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Inspire policy making by territorial evidence

Small and Medium-Sized Enterprises in European Regions and Cities

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Scientific Annex

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1 Introduction

This Scientific Annex connected to the Main Report of the ESPON project ‘Small and Medium-Sized Enterprises in European Regions and Cities’ provides an in-depth addition to the chapters of the main report. It gives a more detailed elaboration on definitions used and data gathered, as well as on mapping and analyses of SMEs in European cities and regions.

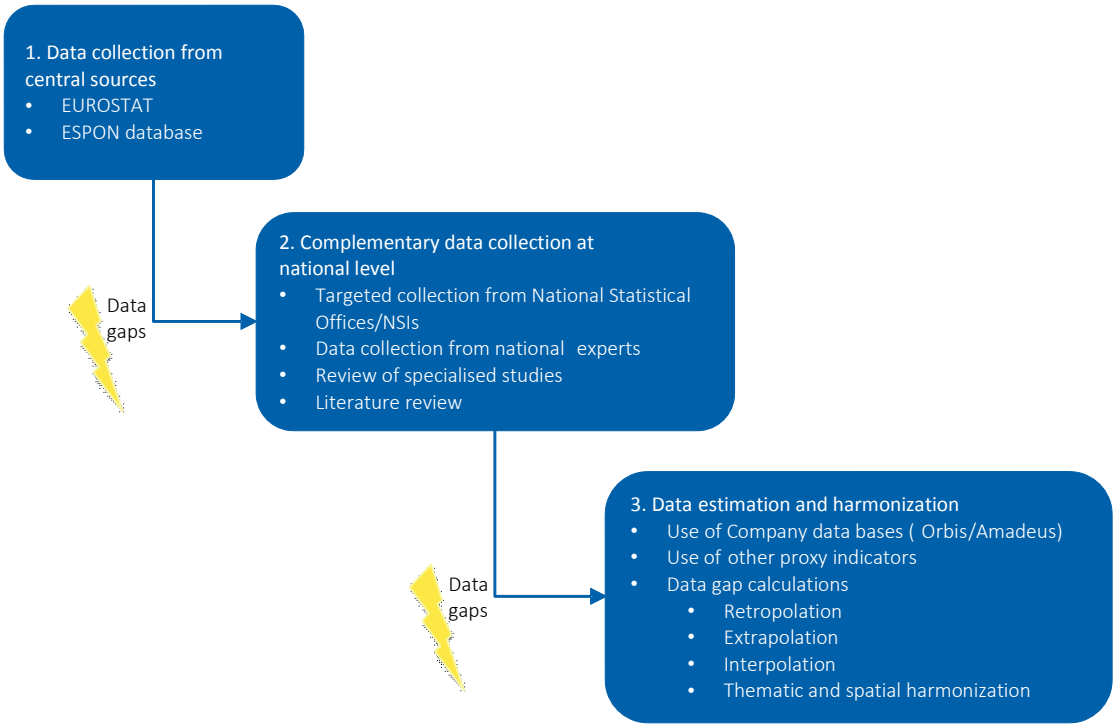
It further provides details to the statistical analyses conducted in the course of the project including a description of the setup of the regional typology and case study selection, as well as short summaries of the 10 case studies conducted. For the detailed case study reports, please refer to the individual case study reports in the Case Study Book.

2 Methodology and approach

2.1 Overview of definitions used

The aim of the task was data collection on SME performance and territorial context. The output is a completed database with 'SME-related data' and 'context data'. The following figure illustrates the process of data collection and the preparation of time series through the following steps:

Figure 2.1: Process of data collection and preparation of time series



Source: Consortium, 2016.

As a basis for the quantitative analyses conducted in the study, regional data on SME performance and territorial context was collected at the NUTS 3 level, covering most of the ESPON space, for the years 2008 and 2014. In general, the *SME data collection* comprised business-related indicators such as[1]:

- Number of firms, e.g. enterprises and/or local units;
- Employment, e.g. persons employed and/or employees;
- Number of firm births and/or birth rate;
- Number of firm closures and/or death rate;
- Survival rate, i.e. percentage of a certain birth cohort still existing after x years.

For number of firms and employment, a breakdown along a combination of the following categories was achieved:

- NUTS 3 regions, in some cases NUTS 2 regions;
- Enterprise size categories: 0, 1-9, 10-49, 50-249, 250+ employees.

[1] For definitions used refer to the Scientific Annex

It was not possible to differentiate SME size class by NACE sectors as this data does not exist on NUTS 3 level at a comparable basis. We have worked around this issue by analysing regional labour market structures by NACE sectors and combining this information with the regional SME typology (see Chapter 4.5.).

Apart from SME data, *territorial context indicators* have been defined, picturing the characteristics of regions and external factors. Relevant variables have been collected on the basis of theory-based hypotheses on factors explaining the different regional patterns of SMEs on the one hand and data availability in European and national databases on the other hand.

