

Priority Sector Report: Mobility Technologies



November 2019

This report was prepared for the European Commission by Mika Naumanen (VTT Technical Research Center of Finland and Statistics Finland) as part of the service contract for the European Observatory for Clusters and Industrial Change under guidance from European Commission officials.

Deloitte.



For further information, please contact: European Commission Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, Unit F.2: Advanced Technologies, Clusters and Social Economy per email on: grow-clusters@ec.europa.eu

URL: <https://www.clustercollaboration.eu/eu-initiatives/european-cluster-observatory>

DISCLAIMER

The information and views set out in this publication are those of the author(s) and do not necessarily reflect the official opinion of EASME or of the Commission. Neither EASME, nor the Commission can guarantee the accuracy of the data included in this study. Neither EASME, nor the Commission or any person acting on their behalf may be held responsible for the use which may be made of the information contained therein.

Luxembourg: Publications Office of the European Union, 2019.

© European Union, 2019. All rights reserved. Certain parts are licensed under conditions to the EU. Reproduction is authorized provided the source is acknowledged.

Table of Contents

Introduction.....	4
Overview	6
Employment	10
Enterprises.....	12
Regional specialisation	19
Summary	25
Appendix.....	27

Introduction

The Cluster Mapping Approach

Clusters can be understood as regional concentrations of economic activities in related industries connected through local linkages and spill-overs that have long been known to be a competitive feature of the market economy.¹ They have a distinct geographic dimension, reflecting the dynamics of local spill-overs. Clusters are also deeply embedded in a broader geographic context: they serve markets elsewhere and are connected to other clusters with complementary strengths in regional, interregional or global value chains. This mirrors the role of location for firms: while local conditions provide the unique context for building distinct capabilities and strategic positions, national and international linkages are critical to access other markets, suppliers, and collaboration partner. Cluster mapping is of high relevance to better understand the key competences of the cluster actors as well as to review to what extent the respective value chain is properly covered.

This report provides perspectives on Mobility Technologies emerging industry clusters across Europe. Clean, connected and autonomous vehicles is one of the six identified key strategic value chains the Strategic Forum on Important Projects of Common European Interest (IPCEI) selected in February 2019.² The report uses firm-level data to supplement the statistical data from national and EU statistical offices. This firm-based data significantly increases the robustness of the data, especially in countries like Germany that collect regional data through samples rather than reporting by all firms. It also enables performance of individual firms to be tracked over time, gaining more granular insights into patterns of entrepreneurship, SME performance and new business creation. The report is based on an enriched dataset that is compiled specifically for analysing detailed patterns of cluster evolution. The core of the dataset is the firm- and plant-level data sources from the Orbis database supplied by Bureau van Dijk. This dataset provides detailed data on the economic performance of firms. It allows the usage of data of firms' turnover, wage bill, capital, materials and employment, totalling more than 1 billion data points. The coverage is very good in most countries in Europe, and especially for larger limited liability companies. However, for some countries, significant gaps are still present.

¹ Ketels, C. 2017. Cluster Mapping as Tool for Development, Harvard Business School, http://www.hbs.edu/faculty/Publication%20Files/Cluster%20Mapping%20as%20a%20Tool%20for%20Development%20report%20ISC%20WP%20version%2010-10-17_c46d2cf1-41ed-43c0-bfd8-932957a4ceda.pdf

² European Commission. 2019. Strengthening Strategic Value Chains for a future-ready EU Industry - report of the Strategic Forum for Important Projects of Common European Interest. <https://ec.europa.eu/docsroom/documents/37824>

Cluster stars per region

In this report, strong clusters are being determined based on the cluster mapping approach of the European Panorama for Clusters and Industrial Change, which measures cluster size, specialisation, employee productivity for the relevant industries in a region (covering three established categories), complemented by two new categories capturing SME (high-growth) performance and the innovation potential of global frontier firms.

The extent to which regional clusters in traded sectoral industries or cross-sectoral (emerging) industries have achieved this specialised critical mass is shown by allocating them up to three so-called cluster stars for each of these following five categories:

- *Size*: total number of employees in full time equivalent units in the industry for a given region. This indicator captures general employment performance.
- *Specialisation*: degree of specialisation measured by a location quotient. The location quotient is calculated as the ratio between the industry's share of total employment in a given region and the industry's share of total employment in all the countries considered in the analysis. Values above unity imply high regional specialisation, with a location quotient of two corresponding to twice as many employees in an industry than would be expected if all employment was distributed evenly.
- *Productivity*: measured by the average wage per employee (in full time equivalent units) in the region as a proxy. Productivity levels vary across Europe and these differences are captured as part of the cluster strength measure.
- *SME performance*: measured by number of high growth firms (i.e. have annual growth rates of 20% for turnover or employment over 3 years while respecting minimum employment and turnover size thresholds). Research suggests that entrepreneurial activity drives economic growth and entrepreneurship policy in highly developed economies should focus on potentially fast-growing new firms.
- *Innovation leaders*: measured by the number of global frontier firms (i.e. top 5% of firms in terms of productivity (value added based, per employee), calculated by adding up factor incomes going to employees (wages) and to capital owners (profits) within any given emerging industry or traded cluster and year) as the relative strength of such firms probably reflects their capacity to innovate, rapidly diffuse and replicate cutting-edge ideas.

For the first three dimensions, a star is assigned to regions that are in the top 20 per cent in Europe. These stars are then summed up for the years 2014, 2015 and 2016 to arrive at the final star rating, with a maximum of three stars for each category. For the latter two dimensions, three stars are assigned to regions that are in the top 20 per cent in Europe in the years 2008 – 2016, two stars for those in the top 20-40 per cent range and one in the top 40-60 per cent range. An industrial regional clusters can therefore be allocated a maximum of 15 cluster stars.

In terms of geographic scope, the analysis covers all the countries participating in the COSME programme, namely all 28 EU Member States, as well as Iceland, North Macedonia, Montenegro, Turkey, Albania, Serbia, Moldova, Armenia, Bosnia & Herzegovina and Ukraine. These regions are used as a pragmatic choice because they are likely to encompass the

“economically relevant” regions; there is data available, and in most cases there is some level of government that can take action for this specific region.

For comparative purposes, OECD member states are included, such as Australia, Canada, Chile, Israel, Japan, Korea, Mexico, New Zealand, Norway, Switzerland and United States. Wherever possible, firm-level data are used at the NACE 4-digit and NUTS 3-digit level. In the maps, the data for the administrative boundaries is from EuroGeographics.

Cluster trends and case examples

The report also points to some transformation trends of relevance for the priority sector. This is foremost written though from a cluster perspective and based on the expertise gathered from the cluster mapping work carried out and not from an expert perspective nor extensive research of the priority sector concerned.

The report still offers a cluster case example with the identification of specialised SME intermediaries – so called cluster organisations – that manage the collaboration, networking and learning in a clusters and provide or channel tailored business support service to group of specialised SMEs in the priority area. Such cluster organisations can help firms to better engage with other local actors within their cluster and to organise collective actions to strengthen the local context. Moreover, they can reduce transaction costs for firms, especially SMEs, in building linkages to firms and collaboration partners in other locations.

Overview

The yearly global turnover of the Mobility Technologies emerging industry (i.e. development, manufacturing, maintenance and core services) is currently assessed between 2 000 and 2 150 billion euros.³ The Mobility Technologies emerging industry includes all activities and agents providing products, services and technologies that enable people and goods to move around more freely and efficiently. Stemming from the automotive sector as a core, it comprises related technologies, such as the production technology and aerospace cluster, as well as few related upstream activities like metalworking and plastics.⁴ The boundaries of each emerging industries are increasingly blurred, with industries that are so strongly interconnected one to another that it is becoming challenging to discriminate between them. Moreover, the distinction between Mobility Technologies and Logistical Services is also weakening.

³ Accenture (2018). Mobility as a Service: Mapping the Route Towards Future Success in The New Automotive Ecosystem.

⁴ To avoid overlapping with the range of activities covered by other emerging industries (e.g. Logistical and Blue Growth), the reach of the Mobility Industry is usually limited to the movement of people (no goods) by road, rail and air (no maritime) transport.

In a dynamic perspective, the last 40 years have witnessed an appreciable worldwide increase in the sales of cars, buses and airplanes, which have tripled, thanks especially to the extraordinary expansion of the Chinese market in the last decade. On the other hand, environmental regulation and changes in habits and social norms are casting doubts on the future possibilities of the sector to keep similar rates of growth. For the next decade, revenues and profits from manufacturing and selling motors and vehicles are forecast to be stable or shrink, while those from mobility services are expected to soar.

Mobility Technologies are a core part of the European manufacturing industry and are a clear focus for Europe's strategy to re-industrialize. The European mobility industry is estimated to employ between 10.9⁵ and 13.3⁶ million people, with rather high levels of wages, productivity and average value added. In terms of production, it accounts for 20% of global motor vehicle production and 21% of global passenger car production.⁷ The major competitors are China, the USA and Japan, which maintain world market shares of around 30%, 13% and 10% respectively.⁸ More specifically, Japan is a world leader in automotive manufacturing and technology, and one of the worlds' top 3 car producing countries since the 1960s. The industry has evolved into an integrated supply chain of companies in Japan, which encompasses great diversity of firms. In the USA, the mobility industry is being disrupted by new ICT and aerospace technologies. In particular, the USA is at the forefront in the development of self-driving vehicles. The automotive sector in South Korea is also well developed, with strong trade relations especially with the USA, but the degree of innovation and technological advance lag behind those observed in the major economies.

In 2016, the average wage in Mobility Technologies was 40 500 euros, with specialised clusters, regional concentrations of related traded industries,⁹ showing a 5.4% wage premium over other locations.¹⁰ The average employment in specialised clusters was almost three times of that of other locations and in total about 43% of the employment in this emerging industry is based in specialised clusters. From 2011 to 2016, the employment has grown 0.2% and the wages 0.3% per year, on average.

⁵ EOCIC (2019). European Panorama of Clusters and Industrial Change: Towards Modern Cluster Policy for Industrial Change and Growth, European Commission, Brussels.

⁶ ACEA (2018). Key Figures, European Automobile Manufacturers Association

⁷ ACEA (2018). Key Figures, European Automobile Manufacturers Association

⁸ Statista (2018). Transportation & Logistics.

⁹ A specialised cluster has a specialisation rate of over 1.5 – measured by the location quotient – and has more than 500 employees in the given industries. Values above unity imply high regional specialisation, with a location quotient of 1.5 corresponding to 1.5 times as many employees in an industry than would be expected if all employment was distributed evenly.

