specialisation within branches. In addition, growth trends suggest that some sectors of manufacturing activities have been growing more rapidly in urban regions than the European average. Interestingly, these sectors correlate less strongly with high technology and qualifications and

more strongly with consumption close to production. While these branches are still small in shares of urban employment, this suggests that some parts of production may indeed be returning to metro regions.

Adaptiveness and flexibility seem to be traits that the manufacturing sector should exhibit more and more, in the context of the twin digital and green transitions. The same traits should be exhibited by policymakers, and, as the **New Leipzig Charter** points out, 'many cities are already taking over responsibility and leading the transformation towards just, green and productive societies. This requires good leadership, solid urban governance and resources ... but also requires place-based approach as an overarching principle for all places and policy sectors, strengthened cooperation between and across spatial levels', between cities and their functional areas.

From an **economic policy perspective**, there is a need to embrace new perspectives when trying to grasp the nature of contemporary manufacturing. There may be fertile ground for industrial policies aiming to strengthen the metropolitan industrial base, as some of the evidence presented shows that the decreases in industrial employment in city regions were primarily triggered by high productivity gains in metropolitan industry. At the same time, however, it is likely that these productivity advantages will determine the degree of city regions' competitiveness, despite high incomes, especially in technology- and knowledge-intensive productive activities. Maintaining high productivity levels will therefore be of central importance in order to keep production in cities, even if this implies slowing down the rate of employment. Policymakers are aware that 'one-size-fits-all' solutions are unlikely to appear, given the considerable heterogeneity in industry developments in both regional and sectoral terms.

From an **urban planning perspective**, identifying and developing sites that are appropriate for manufacturers at various stages (e.g. prototyping, start-up, scale-up, small and medium-sized enterprise) based on regional strategic objectives could encourage the return of industry to the city. However, first, cities should update their regulatory regimes, which, in most cases, encourage the conversion of industrial land to other functions. From a planning perspective, models of mixed use of urban spaces compete with issues such as affordable housing, as this topic is currently high on the political agenda (ESPON, 2020b).

In tackling the increased number of challenges, cities that have considered manufacturing and productive activities essential to the local economy have referred to several approaches (ESPON, 2020b).

- Some cities imposed stronger zoning on specific areas, by identifying and reclaiming 'opportunity zones' or 'innovation districts'; creating such areas is very much dependent on the availability of government-owned land. These areas may be subject to additional public investment, branding or support in order to attract a cluster of public or private activities.
- Some cities turned to industrial intensification, in cases where industrial land is expensive and multistorey buildings become viable. Industrial intensification could include a mix of business types (such as heavier manufacturing on the ground floors and lighter functions on the upper floors) or it could be a mix of activity types (such as a mix of manufacturing and logistics).
- Some cities turned towards industrial co-location, whereby a traditionally industrial activity cohabits the same building or block with non-industrial activities (such as housing, social services, e.g. a school, or commercial activities). While traditional manufacturing could be accommodated in both industrial intensification and co-location projects, modern norms, development costs and assumed real estate values have limited the number of contemporary examples. However, private developers will aim to avoid the mix.

From a **structural policy perspective**, this will mean building on existing sectoral strengths of the city region in question, by encouraging spin-offs and knowledge spillovers. In order to promote productive activities in cities in the long run, it is essential to understand both the nature of the manufacturing and the reasons that contributed to its remaining in a specific city. In addition, promoting an economically healthy environment for the total local economy that fosters innovation and entrepreneurial activities is advantageous to productive activities in the long run. This requires (ESPON, 2020b):

- city-specific solutions based on intensive dialogue between policymakers, businesses, economists and urban planners, and a change in perspective from factories, capital equipment and technology towards a people-based view of cities as productive platforms;
- tools for supporting productive activities within metropolitan strategies, such as developing strategies to encourage densification, or giving financial incentives for businesses to address certain urban issues (e.g. the circular economy and resource management);

- resources for monitoring policy success (or failure) including the development of data sources that make an improved evidence base possible for policymaking, providing comparable regional and granular sectoral data on employment, GVA and the number of enterprises in all EU countries.

3.1 Main recommendations

Over recent years, cities have shown a more active role in supporting manufacturing and industrial areas in a range of ways. For example, public investment has been used to stimulate the business development of local start-ups, by funding research and innovation that suits local clusters, subsidising low-skilled job creation and investing in space for manufacturing businesses that the city depends on. This shows that some public authorities are prepared to 'correct' the market and diversify local economies. The challenge is to refresh the possible roles and tools available to public administrations in addressing ambitions for industrial areas and manufacturing.

The scale of action can affect the level of influence over the production cycle, as this is divided into several steps. Some of these are more inclined to be located closer to the core city; other activities are more inclined to be located in the metropolitan or functional urban area. Going beyond administrative boundaries, there is a clear need to match the needs of urban manufacturing with possibilities of and opportunities for land use and land availability. To embrace the opportunities of metro regions, where land is more affordable, accessibility and transport costs are lower, labour costs may be more affordable and there is less likelihood of conflict between land uses, it is clear that there is a strong need to coordinate metro regions and govern them in an efficient manner.

Building on the core principles that the New Leipzig Charter proposes for **empowering cities to transform** – (1) *design sustainable urban development*, (2) *follow an integrated approach*, (3) *use participatory methods* and (4) *enhance multilevel governance* – the following key policy recommendations could be formulated.