2.1.1 Statistical units used for describing structures and development of SMEs

A fundamental requirement in measuring structures and development of businesses concerns the definition of a business itself. Statistical offices will typically define businesses according to their activity within national boundaries, although businesses are also, and increasingly so, measured in a global, multinational sense. Definitions used by national statistical offices are not consistent across countries[2]. Many businesses (parents) own or control other businesses (subsidiaries) operating within the same economy. Depending on the degree of control and the nature of the economic activity, some statistical offices will consolidate parents with subsidiaries, while others do not. The rules steering statistical offices' practices largely reflect institutional and administrative arrangements that exist in their country. Not surprisingly, these differ across countries and so too, therefore, do the definitions used for businesses.[3]

All Member States of the European Union maintain business registers for statistical purposes. The BR Regulation[4] establishes a common framework for these registers. Building on the BR Regulation, Eurostat's Business Register Recommendations Manual[5] takes into account the need for consistency in the units and classifications used in harmonised registers and, particularly, compatibility with NACE.

In defining standard statistical units, the two most authoritative international sources are the system of national accounts (2008 SNA)[6] and the International Standard Industrial Classification of All Economic Activities (ISIC Rev. 4)[7].

---

[2] Work by Eurostat (Herczog, Aimée, Hans van Hooff and Ad Willeboordse (1998), 'The Impact of Diverging Interpretations of the Enterprise Concept".) for example, demonstrated that the operational definitions used for enterprises differed considerably for some firm configurations, across countries, both conceptually and, more commonly, in practice.

[3] cf. Eurostat – OECD Manual on Business Demography Statistics
http://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-RA-07-010-EN.pdf

[4] Business Register (BR) Regulation (EC) No. 177/2008

[5] Eurostat (2010): Business registers recommendations manual
http://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-32-10-216-EN-C-EN.pdf

[6] http://unstats.un.org/unsd/nationalaccount/docs/SNA2008.pdf

[7] http://unstats.un.org/unsd/cr/registry/isic-4.asp

The BR Regulation makes three statistical units (SUs) mandatory, as these are the main units intended for use in collecting business statistics:[8]

- *Enterprise:* An institutional unit in its capacity as a producer of goods and services is known as an enterprise. An enterprise is an economic transactor with autonomy in respect to financial and investment decision-making, as well as authority and responsibility for allocating resources for the production of goods and services. It may be engaged in one or more productive activities.
- *Enterprise group:* Many enterprises operating within an economy are linked with other enterprises by complete or partial common ownership and a shared management structure to form an enterprise group. Members of an enterprise group are usually engaged in different activities and sometimes in more than one sector
- *Local unit:* Enterprises often engage in productive activity at more than one location, and for some purposes it may be useful to partition them accordingly. Thus, a local unit is defined as an enterprise or a part of an enterprise (e.g. a workshop, factory, warehouse, office, mine or depot) which engages in productive activity at or from one location. The definition has only one dimension, in that it does not refer to the kind of activity that is carried out.

Other units with international acceptance are[9]:

- *Establishment, also called local kind-of-activity unit (LKAU):* The establishment is defined as an enterprise or part of an enterprise that is situated in a single location and in which only a single (non-ancillary) productive activity is carried out or in which the principal productive activity accounts for most of the value added.
- *Kind-of-activity unit (KAU):* This is an enterprise or part of an enterprise that engages in only one kind of productive activity or in which the principal productive activity accounts for most of the value added. Compared with the establishment, in the case of such a unit, there is no restriction on the geographic area in which the activity is carried out, however it is characterized by homogeneity of activity.
- The systematic description of the economy, as represented by SNA, analyses two interrelated types of transactors and transactions that require two levels of statistical units:
- The *establishment*, in combination with ISIC and CPC, is used for the analysis of transactions in goods and services and for compilation of the production account.
- The *enterprise* is used as the statistical unit for compilation of income accounts, accumulation accounts, and balance sheet accounts as well as in the institutional sector classification of economic entities. The enterprise can be regarded as the core statistical unit of the 2008 SNA.

The various types of SUs are not independent but are linked to each other forming a statistical unit model. Each *enterprise* has one or more *local units (locations)*. Each local unit is attributed to only one enterprise. Each enterprise has one or more establishments (local kind-of-activity units). Each establishment is attributed to only one enterprise.[10]

All EU and OECD countries are able to produce structural business statistics on these bases (albeit with some differences in practice), often to meet the needs of international organisa-

[8] cf. SNA2008 and ISIC Rev. 4 for definitions
[9] cf. UNECE (2015), Guidelines on Statistical Business Registers
http://www.unece.org:8080/fileadmin/DAM/stats/publications/2015/ECE_CES_39_WEB.pdf
[10] cf. UNECE (2015), Guidelines on Statistical Business Registers
http://www.unece.org:8080/fileadmin/DAM/stats/publications/2015/ECE_CES_39_WEB.pdf

tions (e.g. OECD), and often for their own needs. For example, R&D statistics can only be practically produced at the enterprise (and enterprise group) level or at national accounts, which are typically based on establishment measures. However, the focus on business demography statistics by statistical offices is relatively new and, therefore the business definitions used across countries differ.[11]

The 'OECD Manual on Business Demography Statistics' recommends using the enterprise as a statistical unit: 'What matters most is the level at which decisions are made, such as those that affect expansion and innovation, and where operational control resides. Policy makers are interested in understanding what makes a successful business. The factors and business characteristics that determine this are inextricably linked to operational control. Measures based on enterprises come closest to these criteria, as the degree of innovation, decision making etc. within a business is likely to be closely related to the organisational and management structures that exist at the enterprise level. Research and development, product design and product advertising for example will usually be developed centrally within an enterprise with establishments benefiting from spill-over; indeed, even innovative ideas generated at the establishment level are likely to permeate throughout the enterprise as upward spill-over.'