¹⁰ This calculation takes into account the average wage level in the country. For example, it can be that most of the specialised clusters locate in lower wage countries. In this case, the difference in wage levels follows from the differences between nations, not from the differences between specialized clusters versus other locations. For the "modified" wage premium, a wage level in a region is first compared to the region's average wage level and the possible premium is calculated. These premiums for specialised clusters and other locations in a country are then summed up. Finally, the "modified" wage premium is the average of these national premiums.

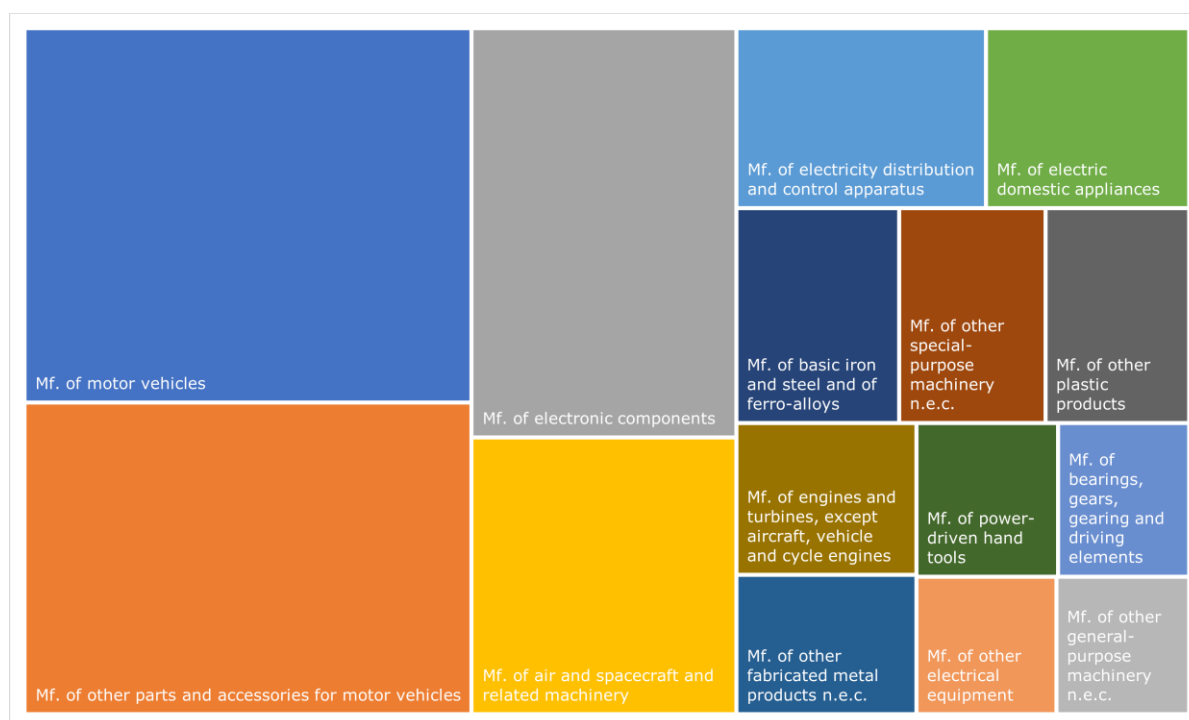
Table 1. Basic facts of Mobility Technologies.

	Specialised clusters	Other locations
Number of NUTS 2 regions	72	279
Average employment 2016	65 000	22 500
Annual change in employment 2014-2016	0.6 %	-0.7 %
Average wage 2016	39 200 €	40 900 €
Annual change in wages 2014-2016	4.9 %	3.7 %

Wage premium considering the local average wage level: 5.4 %

Mobility Technologies stem from the automotive cluster as a core and expand it with related technologies from the production technology and aerospace cluster as well as a few related upstream activities such as metalworking, plastics, and lighting and electrical equipment. As Figure 1 illustrates the biggest shares of employment take place in the sectors manufacturing of motor vehicles, manufacturing of other parts and accessories for motor vehicles and manufacturing of electronic components with 16, 14 and 11 per cent shares of employment, respectively.

Figure 1. Mobility Technologies composition based on employments on NACE industry classifications 2008 (top 15 sectors).



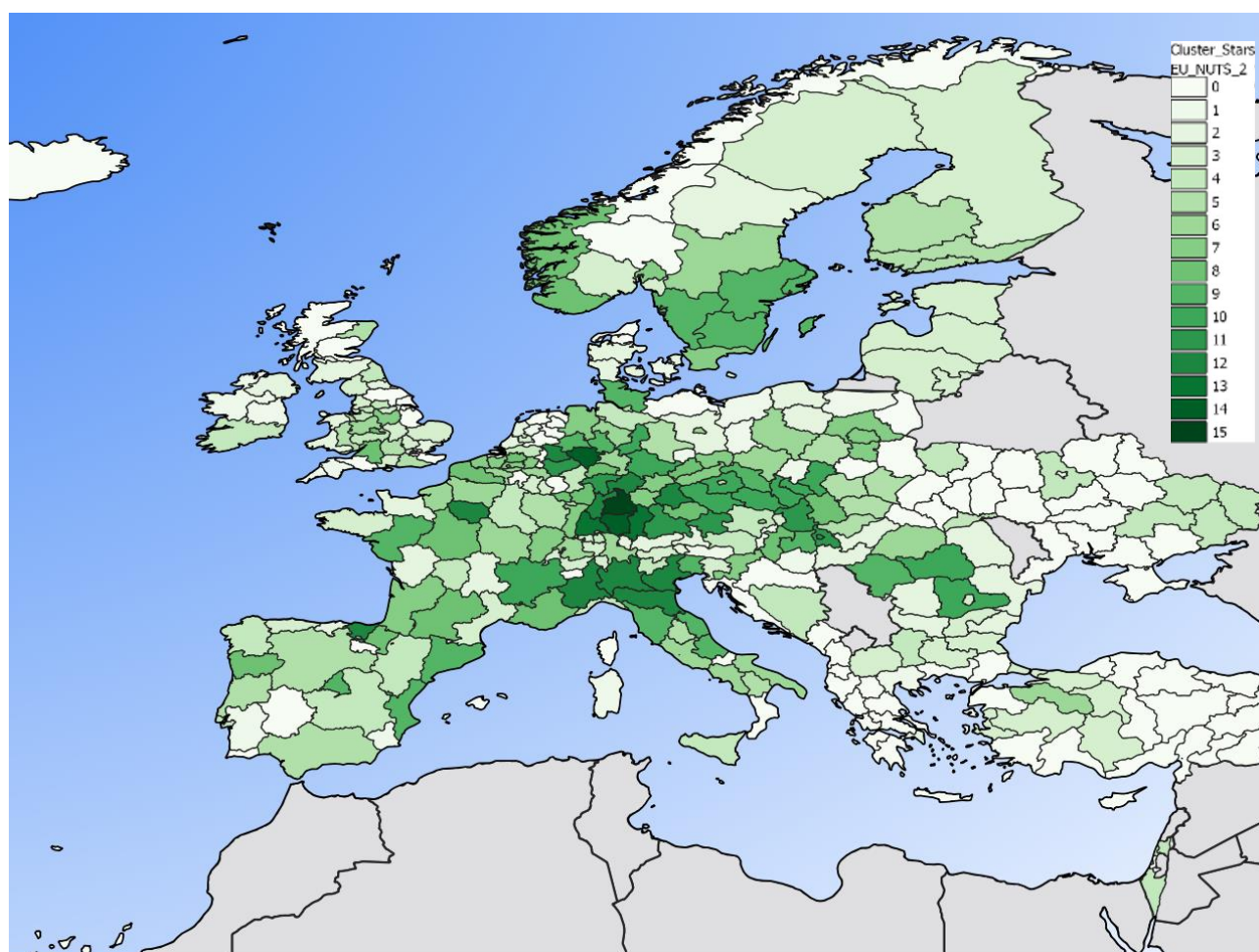
Note: Mf. stands for manufacturing.

Topics dealt with by technological innovation in the field of mobility include road vehicle engineering, internal combustion engines, batteries and motors, electric and hybrid powertrains, urban and high speed rail transportation, aircraft types and aerodynamics, radar, navigation, GPS, GIS, etc. Examples of emerging mobility technologies are predominantly

bundled under the so-called smart mobility trends, which involve the development of cleaner energy fuelling and more energy-efficient solutions. The design of hybrid, electrified or zero-emission vehicles illustrates the need for cross-sectoral linkages by the involvement, for example, of energy and automotive industries as a means to meet objectives of governments and manufacturers.

Figure 2 profiles all European regions according to the Cluster Stars in Mobility Technologies. Not surprisingly, most of the regions with strong clusters in the industry are located in areas of traditional automotive strength. Stuttgart is the leading cluster star region with 15 stars, together with a number of other German clusters.

Figure 2. Cluster Stars in Mobility Technologies (2016).



Note: The depth of the green colour indicates the region's star rating on a scale from 0 to 15.

The regions specialised in mobility technologies do not stand up among the ten emerging industries, neither for good nor for bad. These regions have the third highest medium and high technology exports rate, 58%, just behind Digital industries and Medical Devices. The following Table 2 gives an overview of the top 20 regional clusters across Europe.