National level



- Develop public–private partnerships and agencies that can play a crucial role in developing competitive and market-ready projects.
- Develop effective tools for supporting productive activities, which could be used within metropolitan strategies.
- Develop nation-specific and region-specific policies, according to the Industry 4.0 technological transformation profile of the region.
- Tailor policies to the technological transformation present in the region and keep a balance among technological knowledge, new business opportunities and stimulation of new opportunities.
- Concentrate on supporting laggard regions especially that have the potential to become islands of innovation, creating and supporting the necessary creativity.
- Develop education and training policies in order to ensure the future supply of Industry 4.0 professionals, enhancing cooperation between universities and industries in the design of curricula, or attracting professionals.

Metropolitan level



- Provide more in-depth data analysis and clear insights into industrial processes and their impacts at urban/metropolitan level, to underpin strategic decision-making regarding the value of production activities within the local economy.
- Engage constantly with the production activities and processes in order to facilitate strategic knowledge production and exchange.
- Support production systems, as these are most effective at a metropolitan scale and could support territories and actors to better contribute to the wider value chain.

- Develop integrated strategic visions to attract businesses, based on new trans-scalar alliances.
- Explore new tools to support economic development for industrial land, manufacturing and productive activities.
- Support small municipalities, providing the knowledge, competencies and resources needed to interpret and implement metropolitan plans.
- Reinforce territorial cohesion by using compensation or equalisation mechanisms.
- Support brownfield regeneration processes, in order to reduce sprawl and urban blight.
- Create suitable conditions for innovation in order to ensure industrial development.

Local level



- Take a strategic position on the most effective use of industrial land in order to embed manufacturing and productive activities within the local economy.
- Enhance dialogue with other municipalities and develop partnerships to facilitate innovation processes in industrial relocation.
- Strengthen the local authority's role in preserving industry and production space and land in the city.
- Use the capacity for dialogue and negotiation to activate or steer the market.
- Rezone industrial land, through intensification, mixed-use buildings and strong zoning controls.
- Redevelop brownfield industrial land in order to modernise links to a city's local industrial heritage economy while also providing space for compatible demands for space.

References

ESPON EGTC, 2020a. **T4 – Territorial Trends in Technological Transformations**. ESPON European Grouping of Territorial Cooperation; single beneficiary of the ESPON 2020 programme, Luxembourg. (Available at <https://www.espon.eu/transregecon>.)

ESPON EGTC, 2020b. **MISTA – Metropolitan Industrial Strategies & Economic Sprawl**. ESPON European Grouping of Territorial Cooperation; single beneficiary of the ESPON 2020 programme, Luxembourg. (Available at <https://www.espon.eu/mista>.)

ESPON EGTC, 2020b. **SUPER – Sustainable Urbanization and land-use Practices in European Regions**. ESPON European Grouping of Territorial Cooperation; single beneficiary of the ESPON 2020 programme, Luxembourg. (Available at <https://www.espon.eu/super>.)

Eurofound, 2019. *The future of manufacturing in Europe*, Luxembourg: Publications Office of the European Union (<https://www.eurofound.europa.eu/publications/report/2019/the-future-of-manufacturing-in-europe>).

European Commission, 2010. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – An integrated industrial policy for the globalisation era: Putting competitiveness and sustainability at centre stage, COM(2010)614 (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52010DC0614>).

European Commission, 2012. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – A stronger European industry for growth and economic recovery, COM(2012)582 final (<https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0582:FIN:EN:PDF>).

European Commission (2020), Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – A new industrial strategy for Europe, COM(2020)102 final (https://ec.europa.eu/knowledge4policy/publication/communication-com2020102-new-industrial-strategy-europe_en).

Tsui, T., Peck, D., Geldermans, B. and van Timmeren, A., 2020. 'The role of urban manufacturing for a circular economy in cities', *Sustainability* 2021, 13(1): 23 (<https://dx.doi.org/10.3390/su13010023>).

The New Leipzig Charter - The transformative power of cities for the common good, adopted at the Informal Ministerial Meeting on Urban Matters under German Presidency on 30 November 2020. (Available at https://ec.europa.eu/regional_policy/en/newsroom/news/2020/12/12-08-2020-new-leipzig-charter-the-transformative-power-of-cities-for-the-common-good.)



EUROPEAN UNION

Co-financed by the European Regional Development Fund

Inspire Policy Making with Territorial Evidence

espon.eu



ESPON 2020

ESPON EGTC
11 Avenue John F. Kennedy
L-1855 Luxembourg
Phone: +352 20 600 280
Email: info@espon.eu
www.espon.eu

The ESPON EGTC is the Single Beneficiary of the ESPON 2020 Cooperation Programme. The Single Operation within the programme is implemented by the ESPON EGTC and co-financed by the European Regional Development Fund, the EU Member States and the Partner States, Iceland, Liechtenstein, Norway, Switzerland and the United Kingdom.

Disclaimer

This delivery does not necessarily reflect the opinion of the members of the ESPON 2020 Monitoring Committee.

ISBN: 978-2-919816-21-7

© ESPON 2021

Editorial team

Wiktoria Szydarowski, Nicolas Rossignol, Silvia Pierik and Andreea China

Published in December 2021