However, in relation to the topic of SMEs, it reveals differences between establishment and enterprise-based indicators into context: *'The vast majority of enterprises have only one establishment; and this is especially the case for small and medium enterprises (SME), where there is considerable policy interest. Large new business are typically opened by a larger enterprise group, whether that be foreign or domestically owned and, so, statistics that compare levels of small business entries are likely to be comparable across countries even if the business definitions differ.'*

2.1.2 Classification of SMEs by number of employees

Describing SMEs in statistical terms is not trivial. The European Commission defines SMEs as having less than 250 persons employed and an annual turnover of up to € 50 million, or a balance sheet total of no more than € 43 million (Commission Recommendation of 6 May 2003). However, when looking for regional patterns of SMEs in different economic sectors, a variety of data sources and definitions exists.

Annual structural business statistics with a breakdown by size-class are the main source of data for an analysis of SMEs at the European level, but are only available at the national (NUTS 0) level. A limited set of the standard SBS variables (number of enterprises, turnover, persons employed, value added, etc.) is available mostly down to the three-digit (group) level of the activity classification (NACE), based on criteria that relate to the number of persons employed in each enterprise. The number of size classes available varies according to the

[11] cf. Eurostat – OECD Manual on Business Demography Statistics http://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-RA-07-010-EN.pdf.

activity under consideration. The main classes used for presenting the results in Structural Business Statistics are:

(a) microenterprises with less than 10 persons employed;
(b) small enterprises with 10-49 persons employed;
(c) medium-sized enterprises with 50-249 persons employed
(d) small and medium-sized enterprises (SME) with 1-249 persons employed;
(e) large enterprises with 250 or more persons employed.

This definition used by structural business statistics does not allow a differentiation of employer or non-employer firms (enterprises with 1-9 persons employed versus enterprises with 0 persons employed).

The second source for data on SMEs is the Eurostat regional business demography (BD). BD provides information on the number of active enterprises, number of persons employed in active enterprises, number of employees in active enterprises, enterprise births[12], enterprise birth rate[13], enterprise deaths, enterprise death rate, and enterprise survival rate, both on regional and country levels. It is available for 22 countries (not available for BE, CH, DE, EL, IE, IS, LI, NO, SE, UK) and therefore large countries which are important for data analysis such as DE and UK, are not covered here. In general, BD covers NACE B-S. Data are provided at NUTS 3 level and include information either on NACE (1-digit level, groups of 1-digits) or on enterprise size. The available enterprise size categories in regional business demography are:

(a) 0;
(b) 1-9;
(c) 10+ persons employed.

Therefore it is not possible to identify SMEs because the size categories up to 249 and 250+ are missing.

In the study at hand, we used data from the regional business demography (BD) as a basis and combined it with national data collection to identify the group of large enterprises (250+ employed persons) in order to calculate the enterprise size classes of interest[14]:

(a) one-person enterprises with 0 persons employed;
(b) microenterprises (Micros) with 1-9 persons employed;
(c) small and medium-sized enterprises (S&M) with 10-249 persons employed;
(d) large enterprises with 250 or more persons employed.

For better clarity of this study's results and to clearly delineate the enterprise size classes, the group of small and medium-sized enterprises with 10-249 is labelled as 'S&M', while the offi-

[12] Enterprise births: a birth occurs when an enterprise starts from scratch and actually starts activity; excluding mergers, break-ups, split-off or restructuring of a set of enterprises.
[13] Birth rate: number of births as a percentage of the population of active enterprises.
[14] In some cases, data from the Structural Business Statistics was used to fill data gaps (see chapter 2.3 for data estimation techniques).

cial abbreviation 'SMEs' is used for the total of microenterprises and small and medium-sized enterprises (0/1-249).

2.1.3 Specific SME sectors or technology areas

SMEs are not a homogeneous group of businesses. They include very small microenterprises as well as medium-sized enterprises with up to 250 employees. *Microenterprises* (with up to 9 employees) have strongly grown in numbers over the last few years, but less so in terms of their economic weight. They constitute a quite vulnerable form of business. Also, SMEs perform very differently; there is a small fraction of – rather young – high-growth firms (often referred to as 'gazelles') which contribute a great deal of SME job growth, while the majority of SMEs rather seek to keep their size and level of business activity.

SMEs are prevalent in virtually all *sectors and industries,* although they dominate some sectors more than others. For example, SMEs are very significant in construction, accommodation, business services, and retail trade, while transportation is an example of a sector which is less dominated by SMEs. Strongest SME growth can be observed in *knowledge-intensive services:* here employment increased by 12% from 2008 to 2014[15]. Most of the other sectors stagnated or even shrank in the same period.

Knowledge and creative economy

Empirical evidence of economic growth literature indicates that for the past decades an 'increased supply of labour and fixed and human capital can only account for between half and two-thirds of economic growth in most countries. The remainder is driven by something else.'[16] It has been acknowledged that this residual depends mainly on the stock of knowledge.