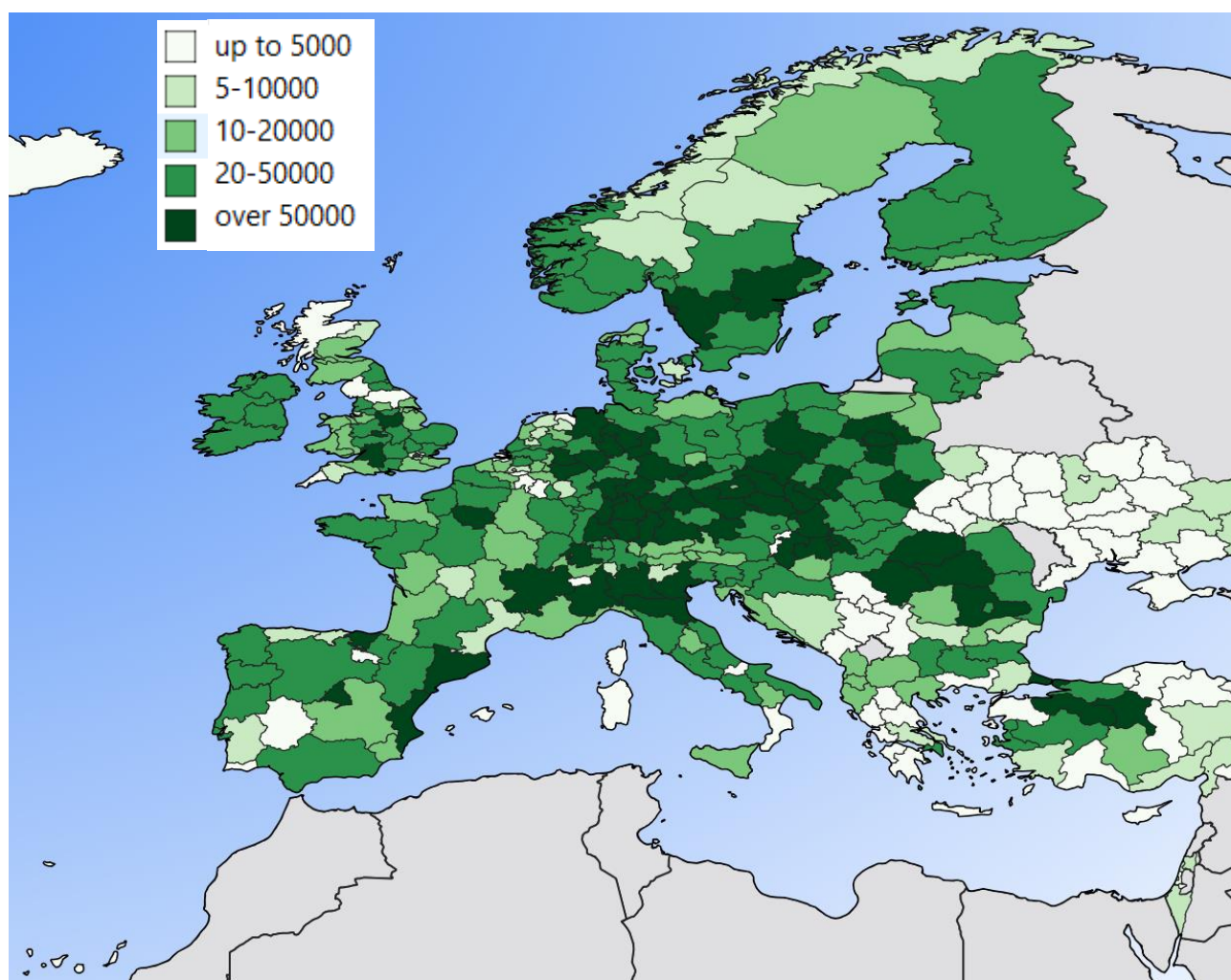
Table 2. European top 21 regions in Mobility Technologies (Cluster Stars, 2016).

Cluster stars							
	Region	Size (0-3)	Specialisation (0-3)	Productivity (0-3)	SME performance (0-3)	Innovation leaders (0-3)	Total stars (0-15)
1	DE11 - Stuttgart	3	3	3	3	3	15
2	DE14 - Tuebingen	3	3	3	2	3	14
2	DEA5 - Arnsberg	3	3	3	2	3	14
4	DE13 - Freiburg	3	3	3	2	2	13
4	DE27 - Schwaben	3	3	3	1	3	13
6	DE12 - Karlsruhe	3	3	3	1	2	12
6	DE23 - Oberpfalz	3	3	3	1	2	12
6	DE26 - Unterfranken	3	3	3	1	2	12
6	DEA1 - Duesseldorf	3	3	0	3	3	12
6	ES21 - Pais Vasco	3	3	0	3	3	12
6	FR10 - Ile-De-France	3	0	3	3	3	12
6	ITC1 - Piemonte	3	3	0	3	3	12
6	ITC4 - Lombardia	3	3	0	3	3	12
6	ITH3 - Veneto	3	3	0	3	3	12
6	ITH5 - Emilia-Romagna	3	3	0	3	3	12
16	AT31 - Oberosterreich	3	3	0	2	3	11
16	DE21 - Oberbayern	3	0	3	2	3	11
16	DE71 - Darmstadt	3	0	3	2	3	11
16	DEA2 - Koeln	3	0	3	2	3	11
16	HU10 - Central Hungary	3	3	0	3	2	11
16	SK02 - Western Slovakia	3	3	0	3	2	11

Employment

Figure 3 illustrates the employment pattern in Mobility Technologies in Europe, showing several regions all over Europe employing more than 50 000 workforces. The core of the Mobility Technologies emerging industry employment lies in Germany, France and the United Kingdom. There are cross-sectoral networks in Spain, Poland and Central Europe, Northern Italy and Sweden.

Figure 3. Leading European regions in Mobility Technologies (Full Time Equivalent, 2016).



Note: The depth of the green colour indicates the full time equivalent employment in Mobility Technologies on a scale from “up to 5 000” to “over 50 000”.

Three German regions, Stuttgart, Düsseldorf and Upper Bavaria (Oberbayern), are among the top 10 European regions with the highest number of employment in Mobility Technologies, with about 320 000, 180 000 and 140 000 employees. Similarly, three Italian regions, Lombardia, Veneto and Emilia-Romagna make their way to top 10 with about 310 000, 160 000 and 150 000 employees. Istanbul, Slaskie in Poland, Central Hungary and Cataluna are the other four regions with the highest number of employees in the industry. Stuttgart is home for Daimler AG and a number of Tier1 suppliers such as Bosch, Mahle and Würth, Düsseldorf for industrial conglomerates Thyssenkrupp, Rheinmetall and Hüttenwerke Krupp Mannesmann, and Upper Bavaria for BMW, MTU Aero Engines and Airbus. The Italian clusters host smaller, but well-known global brands such as Brembo, Sogefi, Carraro and Maserati, but Citroen Italia in Lombardia also. Istanbul is home for Ford Otomotiv Sanayi and Slaskie for Fiat Chrysler Automobiles (FCA) Poland and Opel Manufacturing Poland among others.

As the mere employment figures by default favour regions with a larger population, the following table not only provides the figures for the top employment regions but also indicates the extent of the regional specialisations, expressed by the location quotient. A value above 1

indicates that a region is more specialised than the average region of similar size. A value of 1.5, together with a threshold of 5 000 employees is used to identify a specialised clusters.

Table 3. Top 20 European regions with the highest number of employment in the Mobility Technologies (Full Time Equivalents, 2016).

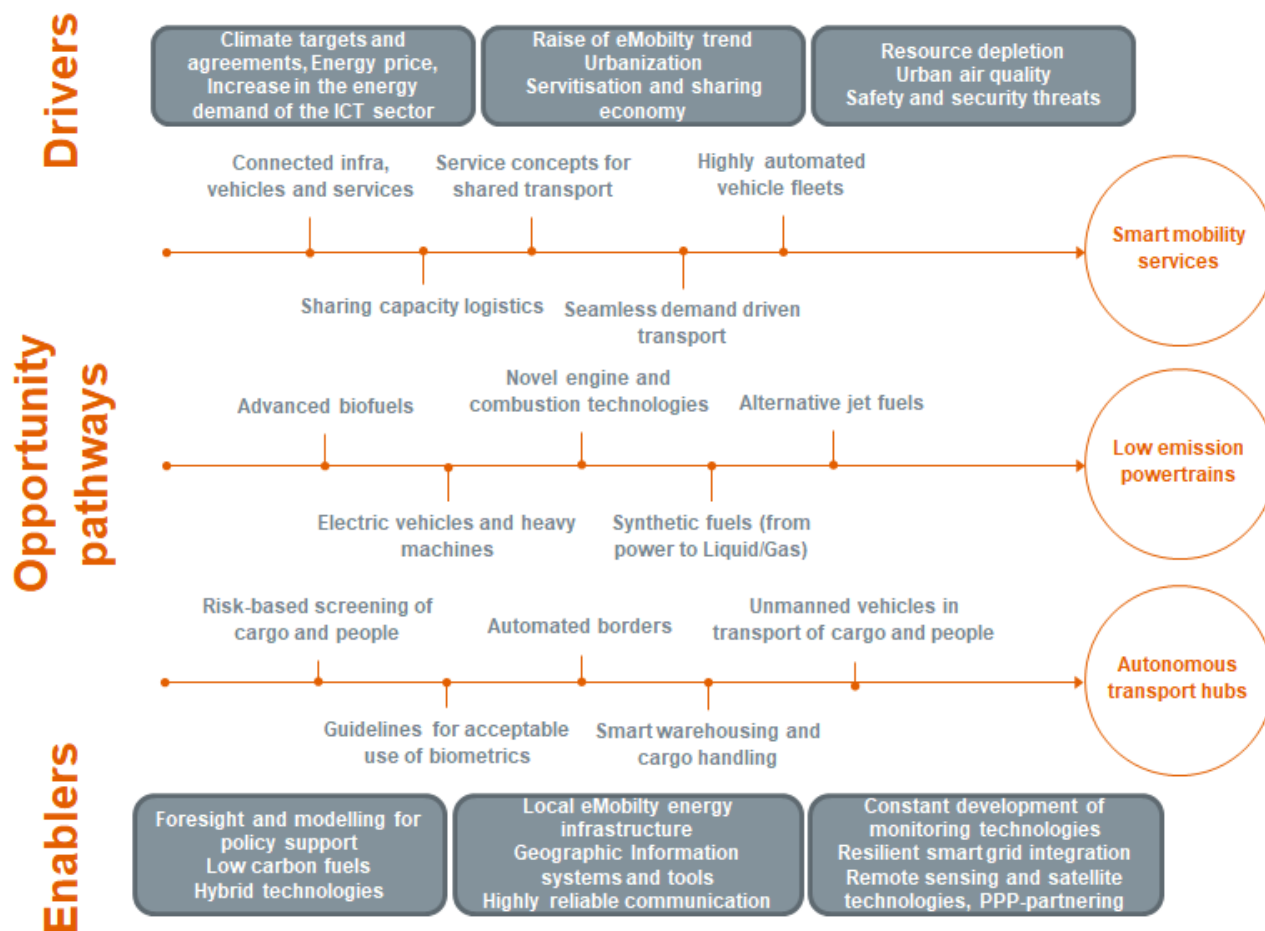
Region	Employees	Specialisation	Region	Employees	Specialisation
DE11 - Stuttgart	317 800	3.3	DEA5 - Arnsberg	132 700	2
ITC4 - Lombardia	306 500	1.8	ITC1 - Piemonte	131 900	2.1
TR10 - Istanbul Subregion	200 400	0.9	DE12 - Karlsruhe	119 000	1.7
PL22 - Slaskie	189 500	1.8	RO42 - West	111 500	3.5
DEA1 - Duesseldorf	177 000	1.8	FR71 - Rhone-Alpes	109 100	1
HU10 - Central Hungary	170 500	1.7	FR10 - Ile-De-France	108 400	0.4
ITH3 - Veneto	164 900	1.9	DE13 - Freiburg	106 300	2.4
ITH5 - Emilia-Romagna	148 100	1.8	DE14 - Tuebingen	91 200	2.5
ES51 - Cataluna	139 800	0.9	PL51 - Dolnoslaskie	88 700	1.4
DE21 - Oberbayern	135 600	1.4	ES21 - Pais Vasco	87 700	2.1

Enterprises

Close to 200 countries have committed in COP21 to limit the global warming below 2°C.¹¹ Rapid transformation of all the sectors that are emitting greenhouse gases are needed. Billions of mechanical devices, buildings, vehicles and industrial processes need to be changed, retrofitted or renovated to improve energy efficiency and to decrease emissions. Low-emission biofuels, hybrid and electric vehicles are the first implications of the transformation in the transport sector. Beyond eco-friendly modes of transport, new sharing-economy based mobility services will ease traffic congestion and the environmental burden, and make more efficient use of resources. The greatest payoffs are expected from innovations that increase the effectiveness of low-emission mobility, whether of the entire system, service concepts, powertrains or clean energy. Some development paths along these megatrends are briefly summarised in Figure 4 below.

¹¹ The 2015 United Nations Climate Change Conference, COP 21, was held in Paris, France, from 30 November to 12 December 2015. It was the 21st yearly session of the Conference of the Parties (COP) to the 1992 United Nations Framework Convention on Climate Change (UNFCCC). The COP 21 led to a new international climate agreement aiming to keep global warming below 2°C, in accordance with the recommendations of the Intergovernmental Panel on Climate Change (IPCC). The agreement formally came into force on 4 November 2016, and has now been ratified by 169 countries, including the European Union 28, representing 88% of emissions. For more information, <https://ec.europa.eu/eurostat/news/themes-in-the-spotlight/cop21>

Figure 4. Transportation sector created 14% of global GHGs and is among the most challenging sectors in climate change mitigation.



Source: Technical Research Centre of Finland VTT

Smart mobility is expected to have disruptive effects on different sectors. The increasing focus on energy efficiency, alternative fuels, shared mobility, automated vehicles and transport systems will require changes in the business organisation models, skills sets and value chain structure of the emerging industries, which may represent at the same time challenges and opportunities for firms, depending on their ability and willingness to embrace change. Self-driving vehicles' market will grow exponentially in the coming years creating new jobs and developing profits of up to EUR 620 billion for the EU automotive industry.¹²

Urbanisation is strongly correlated with economic development and would allow the emergence of a global urban middle class by the 2030s, boosting demand for several products and services. In particular, the market for smart city and smart mobility solutions would greatly

¹² European Parliament (2019). Self-driving cars in the EU: from science fiction to Reality, European Parliament, Brussels. www.europarl.europa.eu/news/en/headlines/economy/20190110STO23102/self-driving-cars-in-the-eu-from-science-fiction-to-reality

expand in the upcoming decades for a wide range of applications, e.g. mobility, e-government, etc.^{13,14}

Table 4 illustrates the top European regions in terms of the corresponding number of enterprises in Mobility Technologies. Firm-level data has been used to also identify high growth firms and rapidly growing start-ups, industry leaders and global frontier firms.¹⁵ Due to the availability of the data and differences in accounting rules across countries, the results have to be interpreted however with some caution. Still, it brings a more dynamic view to the cluster mapping and analysis.

Table 4. Top 20 European regional clusters according to number of high growth firms and start-ups, industry leaders and global frontier firms in Mobility Technologies (global share of enterprises, per million people, 2016).

Cluster performance in detail: SME performance driven by high growth firms						Innovation potential driven by industry leaders (top 1%) and global frontier firms (top 5%)				
Region	Turnover	Employees	Assets	Start-ups	Avg	Region	Turnover	Profit	Value Add	Avg
ITC4 - Lombardia	0.4	0.5	0.4	2.4	0.9	ES22 - Navarra	0.3	0.4	0.8	0.5
ITH5 - Emilia-Romagna	0.5	0.6	0.4	1.0	0.6	UK13 - Inner London - West	0.7	0.6	0.3	0.5
Korea	0.5	0.4	0.6	0.9	0.6	SE11 - Stockholm	0.4	0.5	0.6	0.5
CZ07 - Central Moravia	0.7	1.0	0.6	0.0	0.6	SE23 - West Sweden	0.5	0.5	0.4	0.5
CZ05 - Northeast	0.6	0.9	0.6	0.0	0.5	ITC4 - Lombardia	0.1	0.1	1.2	0.5
ITH3 - Veneto	0.4	0.5	0.4	0.8	0.5	FI1B - Helsinki-Uusimaa	0.5	0.5	0.4	0.5
SI03 - Eastern Slovenia	0.6	0.7	0.5	0.0	0.5	AT31 - Oberosterreich	0.3	0.7	0.5	0.5
SE21 - Smaland and the islands	0.7	0.6	0.5	0.1	0.5	AT34 - Vorarlberg	0.2	0.7	0.5	0.5
CZ03 - Southwest	0.5	0.7	0.5	0.1	0.4	LU00 - Luxembourg	0.5	0.4	0.4	0.4
CZ06 - Southeast	0.5	0.7	0.5	0.0	0.4	NL23 - Flevoland	0.3	0.8	0.2	0.4
SK02 - Western Slovakia	0.5	0.6	0.4	0.1	0.4	SE12 - East Middle Sweden	0.4	0.6	0.3	0.4
BG41 - Yugozapaden	0.5	0.7	0.4	0.2	0.4	ES21 - Pais Vasco	0.2	0.4	0.8	0.4
ITC1 - Piemonte	0.4	0.4	0.3	0.5	0.4	BE31 - Walloon Brabant	0.4	0.0	0.9	0.4
BG42 - Yuzhen										
Tsentralen	0.5	0.7	0.4	0.0	0.4	BE24 - Flemish Brabant	0.2	0.1	1.0	0.4

¹³ Deloitte (2017). Forces of change: The future of mobility.

https://www2.deloitte.com/content/dam/insights/us/articles/4328_Forces-of-change_FoM/DI_Forces-of-change_FoM.pdf

¹⁴ McKinsey Global Institute (2018). Smart cities: digital solutions for a more livable future.

<https://www.mckinsey.com/~media/mckinsey/industries/capital%20projects%20and%20infrastructure/our%20insights/smart%20cities%20digital%20solutions%20for%20a%20more%20livable%20future/mgi-smart-cities-full-report.ashx>

¹⁵ *High-growth firms* have annual growth rates of 20% for turnover or employment over 3 years while having at least 20 employees at the end. A *rapidly growing start-up*, on the other hand, is a firm that possesses from 3 to 20 employees and that experiences such a high average turnover, employment or asset growth over a one-, two- or three-year period that it belongs to the top 10% of firms within any given industry. *Industry leader* is a company that belongs to the top 1% of companies having the highest turnover or the highest profits in any particular year in the industry. *Global frontier firms* are the top 5% of firms in terms of productivity (value added based, per employee), calculated by adding up factor incomes going to employees (wages) and to capital owners (profits) within any year.

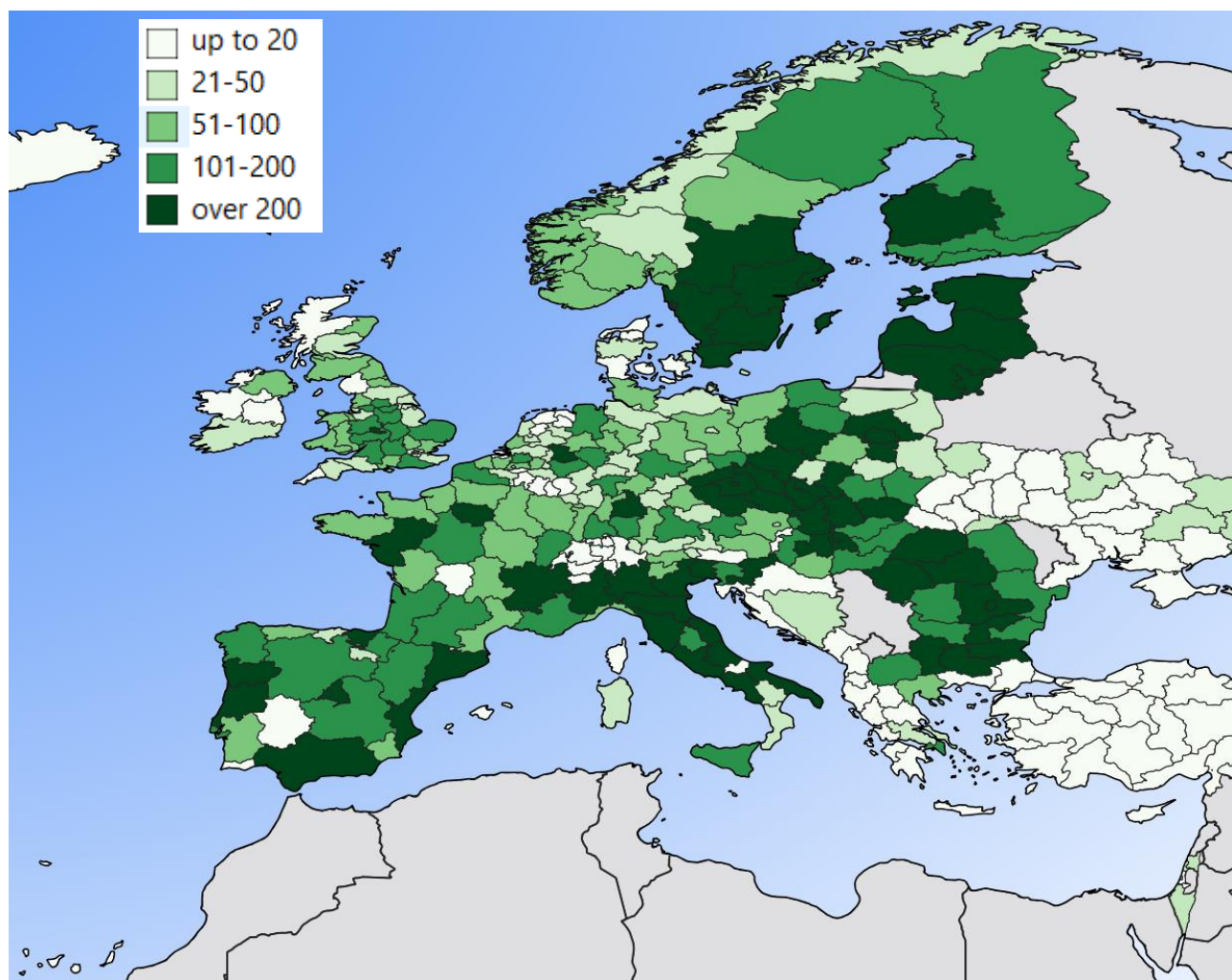
ES21 - Pais Vasco	0.4	0.5	0.3	0.3	0.4	BE25 - West-Flanders	0.1	0.6	0.5	0.4
CZ08 - Moravskoslezsko	0.4	0.6	0.4	0.1	0.4	DE11 - Stuttgart	0.5	0.4	0.2	0.4
ES22 - Navarra	0.5	0.6	0.3	0.1	0.4	ITH5 - Emilia-Romagna	0.1	0.1	1.0	0.4
CZ01 - Prague	0.4	0.6	0.4	0.1	0.4	FR10 - Ile-De-France	0.4	0.3	0.4	0.4
PT16 - Centre	0.4	0.4	0.4	0.2	0.3	FR63 - Limousin	0.5	0.5	0.1	0.4
EE00 - Estonia	0.5	0.4	0.4	0.0	0.3	CH06 - Zentralschweiz	0.5	0.6	0.0	0.4

Note: The measures above are relative, that is, the number of high growth firms – with respect to turnover, employment or asset growth – rapidly growing start-ups, industry leaders – with respect to turnover or profit – and global frontier firms is divided by the region’s population (million people).