The role of knowledge in economic growth has become more apparent as regional and national economies are moving from traditional manufacturing towards knowledge-intensive services and high-technology industries. Thus, investment in intangible capital, such as human capital and knowledge, has become increasingly important. This can be illustrated by the observation that in 'Europe the share of intangible assets in the total assets of publicly-listed firms has more than tripled since the early 1990s, to around 30 percent'.[17] Knowledge capital intensity has increased most in manufacturing, trade, finance, and other services between 1995 and 2013, whereas it hardly changed in sectors like mining, utilities, and construction.[18]

An analysis of the German economic structure, for example, indicates that total and relative employment in the sectors of the *knowledge economy* has been increasing between 1998

[15] EC (2015): Annual Report on European SME 2014/2015. SME start hiring again, p 58.
[16] Kristian Uppenberg (2010): The knowledge economy in Europe. A review of the 2009 EIB Conference in Economics and Finance. EIB, Luxembourg, p.3.
[17] Kristian Uppenberg (2010): The knowledge economy in Europe. A review of the 2009 EIB Conference in Economics and Finance. EIB, Luxembourg, p.8.
[18] OECD (2015): OECD Science, Technology and Industry Scoreboard 2015 – Innovation for growth and society, Paris, p.39.

and 2006, while total employment decreased in the same period of time. This development has however not been homogeneous, neither across German regions nor between different knowledge sectors.[19] The heterogeneity between places may also be illustrated by the example of London.[20] Between 1998 and 2008 the number of jobs in the private sector knowledge economy increased in London by 18%, with particularly high growth in inner London. Comparing the boroughs of London, the local differences in the role of the knowledge economy become apparent with by far the highest share of knowledge economy jobs being found in the City of London in 2008 (nearly 85%) and ranging in the other boroughs between about 25% and 70% of total jobs. The knowledge economy is therefore considered to be one of the drivers of urban change. It is assumed to drive globalisation while at the same time to strengthen cities as economic centres.[21] Scientifically, this is discussed among others in the technology diffusion theory[22] and new economic geography[23].

Similarly, the *cultural and creative economy* appears to become increasingly important in terms of added value created and jobs offered. Depending on the delineation applied, its share accounts for some 2% to 4.5% of total EU GDP. What is more important, however, is that growth of this sector has been considerably higher than average growth of the European economy.[24]

Determinants – Drivers – Barriers

The probably most comprehensive framework considering the drivers of the knowledge economy is presented by the World Bank. In its Knowledge Assessment Methodology (KAM), four pillars crucial for knowledge economy development are identified and can be further broken down into a set of up to 80 structural and qualitative variables that describe the pillars. The four pillars are:

- an *economic and institutional regime* that supports an efficient mobilisation of resources and provides incentives for creation and use of knowledge;
- a pool of well-*educated and skilled workers* who are able to adapt their skills to contribute to knowledge creation;[25]

[19] Manuela Wolke & Sabine Zillmer (2010): Elemente des Städtesystems. In: : Hans-Joachim Kujath & Sabine Zillmer (ed.): Räume der Wissensökonomie. LIT, Urban and Regional Sciences, Vol.6, pp.134. The employment numbers used consider only employment subject to social insurance.
[20] Paula Lucci & Ben Harrison (2011); The Knowledge Economy. Reviewing the make up of the knowledge economy in London. Future of London: Policy Focus, pp.8.
[21] Hans Joachim Kujath (2010): Einleitung. In: Hans-Joachim Kujath & Sabine Zillmer (ed.): Räume der Wissensökonomie. LIT, Urban and Regional Sciences, Vol.6, p. 19.
[22] Lawson, C., Lorenz, E. (2008): Collective Learning, Tacit Knowledge and Regional Innovative Capacity. Regional Studies, 33(4), pp. 305-317.
[23] Paul Krugman (1991): Increasing Returns and Economic Geography. Journal of Political Economy, 99(3), pp. 483-499.
[24] Working Group of EU Member States Experts on Cultural and Creative Industries (2012): European Agenda for Culture, Work Plan for Culture 2011-2014, Policy Handbook. http://ec.europa.eu/culture/library/publications/cci-policy-handbook_en.pdf, p.6.
[25] The role of human capital has also been confirmed by many other papers, e.g. Ikeuchi, K. & Okamuro, H. (2010), Effects of Regional Human Capital Structure on Business Entry: A Comparison of Independent Startups and New Subsidiaries in Different Industries.

- a system of different players who together constitute an *effective innovation system* by tapping into worldwide knowledge and adapting it to regional and local needs;
- a *modern and adequate information infrastructure* that supports communication, dissemination, and processing of knowledge.[26]

According to this logic, investments into these pillars improve the creation, availability, and use of knowledge thereby increasing economic productivity and creating long-term economic growth via knowledge economy activities.

The role and relevance of these pillars (drivers) as well as their precise specifics may vary for different areas of the knowledge economy. Given the wide variety of activities that may be considered as part of the knowledge and creative economy, it can be concluded that different types of knowledge activities have different location needs that may partly be linked to the above drivers, but may also include other location factors.

This has been shown for example by differentiating functional groups of knowledge economic activities. A differentiation of private sector knowledge-based activities between high-tech firms, transformation service providers, transaction service providers, and information and media industry firms[27] shows that (1) they tend to prefer different locations,[28] (2) they have different patterns of interaction with their suppliers, clients, and within networks,[29] and (3) their infrastructure needs are not homogeneous.[30]

The ESPON KIT project[31] – 'Knowledge, Innovation, Territory' – also demonstrated that the geography of innovation is much more complex than a simple core-periphery model. The capacity to turn knowledge and innovation into regional growth is different among regions, and the identification of regional specificities in patterns of innovation is essential to build targeted normative strategies efficient for cohesion policy goals.