The pattern, depicted in Figure 5, shows that the SME performance in Mobility Technologies is especially high in countries like Italy, the Czech Republic, Slovenia, Slovakia, Romania and Bulgaria. Traditionally, the share of small firms is much higher in Italy than in the other OECD countries.¹⁶ Practically all of the world’s top 10 automotive suppliers have localised their production in the Eastern European countries. Rising efficiency requirements resulting from a just-in-time model of car production forces them to operate near the OEMs. These investments have then attracted additional ones from smaller suppliers for them to be able to serve the bigger ones in their business. Also, the Baltic States, Finland and Sweden are performing well in this regard.

¹⁶ Criscuolo, C., P. Gal and C. Menon (2014), The Dynamics of Employment Growth: New Evidence from 18 Countries, OECD Science, Technology and Industry Policy Papers, No. 14, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jz417hj6hg6-en> .

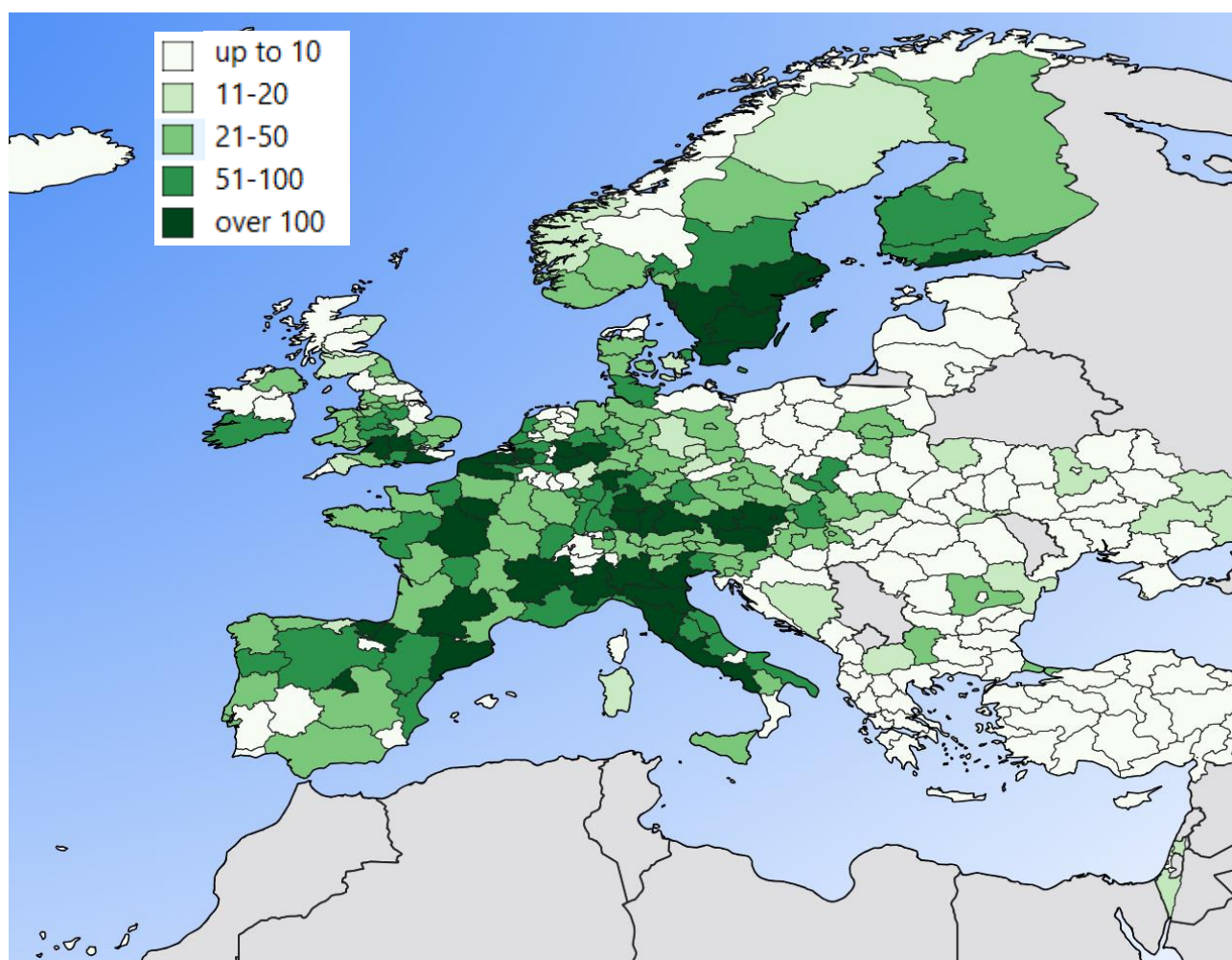
Figure 5. Leading European regions in Mobility Technologies (high growth firms, 2008-2016).



Note: The depth of the green colour indicates the occurrences of high growth firms in the region during the period from 2008 to 2016 on a scale from “up to 20” to “over 200”.

Global frontier firms can be partly found from the same regions. Regions from Belgium, Austria, France and the United Kingdom are replacing the Eastern European ones though.

Figure 6. Leading European regions in Mobility Technologies (global frontier firms, 2008-2016).



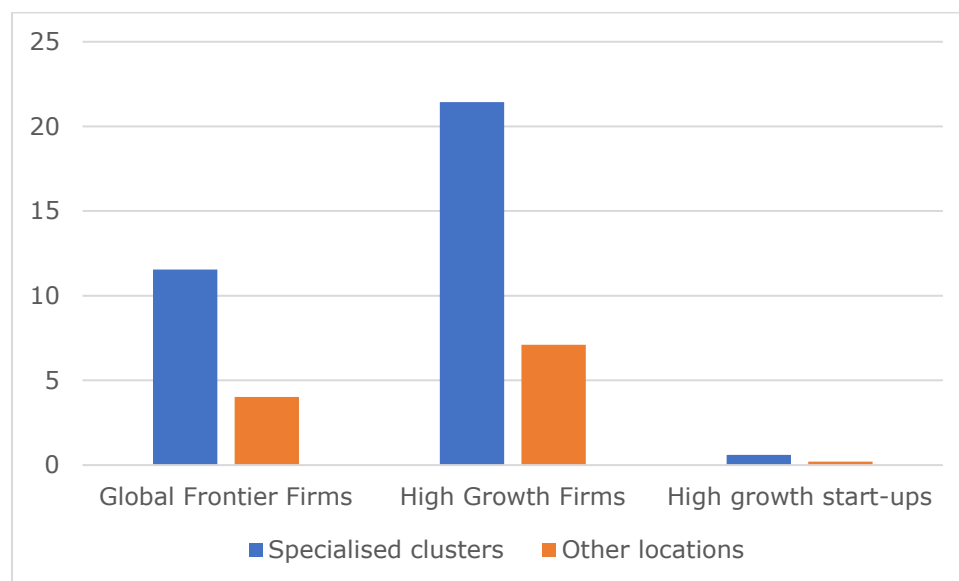
Note: The depth of the green colour indicates the occurrences of global frontier firms in the region during the period from 2008 to 2016 on a scale from "up to 10" to "over 100".

The impact of smart mobility on skills would be primarily concentrated in the transportation sector. In particular, there would be a shift towards higher skill requirements (especially regarding ICT) and more specialisation of professionals. Smart mobility will also improve productivity, especially as a result of reduced congestion and time spent in transportation systems.¹⁷ The extent of this productivity increase would thus be strongly reliant on the efficiency of developed solutions and their organisation.

Compared to other emerging industries, there are relatively high number of global frontier and high growth firms in Mobility Technologies. This probably reflects the quick technological development in the industry and the business opportunities it creates. The regions with specialised clusters locate a much higher rate of these firms than other locations (see Figure 7 below)

¹⁷ *ibid.*

Figure 7. Average number of global frontier firms, high growth firms and rapidly growing start-ups in the specialised clusters and other locations (Mobility Technologies, 2016).



European Strategic Cluster Partnerships for smart specialisation investments (ESCP-S3)

The ESCP-S3 action of the COSME Framework Programme of the European Commission contribute to boost industrial competitiveness and investment within the EU. The ESCP-S3 are facilitating **cluster cooperation** in thematic areas related to **regional smart specialisation** strategies and to increase the involvement of the industry in the context of the Smart Specialisation Platform for Industrial Modernisation¹⁸.

An EU Cluster Partnership, European Automotive Cluster Network for Joint Industrial Modernisation Investments (EACN) aims at initiating joint R&D projects and investments teaming partners from different European regions. The focus is set on virtualisation of processes, robotics and artificial intelligence, elasticity of production, and skills and competencies. EACN also promotes interregional collaboration between the concerned Regional Authorities in the field of industrial modernisation in the automotive industry, secure the long-term cooperation of the engaged clusters through a common European EACN partnership strategy, and prepare EACN to the future with more member clusters. EACN contributes to EC's policies (e.g. "For a European Industrial Renaissance", "Investing in a smart, innovative and sustainable industry" and others) and to the S3 platform's thematic areas "Efficient and Sustainable Manufacturing" or "SME integration to Industry 4.0".¹⁹

IMPACT Connected Car

The INNOSUP initiative²⁰ addresses the challenge to develop new cross-sectoral industrial value chains across the EU, by building upon the innovation potential of SMEs. The development of new industrial value chains calls for the collaboration and

¹⁸ <https://s3platform.jrc.ec.europa.eu/industrial-modernisation>

¹⁹ <https://www.clustercollaboration.eu/node/6511>

²⁰ <https://www.clustercollaboration.eu/eu-initiative/innosup-calls>

integration of different innovation actors, including large enterprises and especially SMEs, across different sectors towards the implementation of a joint vision.