Role in regional development and policy

Knowledge-intensive economic activities have been continuously acknowledged in European policy documents since the adoption of the Lisbon Strategy.[32] In this context, a new strategic goal was formulated according to which the EU aimed 'to become the most competitive and

[26] Chen, D.H.C.; Dahlman, C.J. (2005): The Knowledge Economy, the KAM Methodology and World Bank Operations. The World Bank, Washington, pp.4.
[27] Sabine Zillmer (2010): Teilsysteme und Operationalisierung der Wissensökonomie. In: Hans-Joachim Kujath & Sabine Zillmer (ed.): Räume der Wissensökonomie. LIT, Urban and Regional Sciences, Vol.6, pp. 111.
[28] Manuela Wolke & Sabine Zillmer (2010): Elemente des Städtesystems. In: Hans-Joachim Kujath & Sabine Zillmer (ed.): Räume der Wissensökonomie. LIT, Urban and Regional Sciences, Vol.6, pp.169.
[29] Suntje Schmidt (2010): Beziehungen der Wissensgenerierung von Hochtechnologiebetrieben und Transationsdienstleistern in deutschen Stadtregionen. In: Hans-Joachim Kujath & Sabine Zillmer (ed.): Räume der Wissensökonomie. LIT, Urban and Regional Sciences, Vol.6, pp.251. Hans Joachim Kujath & Sabine Zillmer (2010): Synthese: Städtesystem – Wissensökonomie – Transationsräume. In: Hans-Joachim Kujath & Sabine Zillmer (ed.): Räume der Wissensökonomie. LIT, Urban and Regional Sciences, Vol.6, pp.375.
[30] Axel Stein (2010): Interaktionsmuster im deutschen Städtesystem. In: Hans-Joachim Kujath & Sabine Zillmer (ed.): Räume der Wissensökonomie. LIT, Urban and Regional Sciences, Vol.6, pp.227.
[31] See http://www.espon.eu/main/Menu_Projects/Menu_AppliedResearch/kit.html [10.6.2016].
[32] www.europarl.europa.eu/summits/lis1_en.htm

dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion'.[33] Although approaching this transition has become one of the most central policy areas in the EU, its achievements were disappointing when evaluating the strategy's progress.[34] Nevertheless, given its admitted relevance (for regional development) the goal was taken up again in the Europe 2020 Strategy focusing among others on smart growth. In this context, it is underlined that *knowledge and innovation* need to be strengthened to nurture future economic growth.[35]

The territorial policy perspective of the European Union does not focus explicitly on the knowledge economy, taking into account that relevant sectors and activities are not evenly distributed across regions and cities. In contrast, the Territorial Agenda 2020 requests smart specialization strategies with a place-based approach to enhance economic competitiveness of European regions. It calls for strengthening of 'research, human capital, the capacity for innovation, and bringing ideas to the market'.[36]

EU policy documents also acknowledge the role of creative economic activities. They are often referred to as cultural and creative industries, thereby partially including knowledge-intensive services. These industries are considered to be 'in a strategic position to promote smart, sustainable and inclusive growth in all EU regions and cities, and thus contribute fully to the Europe 2020 Strategy'.[37] Cultural and creative industries are considered to be important for European regional development as they may be useful at all stages of development, in order 'to enhance the comparative advantages of the local economy and to stimulate creativity and enterprise'.[38] The creative and cultural industries represent a key sector in many smart specialisation strategies on the ground.

The design of EU regional policy has taken into account the role of the knowledge and creative economy. For the 2014-2020 programming period, this is visible for instance in the common provision regulation[39] and the ERDF regulation[40]. While the support under European Structural and Investment Funds (ESIF) is not restricted to certain economic sectors, several thematic objectives aim to support competitiveness of regional economies by focussing on (1) research and innovation, (2) ICT, and (3) competitiveness of SMEs. This is further specified in the ERDF regulation, which states that it 'is necessary to promote innovation and the devel-

[33] Lisbon Strategy (2000), paragraph 5.
[34] Reinhilde Veugelers & Mojmir Mrak (2009): The Knowledge Economy and Catching-up Member States of The European Union. Report prepared for Commissioner's Potocnik's Expert Group, 'Knowledge for Growth".
[35] COM(2010) 2020 final, p.11.
[36] Territorial Agenda of the European Union 2020, paragraph 33.
[37] Working Group of EU Member States Experts on Cultural and Creative Industries (2012): European Agenda for Culture, Work Plan for Culture 2011-2014, Policy Handbook. http://ec.europa.eu/culture/library/publications/cci-policy-handbook_en.pdf, p.3.
[38] Working Group of EU Member States Experts on Cultural and Creative Industries (2012): European Agenda for Culture, Work Plan for Culture 2011-2014, Policy Handbook. http://ec.europa.eu/culture/library/publications/cci-policy-handbook_en.pdf, p.7.
[39] Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2017.
[40] Regulation (EU) No 1301/2013 of the European Parliament and of the Council of 17 December 2017.

opment of SMEs in emerging fields linked to European and regional challenges such as creative and cultural industries and innovative services, reflecting new societal demands, or to products and services linked to an ageing population, care and health, eco-innovation, the low-carbon economy and resource efficiency'.[41]

When looking at the KAM pillars mentioned above, the pillar related to the economic and institutional regime is least considered by EU regional policies since it is strongly linked to macroeconomic conditions (free trade, control of government expenditures and budget deficits, low inflation rate, efficient financial system) and the legal environment (effective and corruption-free government, sound and credible legal rules, (intellectual) property rights). Many of these aspects are however tackled under other European and national policy areas.

Table 2.1: Pillars of the knowledge economy and their recognition in EU regional policy

Economic and institutional regime	Educated and skilled workers	Effective innovation system	Modern and adequate information infrastructure
TO 11: Support to enhance the institutional capacity of public authorities and stakeholders and developing efficient financial instruments to overcome market failure and improve the availability of finance.	TO 8: Support for promoting quality employment and labour mobility. TO 10: Support for investments in education and training to improve skills and contribute to lifelong learning.	TO 1: Strengthen research, technological development, and innovation with a particular focus in IP 1b of the ERDF on links and synergies between all players of the innovation system. TO 3 in particular with respect to different IPs of the ERDF that support exploitation of new ideas, development of capacities for innovation, and development processes.	TO 2: Support for improved access to, use, and quality of information and communication technologies.

Source: Own presentation based on CPR and ERDF regulation.

Working definition

There is no universally valid definition for the knowledge and creative economy, and it is even discussed whether it can be defined and distinguished as a certain part of the economy.[42] Some authors argue that creativity and knowledge always mattered for economic production of goods and services. Thus, knowledge matters for all economic sectors, whether public or

[41] Regulation (EU) No 1301/2013 of the European Parliament and of the Council of 17 December 2017. Recital 8.

[42] For different approaches to definitions see e.g.
- Chen, D.H.C.; Dahlman, C.J. (2005): The Knowledge Economy, the KAM Methodology and World Bank Operations. The World Bank, Washington.
- Brinkley, I. (2006): Defining the knowledge economy. The Work Foundation. www.theworkfoundation.com
- ESPON (2012): KIT – Knowledge, Innovation, Territory. Final Report.
- OECD (1996): The knowledge-based economy. Paris.
- Powell, W.W.; Snellman, K. (2004): The Knowledge Economy. Annual Review of Sociology, Vol.30, pp. 199-220.
- Smith, K. (2000): What is the 'knowledge economy"? Knowledge-intensive industries and distributed knowledge bases. http://www.ebusinessforum.gr/old/content/downloads/WorkingPapera54.pdf

private. For assessing the role of the knowledge and creative economy in this study it is however necessary to identify relevant sectors.

Definitions may be more input or more output oriented or were developed against certain regional or overall global conditions.[43] Typical input-oriented perspectives highlight the role of knowledge and R&D activities for production or, like the World Bank, identify factors that are central to increasing the use and creation of knowledge. More output-oriented definitions focus on the knowledge production, innovations created, and patents obtained, etc. The different definitions may have in common that they discuss the creation and exploitation of knowledge, R&D, and innovation and testify to a shift towards changed competitiveness patterns and dynamics. In this context, the OECD definition may be most useful as a starting point: the knowledge economy describes '*trends in advanced economies towards greater dependence on knowledge, information and high skill levels, and the increasing need for ready access to all of these by the business and public sectors*.'[44]

Though interlinked and possibly largely overlapping, the terms creative economy and knowledge economy do not necessarily and completely refer to the same economic activities. The UK's definition of the creative industries[45], which has been adopted by other countries, includes thirteen sectors[46] of which many are knowledge intensive, though not all of them are typically considered to be knowledge intensive such as crafts. A similar approach has been adopted in the European Commission's Green Paper 'Unlocking the potential of cultural and creative industries' by distinguishing cultural industries and creative industries as follows:

- 'Cultural industries' are those industries producing and distributing goods or services which at the time they are developed are considered to have a specific attribute, use or purpose which embodies or conveys cultural expressions, irrespective of the commercial value they may have. Besides the traditional arts sectors (performing arts, visual arts, cultural heritage – including the public sector), they include film, DVD and video, television and radio, video games, new media, music, books and press.
- 'Creative industries' are those industries which use culture as an input and have a cultural dimension, although their outputs are mainly functional. They include architecture and design, which integrate creative elements into wider processes, as well as subsectors such as graphic design, fashion design or advertising.'[47]

While these definitions indicate the variety of creative economic activities, they also show that the creative economy does not include technology intensive sectors that are typically considered as part of the knowledge economy. Furthermore, the definition and understanding of the

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[43] For an overview of the variety of different indicators used to measure the knowledge-based economcy see e.g. Anthony Arundel, Adriana van Cruysen, Wendy Hansen, Minna Kanerva, René Kemp (2008): Knowledge Economy Indicators. Workpackage 1. Defining the Knowledge-Based Economy: Final Synthesis Report. Research project of the Sixth Framework Programme for Research, p.3.