Funded by INNOSUP Initiative, IMPACT Connected Car aims at creating value link-chains for innovation in the Connected Car OpenSpace, with vehicle, infrastructure and device & TelCo interactions and consumer & business services. Through the acceleration and smartization of 70 Disruptive SMEs in its OpenSpace, IMPACT Connected Car is designed to give a boost to all parts of the value chain, including industry start-ups; in partnership with global brands including PSA Group and the Federation Internationale de l'Automobile. Participating companies will have access to up to 60 000 euros per start-up, equity free, in start-up grants and up to 50 000 euros per start-up equity free. Up to 2.1 million euros will be distributed. Finally, top start-ups will have the opportunity to find investors and receive private funding of up to 200 000 euros from participating venture capital funds.²¹

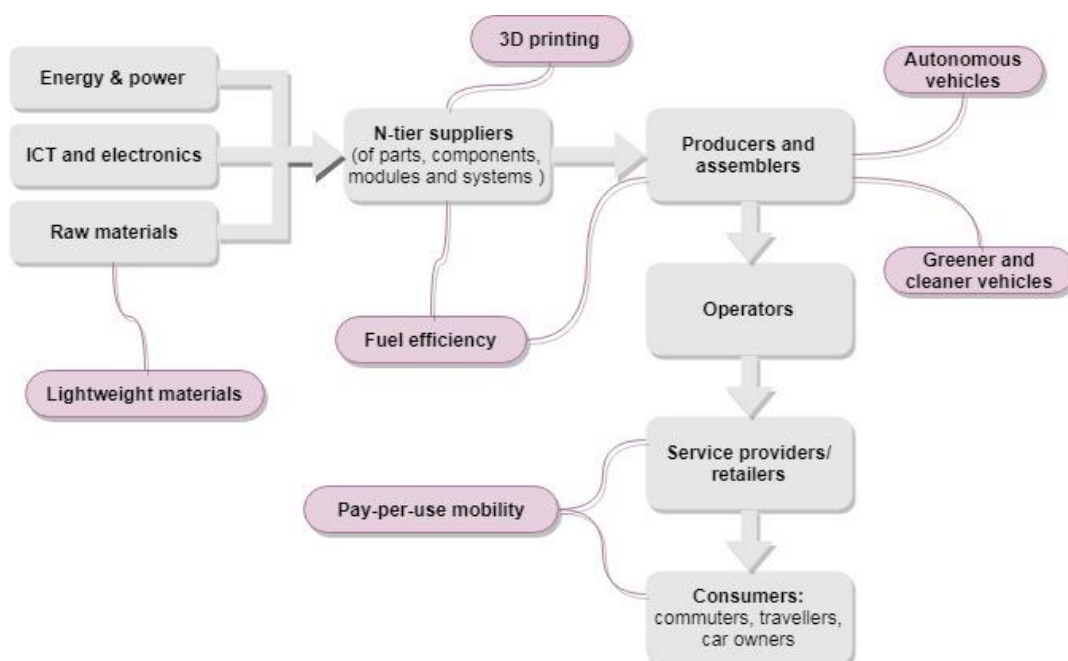
Regional specialisation

The complexity of the Mobility Technologies value chain implies a thick network of cross-sectoral linkages. Data since 2010 indicate that this emerging industry is significantly and increasingly interconnected. The most important cross-sectoral mergers and acquisitions are carried out with the Machinery sector, followed by Electronics and Chemicals. Some joint ventures and alliances have taken place in the considered time span, and the most numerous deals involved the Business services and Electric, Gas & Water distribution sector.²² Figure 8 elaborates and shows the cross-sectoral value chain of mobility technologies.

²¹ <https://www.gsa.europa.eu/impact-connected-car>

²² EOCIC (2019). European Cluster and Industrial Transformation Trends Report.

Figure 8. Cross-sectoral value chain of Mobility Technologies.



Source: CSIL (Centre for Industrial Studies)

According to ACEA, out of 19.6 million motor vehicles manufactured in the EU in 2017, about 6.2 million were produced in Germany, 2.9 million in Spain and 2.3 million in France, with the Czech Republic and Slovakia rapidly increasing their shares (1.4 million and almost 1 million vehicles respectively).²³

In terms of cross-sectoral linkages, the most dynamic hotspots in Mobility Technologies are in Germany, France and the UK. Cross-sectoral networks in Spain, Poland and Central Europe, Northern Italy and Sweden are increasing. Ireland and Denmark are significantly integrated with the UK and Sweden, respectively.

The social-network analysis identifies seven communities of regions that were the most closely connected through cross-sectoral linkages in the 2011–2016 period. These communities centre around specific node regions (hotspots).²⁴

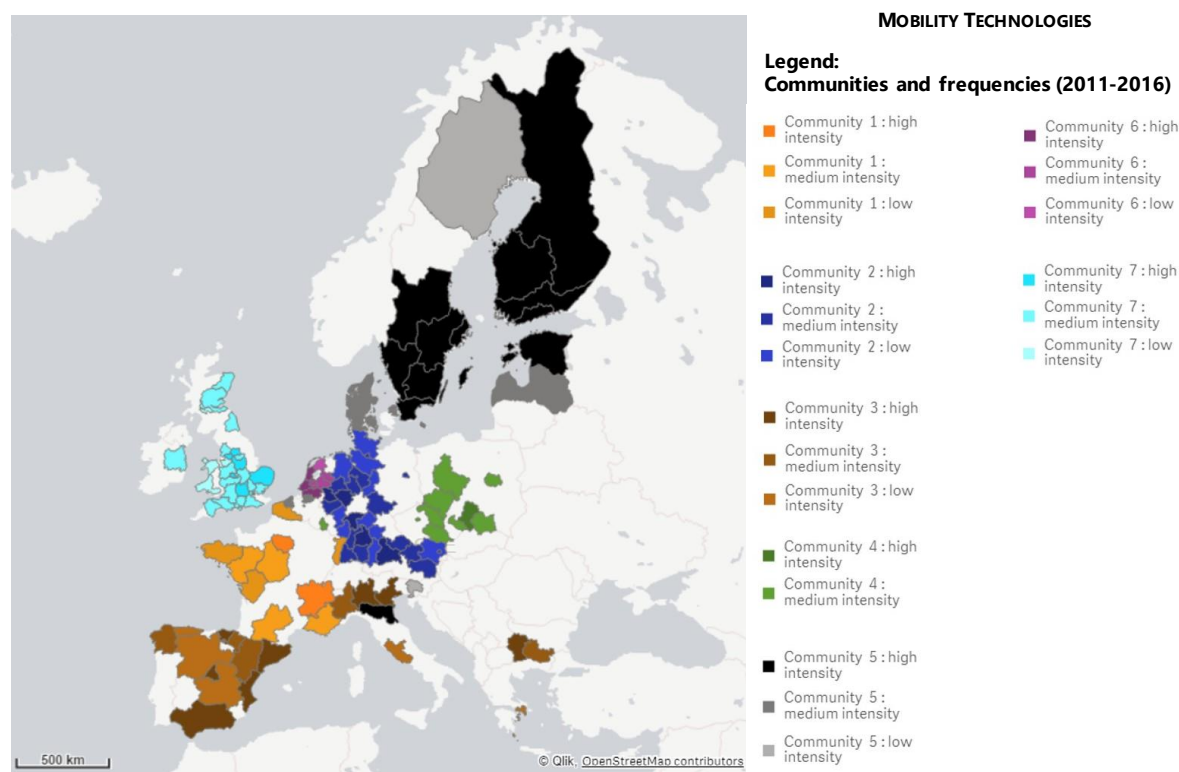
Community 1: Ile-de-France (France)	Community 5: Helsinki-Uusimaa (Finland)
Community 2: Oberbayern (Germany)	Community 6: Noord-Brabant (Netherlands)
Community 3: Cataluña (Spain)	Community 7: West Midlands (United Kingdom).
Community 4: Śląskie Poland	

²³ ACEA (2018). EU Production, European Automobile Manufacturers Association.

²⁴ EOCIC (2019). European Cluster and Industrial Transformation Trends Report.

The number of communities has decreased over time, suggesting a tendency toward concentration of cross-sectoral and cross-regional operations.

Figure 9. Cross-sectoral communities and hotspots of Mobility Technologies in Europe (2011-2016).



Source: CSIL (Centre for Industrial Studies) and Deloitte

Case: Cantabria²⁵

Cantabria performs well in the automotive industry in terms of specialisation and productivity. It has several companies that cover all automotive sub-sectors, such as vehicle manufacturers, automotive components manufacturers and auxiliary companies. Tooling and die-manufacturing are key sub-sectors for industrial development in Cantabria.

Cantabria has one cluster organisation aligned with the automotive sector, the Automotive Cluster of Cantabria – GIRA.²⁶ GIRA is the oldest and most consolidated cluster organisation in the region. Created in 2005, it involves 31 members related to the automotive sector, including Tier 1 and Tier 2 firms. There is no presence of an OEM (Original Equipment Manufacturer)²⁷ in the region. So far, GIRA is the only cluster organisation in Cantabria using a bottom up

²⁵ EOCIC (2018). Regional assessment report – Cantabria.

²⁶ <https://giracantabria.com>

²⁷ In the automotive industry, an original equipment manufacturer (OEM) is the car manufacturer, whose focus is on designing and promoting cars, ordering from vendors and assembling the vehicles. Tier 1 suppliers are companies that supply parts or systems directly to OEMs. These suppliers usually work with a variety of car companies, but are often tightly coupled with one or two OEMs, and have more of an arms-length relationship with other OEMs. Tier 2 suppliers are the firms that supply parts that end up in cars, even though they themselves do not sell directly to OEMs. Tier 3 refers to suppliers of raw, or close-to-raw, materials like metal or plastic.

approach. It has been driven by the need to promote the cooperation amongst the automotive firms and therefore to improve their competitiveness. In 2016, GIRA launched a Strategic Plan 2016-2019²⁸ with the objectives of positioning of the sector, investment attraction, increase of SMEs competitiveness and contribution to the regional development.

Cantabria is facing difficulties to compete with other European regions or countries beyond Europe in terms of digitalisation, use of advanced technology and labour costs, which are higher than in the emerging economies. For these reasons, it is seen important to adapt business models to the new era through innovation, modern technologies and machinery, and by attracting and retaining skilled personnel. Considering these facts, globalisation can be seen as an opportunity for large companies or specific sectors, such as automotive and maritime transport.