[44] https://stats.oecd.org/glossary/detail.asp?ID=6864

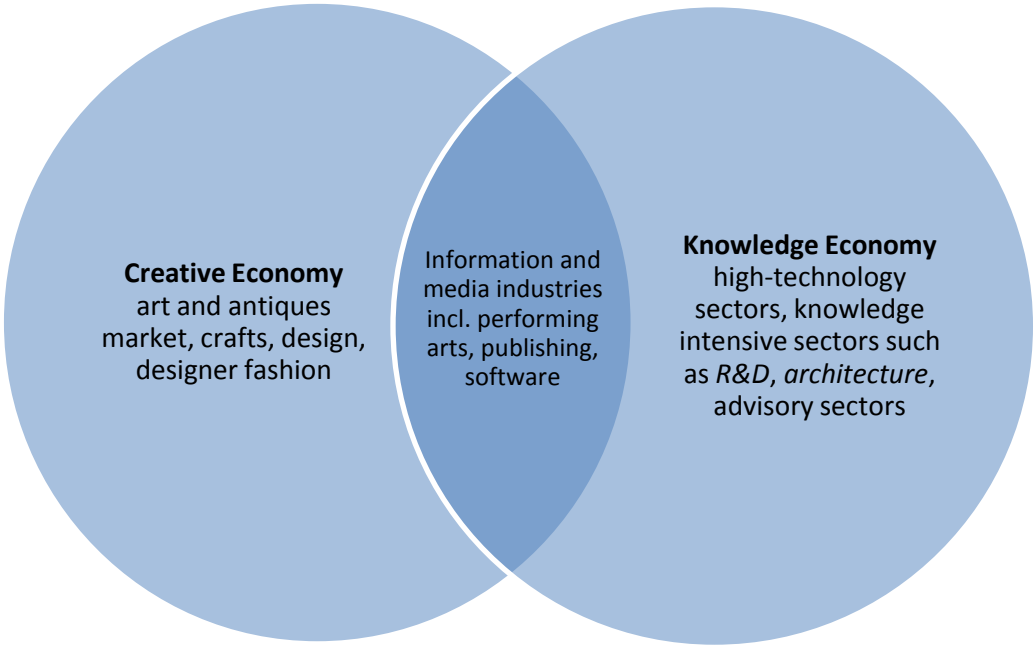
[45] http://creativecities.britishcouncil.org/creative-industries/what_are_creative_industries_and_creative_economy

[46] The thirteen sectors are advertising, architecture, the art and antiques market, crafts, design, designer fashion, film, interactive leisure software (ie. video games), music, the performing arts, publishing, software, and television and radio.

[47] COM(2010) 183 final: Green Paper – Unlocking the potential of cultural and creative industries, pp. 5-6.

creative economy is not unambiguous as may be illustrated by different categorisations which sometimes include respectively exclude R&D or architecture.[48]

Figure 2.2: Definition of knowledge and creative economy according to sectors



Italics: ambivalent categorization depending on source. Source: own elaboration

Regarding the knowledge economy, many studies delineate the sectors of the knowledge economy according to the (1) share of high-skilled labour, (2) R&D personnel and/or (3) the share of R&D expenditures in total expenditures/turnover. Sectors above certain benchmarks[49] are then considered to be part of the knowledge economy. In considering the parts of the creative economy that may not be knowledge intensive, additional sectors as depicted in the Figure above need to be included. Any approach to operationalising the knowledge and creative economy for the purpose of this study needs to consider data availability, especially from Eurostat, at the sector as well as the regional level.

In general, Eurostat distinguishes various aggregation groups based on NACE Rev. 2 in order to define high-tech industry and knowledge-intensive services in different contexts. The following groups are deemed to be relevant for the purpose of the study:

- Total Knowledge Intensive Activities – Business Industries (KIABI), for data of the European Labour Force Survey (LFS);
- High-tech aggregation in the field of manufacturing industries, in particular high-technology and medium-high-technology;
- High-tech aggregation in the field of services, in particular the knowledge-intensive services (KIS).

[48] See also UNDP (2013): Creative economy report 2013. Special edition – Widening local development pathways.
[49] Over time different benchmarks have been applied in different studies.

Table 2.2: Relevant categories of technology and knowledge-intensive sectors according to Eurostat

NACE Rev. 2	Division	Total Knowledge Intensive Activities – Business Industries (KIABI)	High-technology and medium-high-technology manufacturing	Knowledge Intensive Services (KIS)
B 09	Mining support service activities	X		
C 19	Manufacture of coke and refined petroleum products	X		
C 20	Manufacture of chemicals and chemical products		X	
C 21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	X	X	
C 26	Manufacture of computer, electronic, and optical products	X	X	
C 27	Manufacture of electrical equipment		X	
C 28	Manufacture of machinery and equipment n.e.c.		X	
C 29	Manufacture of motor vehicles, trailers, and semi-trailers		X	
C 30	Manufacture of other transport equipment		X	
H 50	Water transport			X
H 51	Air transport	X		X
J – Information and communication (total section)				
J 58	Publishing activities	X		X
J 59	Motion picture, video and television programme production, sound recording, and music publishing activities	X		X
J 60	Programming and broadcasting activities	X		X
J 61	Telecommunications	X		X
J 62	Computer programming, consultancy, and related activities	X		X
J 63	Information service activities	X		X
K – Financial and insurance activities (total section)				
K 64	Financial service activities, except insurance and pension funding	X		X
K 65	Insurance, reinsurance and pension funding, except compulsory social security	X		X
K 66	Activities auxiliary to financial services and insurance activities	X		X
M – Professional, scientific, and technical activities (total section)				
M 69	Legal and accounting activities	X		X
M 70	Activities of head offices; management consultancy activities	X		X
M 71	Architectural and engineering activities; technical testing and analysis	X		X
M 72	Scientific research and development	X		X
M 73	Advertising and market research	X		X
M 74	Other professional, scientific, and technical activities	X		X
M 75	Veterinary activities	X		X
N 78	Employment activities	X		X
N 79	Travel agency, tour operator, and other reservation service and related activities	X		
N 80	Security and investigation activities			X
O – Public administration and defence; compulsory social security (total section)				
O 84	Public administration and defence; compulsory social security			X
P – Education (total section)				
P 85	Education			X
Q – Human health and social work activities				
Q 86	Human health activities			X
Q 87	Residential care activities			X
Q 88	Social work activities without accommodation			X
R – Arts, entertainment, and recreation (total section)				
R 90	Creative, arts, and entertainment activities	X		X