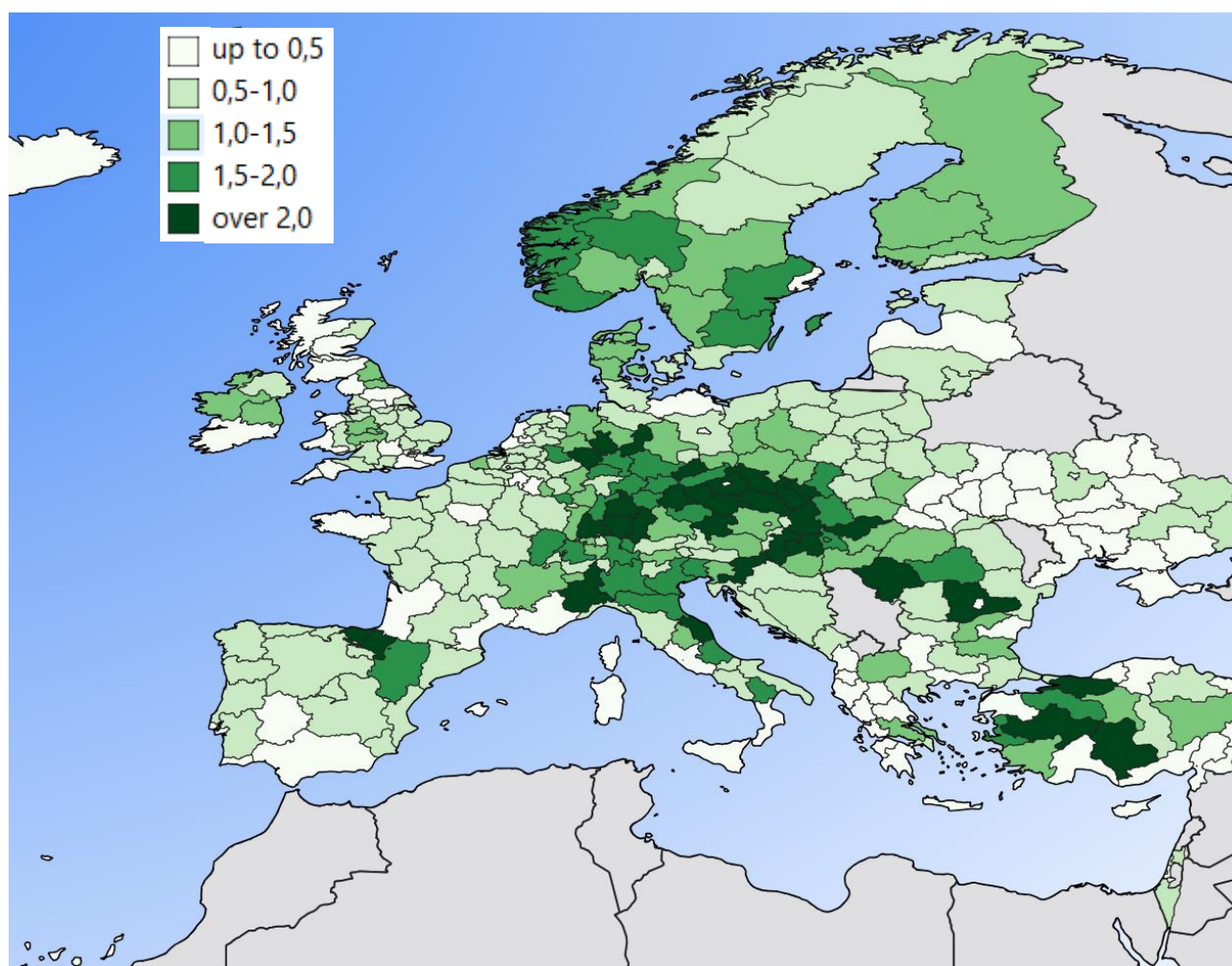
Measuring regional specialisation

Measuring regional specialisation of Mobility Technologies can provide interesting insights to what extent a region is stronger than would be expected in this sector given its overall size, compared to the average employment size in the industry across all regions. Regional specialisation can be measured by the Location Quotient (LQ).²⁹ Figure 10 shows to what extent European regions are specialised in Mobility Technologies.

²⁸Cluster de Automoción de Cantabria (GIRA), Plan *Estratégico de GIRA 2016-2019*, Available at (Spanish): <https://giracantabria.com/wp-content/uploads/2014/04/presentacion-del-plan-estrategico-gira-2016-2019.pdf>

²⁹ A value higher than 1.0 means a given region is higher specialised than the European average. As of a value of 1.5, one speaks of specialised regional clusters.

Figure 10. Leading European regions in Mobility Technologies (Specialisation, 2016).



Note: The depth of the green colour indicates the region's Location Quotient (LQ) in Mobility Technologies on a scale from "up to 0.5" to "over 2.0".

The German region Stuttgart has the highest number of employees, 318 000, and a high specialisation rate also. Other regions specialised in Mobility Technologies comprise the "New Detroit" automotive cluster in the Widening countries³⁰ including West Romania, Central and Western Transdanubia in Hungary, Śląskie in Poland, several regions in the Czech Republic and the Šumadija and Western region in Serbia. This area is well connected with some "old" EU countries such as Germany. A successful investment is likely to attract additional ones as producers tend to gather in OEMs' proximity in order to secure just-in-time deliveries. These specialized regions have from 60 000 to over 110 000 employees each.

³⁰ Widening consists of three main actions, i.e. Teaming, Twinning and ERA Chairs, for which specific eligibility conditions apply. This ensures a targeted approach towards Widening Member States and Associated Countries. The Member States currently eligible for Widening support are: Bulgaria, Croatia, Cyprus, Czechia, Estonia, Hungary, Latvia, Lithuania, Luxembourg, Malta, Poland, Portugal, Romania, Slovakia and Slovenia.

Table 5. Top 20 European regions with the highest location quotients (specialisation) in Mobility Technologies (Full Time Equivalents, 2016).

Region	Employees	Specialisation	Region	Employees	Specialisation
UA26 - Zaporizka	22 000	7.2	UA18 - Poltavaska	7 600	3.2
UA14 - Luhanska	16 800	4.7	CZ03 - Southwest	74 900	3.2
UA06 - Donetska	33 700	4.7	CZ05 - Northeast	87 600	3.1
HU21 - Central Transdanubia	80 200	4.1	UA25 - Zakarpatska	6 100	2.9
TR33 - Manisa Subregion	38 100	3.9	CZ07 - Central Moravia	64 900	2.8
RO42 - West	111 500	3.5	UA08 - Kharkivska	14 200	2.8
HU22 - Western Transdanubia	73 000	3.5	UA24 - Volynska	4 400	2.7
UA16 - Mykolayivska	7 100	3.4	CZ08 - Moravskoslezsko	62 300	2.7
DE11 - Stuttgart	317 800	3.3	TR52 - Konya Subregion	16 600	2.7
RS21 - Šumadija and Western Serbia	70 000	3.2	IL02 - Northern district	46 600	2.6

Not surprisingly, the specialised mobility technology clusters are located in areas of traditional automotive strength. The vast majority of all clusters have automotive as the core category, usually followed by production technology or metalworking. Three German regions, Stuttgart, Braunschweig and Upper Bavaria (Oberbayern), stand out as regions with specialised clusters, with about 77 000, 48 000 and 40 000 employees, in the automotive traded cluster.

In the aerospace vehicles and defence traded cluster, the specialised region with the highest numbers of employees are Israel's Central district; the Gloucestershire, Wiltshire and Bristol/Bath area in the United Kingdom; Midi-Pyrenees in France and Upper Bavaria (Oberbayern) in Germany, each having from 10 000 to 15 000 employees. Safran Landing Systems is a French company and the world's largest manufacturer of aircraft landing gear. However, the company's origins date back to the United Kingdom-based Dowty Group with large operations in Gloucester. Midi-Pyrenees and Upper Bavaria are both home for Airbus Defence and Space, Midi-Pyrenees also for Thales Alenia Space and Upper Bavaria for MTU Aero Engines AG among others. Israel is strong in military aviation.

In the production technology and heavy machinery traded cluster, the regions with specialised clusters and with the highest numbers of employees are located in Italy and Germany. Lombardy has the highest number of employees, 131 000, followed by Stuttgart with 107 000 and Düsseldorf with 92 000 employees. Emilia-Romagna has 85 000, Veneto 76 000 and Piemonte 70 000 employees. German regions also house smaller clusters, but in general, this cluster's regions with specialised clusters are rather evenly dispersed throughout Europe.

Summary

Mobility Technologies are a core part of the European manufacturing industry and are a clear focus for Europe's strategy to re-industrialize. The European mobility industry is estimated to employ between 10.9 and 13.3 million people, with rather high levels of wages, productivity and average value added. In 2016, the average wage in Mobility Technologies was 40 500 euros with specialised clusters showing a 5.4% wage premium over other locations. From 2011 to 2016, the employment has grown 0.2% and the wages 0.3% per year on average – the growth rates having been higher in specialised clusters than in other locations.

In a dynamic perspective, the last 40 years have witnessed an appreciable worldwide increase in the sales of cars, buses and airplanes, which have tripled, thanks especially to the extraordinary expansion of the Chinese market in the last decade. On the other hand, environmental regulation and changes in habits and social norms are casting doubts on the future possibilities of the sector to keep similar rates of growth. For the next decade, revenues and profits from manufacturing and selling motors and vehicles are forecast to be stable or shrink, while those from mobility services are expected to soar.

Not surprisingly, the specialised mobility technology clusters are located in areas of traditional automotive strength. The vast majority of all clusters have automotive as the core category, usually followed by production technology or metalworking. The industry is significantly and increasingly interconnected. The most important cross-sectoral mergers and acquisitions are carried out with the Machinery sector, followed by Electronics and Chemicals. The most dynamic hotspots in Mobility Technologies are in Germany, France and the UK. Cross-sectoral networks in Spain, Poland and Central Europe, Northern Italy and Sweden are increasing. Ireland and Denmark are significantly integrated with the UK and Sweden, respectively.

Stuttgart is the leading cluster star region with 15 stars, together with a number of other German clusters. Three German regions, Stuttgart, Düsseldorf and Upper Bavaria (Oberbayern), are among the top 10 European regions with the highest number of employment in Mobility Technologies, with about 320 000, 180 000 and 140 000 employees. Similarly, three Italian regions, Lombardia, Veneto and Emilia-Romagna make their way to top 10 with about 310 000, 160 000 and 150 000 employees. Istanbul, Śląskie in Poland, Central Hungary and Cataluna are the other four regions with the highest number of employees in the industry.

Close to 200 countries have committed in COP21 to limit the global warming below 2°C. Low-emission biofuels, hybrid and electric vehicles are the first implications of the transformation in the transport sector. Beyond eco-friendly modes of transport, new sharing-economy based mobility services will ease traffic congestion and the environmental burden, and make more efficient use of resources. The greatest payoffs are expected from innovations that increase the effectiveness of low-emission mobility, whether of the entire system, service concepts, powertrains or clean energy.

Compared to other emerging industries, there are relatively high number of global frontier and high growth firms in Mobility Technologies. The regions with specialised clusters locate a much higher rate of these firms than other locations. This probably reflects the quick technological development in the industry and the business opportunities it creates.