NACE Rev. 2	Division	Total Knowledge Intensive Activities – Business Industries (KIABI)	High-technology and medium-high-technology manufacturing	Knowledge Intensive Services (KIS)
R 91	Libraries, archives, museums, and other cultural activities			X
R 92	Gambling and betting activities			X
R 93	Sports activities and amusement and recreation activities			X

Source: http://ec.europa.eu/eurostat/cache/metadata/DE/htec_esms.htm, July 2016

Table 2.2 above provides a detailed overview of the three above-mentioned groups and their corresponding NACE codes at two-digit level. Just like the OECD definition[50], the definition of Eurostat on knowledge-intensive services (KIS) includes the public sector as well. As public-based knowledge industries and services (i.e. education and health and social work activities) are not relevant for analysing the role of SMEs in European regions and cities, they will not be included in the final working definition.

As the creative economy overlaps to a great part with the knowledge economy, the knowledge economy needs to be extended by those sectors that are considered to be part of the creative economy, but not of the technology and knowledge-intensive sectors. As indicated in the table below, this refers to only a few more sectors which can be mostly linked to the two-digit level of the NACE classification. The only exemptions are manufacturing of jewellery and musical instruments, the retail sale of books, newspapers, music, and video recordings, and at antique markets, which are defined only at the four-digit level of the NACE classification and thus will not be available for regions.

Table 2.3: Creative sectors according to relevant publications at European level

NACE Rev. 2	Division/class	Not included in definition of knowledge economy above
C 18	Printing and reproduction of recorded media	X
C 32[1]	Other manufacturing:	
	C 32.12 Manufacture of jewellery and related articles	X
	C 32.13 Manufacture of imitation jewellery and related articles	X
	C 32.20 Manufacture of musical instruments	X
G 47[2]	Retail trade, except of motor vehicles and motorcycles:	
	G 47.61 Retail sale of books in specialised stores	X
	G 47.62 Retail sale of newspapers and stationery in specialised stores	X
	G 47.63 Retail sale of music and video recordings in specialised stores	X
	G 47.79 Retail sale of second-hand goods in stores (incl. antiques)	X
J 58	Publishing activities	
J 59	Motion picture, video and television programme production, sound recording, and music publishing activities	
J 60	Programming and broadcasting activities	
J 62	Computer programming, consultancy, and related activities	
J 63	Information service activities:	
	J 63.91 News agency activities	
M 71	Architectural and engineering activities; technical testing and analysis	
M 73	Advertising and market research	

[50] https://stats.oecd.org/glossary/detail.asp?ID=6864

NACE Rev. 2	Division/class	Not included in definition of knowledge economy above
M 74	Other professional, scientific, and technical activities	
R 90	Creative, arts, and entertainment activities	
R 91	Libraries, archives, museums, and other cultural activities	

Note: Most of the existing definitions concerning cultural and creative industries (CCIs) in Europe refer to four-digit classes of NACE Rev. 2. In order to provide a reasonable definition for the purpose of the study, mainly the corresponding two-digit divisions have been taken into account. [1]

…Beside the manufacture of jewellery and musical instruments, a considerable part of C 32 consists of 'manufacture of medical and dental instruments and supplies', which is – in all definitions of cultural and creative industries – not part of the creative economy.

[2] *…The same holds for retail trade: The majority of G 47 is not related to the creative economy.*

Source: own elaboration, based on different publications such as: ESSnet Culture Report (2012); EC (2010): Green Paper; Tera (2014); IDEA (2013) Finance CCS; KMFA (2014), KMFA (2015), KMFA & VVA (2016)

When combining the above discussed definitions of the knowledge and creative economy according to NACE Rev. 2, and taking into account both the relevance for the study and the data availability at two-digit level, the following final working definition of the knowledge and creative economy could be applied:

Table 2.4: Final working definition of the knowledge and creative economy

NACE Rev. 2	Division
B 09	Mining support service activities
C 18	Printing and reproduction of recorded media
C 19	Manufacture of coke and refined petroleum products
C 20	Manufacture of chemicals and chemical products
C 21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
C 26	Manufacture of computer, electronic, and optical products
C 27	Manufacture of electrical equipment
C 28	Manufacture of machinery and equipment n.e.c.
C 29	Manufacture of motor vehicles, trailers, and semi-trailers
C 30	Manufacture of other transport equipment
H 50	Water transport
H 51	Air transport
J – Information and communication (total section)	
J 58	Publishing activities
J 59	Motion picture, video and television programme production, sound recording, and music publishing activities
J 60	Programming and broadcasting activities
J 61	Telecommunications
J 62	Computer programming, consultancy, and related activities
J 63	