Appendix

European top regions in Mobility Technologies emerging industry (at least 8 Cluster Stars, 2016)

NUTS	Region	Cluster Stars	Employment 2016	Average annual change 2014-2016	Average wage 2016	Average annual change 2014-2016
DE11	DE11 - Stuttgart	15	317 800	2,4 %	69 100 €	3,6 %
DE14	DE14 - Tuebingen	14	91 200	-5,0 %	63 700 €	3,3 %
DEA5	DEA5 - Arnsberg	14	132 700	-1,8 %	58 300 €	1,6 %
DE13	DE13 - Freiburg	13	106 300	1,0 %	56 700 €	3,0 %
DE27	DE27 - Schwaben	13	81 000	0,3 %	59 800 €	4,3 %
DE12	DE12 - Karlsruhe	12	119 000	-1,5 %	60 400 €	2,4 %
DE23	DE23 - Oberpfalz	12	54 000	1,9 %	68 900 €	4,8 %
DE26	DE26 - Unterfranken	12	51 100	0,1 %	59 000 €	4,5 %
DEA1	DEA1 - Duesseldorf	12	177 000	-0,1 %	50 200 €	1,2 %
ES21	ES21 - Pais Vasco	12	87 700	0,5 %	49 400 €	2,8 %
FR10	FR10 - Ile-De-France	12	108 400	-3,4 %	74 800 €	6,9 %
ITC1	ITC1 - Piemonte	12	131 900	1,6 %	37 800 €	0,8 %
ITC4	ITC4 - Lombardia	12	306 500	-1,4 %	42 500 €	1,0 %
ITH3	ITH3 - Veneto	12	164 900	-0,2 %	41 900 €	3,8 %
ITH5	ITH5 - Emilia-Romagna	12	148 100	-1,0 %	42 800 €	1,0 %
AT31	AT31 - Oberosterreich	11	71 100	0,4 %	50 000 €	3,3 %
DE21	DE21 - Oberbayern	11	135 600	-1,4 %	91 400 €	7,1 %
DE71	DE71 - Darmstadt	11	74 600	0,2 %	63 600 €	4,9 %
DEA2	DEA2 - Koeln	11	77 600	-1,6 %	63 500 €	1,6 %
HU10	HU10 - Central Hungary	11	170 500	3,0 %	13 200 €	1,5 %
SK02	SK02 - Western Slovakia	11	72 700	2,7 %	24 400 €	4,5 %
CZ02	CZ02 - Central Bohemia	10	55 400	0,0 %	26 200 €	6,0 %
CZ03	CZ03 - Southwest	10	74 900	1,4 %	22 900 €	5,6 %
CZ06	CZ06 - Southeast	10	81 200	1,8 %	22 900 €	5,5 %
CZ07	CZ07 - Central Moravia	10	64 900	1,1 %	20 400 €	5,3 %
CZ08	CZ08 - Moravskoslezsko	10	62 300	2,6 %	21 700 €	3,6 %
DE91	DE91 - Braunschweig	10	76 600	-2,2 %	56 500 €	5,3 %
DEG0	DEG0 - Thueringen	10	73 100	-1,7 %	37 900 €	4,5 %
FR71	FR71 - Rhone-Alpes	10	109 100	3,6 %	53 300 €	2,9 %
PL22	PL22 - Śląskie	10	189 500	1,3 %	21 700 €	2,3 %
RO12	RO12 - Centre	10	77 900	2,0 %	16 000 €	6,9 %
RO31	RO31 - South-Muntenia	10	87 600	2,9 %	17 500 €	7,7 %
CZ05	CZ05 - Northeast	9	87 600	-0,2 %	21 600 €	6,0 %
DEA3	DEA3 - Muenster	9	48 600	-1,7 %	61 200 €	4,1 %
DEA4	DEA4 - Detmold	9	84 300	0,9 %	49 600 €	3,4 %

NUTS	Region	Cluster Stars	Employment 2016	Average annual change 2014-2016	Average wage 2016	Average annual change 2014-2016
DEF0	DEF0 - Schleswig-Holstein	9	44 000	-1,0 %	56 800 €	2,4 %
ES30	ES30 - Madrid	9	85 000	-2,7 %	44 800 €	3,4 %
ES51	ES51 - Catalunya	9	139 800	-0,2 %	43 500 €	3,4 %
ES52	ES52 - Comunidad Valenciana	9	51 600	4,3 %	35 600 €	1,6 %
FR51	FR51 - Pays-de-la-Loire	9	44 600	-0,6 %	46 500 €	1,8 %
HU21	HU21 - Central Transdanubia	9	80 200	4,8 %	16 900 €	0,7 %
ITF1	ITF1 - Abruzzo	9	30 400	-1,5 %	40 200 €	4,0 %
ITH4	ITH4 - Friuli-Venezia Giulia	9	43 800	0,2 %	43 300 €	2,1 %
ITI1	ITI1 - Toscana	9	49 900	-1,8 %	41 000 €	2,1 %
ITI3	ITI3 - Marche	9	35 600	-0,2 %	35 000 €	2,7 %
RO42	RO42 - West	9	111 500	1,1 %	16 200 €	11,5 %
SE11	SE11 - Stockholm	9	28 400	-2,5 %	58 600 €	2,3 %
SE12	SE12 - East Middle Sweden	9	53 600	-2,3 %	44 700 €	1,5 %
SE21	SE21 - Smaland and the islands	9	31 700	-2,9 %	35 900 €	1,2 %
SE23	SE23 - West Sweden	9	56 600	-6,8 %	45 900 €	5,2 %
BE21	BE21 - Antwerp	8	20 300	-6,2 %	70 700 €	7,0 %
DE22	DE22 - Niederbayern	8	42 200	0,8 %	69 300 €	3,5 %
DE72	DE72 - Giessen	8	33 900	-0,5 %	62 300 €	6,0 %
DEB3	DEB3 - Rheinhessen-Pfalz	8	48 000	-0,1 %	64 100 €	2,2 %
DEC0	DEC0 - Saarland	8	41 100	2,3 %	60 300 €	2,9 %
DED4	DED4 - Chemnitz	8	58 900	-2,0 %	38 100 €	4,3 %
ES22	ES22 - Navarra	8	23 400	0,0 %	46 800 €	3,3 %
FR24	FR24 - Centre	8	28 200	-1,0 %	58 300 €	3,3 %
FR30	FR30 - Nord-Pas-De-Calais	8	35 800	-4,8 %	56 700 €	3,0 %
FR62	FR62 - Midi-Pyrenees	8	31 300	-1,7 %	63 000 €	3,5 %
FR82	FR82 - Provence-Alpes-Cote D'Azur	8	16 700	-4,3 %	60 800 €	5,1 %
HU22	HU22 - Western Transdanubia	8	73 000	2,5 %	20 000 €	1,1 %
NO04	NO04 - Agder og Rogaland	8	31 500	0,0 %	75 900 €	0,7 %
NO05	NO05 - Vestlandet	8	39 200	-4,7 %	61 000 €	-0,8 %
PT11	PT11 - North	8	49 800	-3,4 %	22 100 €	5,0 %
SK03	SK03 - Central Slovakia	8	43 300	3,2 %	24 100 €	3,4 %
UKG3	UKG3 - West Midlands	8	77 900	-1,5 %	45 900 €	5,9 %
UKK1	UKK1 - Gloucestershire, Wiltshire and Bristol/Bath area	8	51 100	-2,2 %	47 800 €	4,7 %

European Observatory for Clusters and Industrial Change

The European Observatory for Clusters and Industrial Change (#EOCIC) is an initiative of the European Commission's Internal Market, Industry, Entrepreneurship and SMEs Directorate-General. The Observatory provides a single access point for statistical information, analysis and mapping of clusters and cluster policy in Europe, aimed at European, national, regional and local policy-makers, as well as cluster managers and representatives of SME intermediaries.



The aim of the Observatory is to help Europe's regions and countries design better and more evidence-based cluster policies and initiatives that help countries participating in the COSME programme to:

- develop world-class clusters with competitive industrial value chains that cut across sectors;
- support Industrial modernisation;
- foster Entrepreneurship in emerging industries with growth potential;
- improve SMEs' access to clusters and internationalisation activities; and
- enable more strategic inter-regional collaboration and investments in the implementation of smart specialisation strategies.

In order to address these goals, the Observatory provides an Europe-wide comparative cluster mapping with sectoral and cross-sectoral statistical analysis of the geographical concentration of economic activities and performance, made available on the website of the European Cluster Collaboration

Platform (ECCP)³¹. The Observatory provides the following services:

- **Bi-annual "European Panorama of Clusters and Industrial Change"** that analyses cluster strengths and development trends across 51 cluster sectors and 10 emerging industries, and investigates the linkages between clusters and industrial change, entrepreneurship, growth, innovation, internationalisation and economic development;
- **"Cluster and Industrial Transformation Trends Report"** which investigates the transformation of clusters, new specialisation patterns and emerging industries;
- **Cluster policy mapping** in European countries and regions as well as in selected non-European countries;
- **"Regional Eco-system Scoreboard for Clusters and Industrial Change"** that identifies and captures favourable framework conditions for industrial change, innovation, entrepreneurship and cluster development;

³¹ <https://www.clustercollaboration.eu/>

- **Updated European Service Innovation Scoreboard**³², that provides scorecards on service innovation for European regions;
- **"European Stress Test for Cluster Policy"**, including a self-assessment tool targeted at cross-sectoral collaboration, innovation and entrepreneurs with a view to boosting industrial change;
- **Customised advisory support services** to twelve selected model demonstrator regions, including expert analysis, regional survey and benchmarking report, peer-review meeting, and policy briefings in support of industrial modernisation;
- **Advisory support service to European Strategic Cluster Partnerships**, in order to support networking between the partnerships and to support exchanges of successful practices for cross-regional collaborations and joint innovation investments;
- **Smart Guides** for cluster policy monitoring and evaluation, and for entrepreneurship support through clusters that provide guidance for policy-makers; and
- **Brings together Europe's cluster policy-makers and stakeholders** at four European Cluster Policy Forum events in 2018 and 2019, European Cluster Days and at the European Cluster Conference in May 2019 in Bucharest (Romania) in order to facilitate high-level cluster policy dialogues, exchanges with experts and mutual cluster policy learning.
- Online presentations and publications, discussion papers, newsletters, videos and further promotional material accompany and support information exchanges and policy learning on cluster development, cluster policies and industrial change.

More information about the European Observatory for Clusters and Industrial Change is available at: <https://www.clustercollaboration.eu/eu-initiatives/european-cluster-observatory>

³² Previous versions for 2014 and 2015 were developed by the European Service Innovation Centre (ESIC), see http://ec.europa.eu/growth/tools-databases/esic/index_en.htm

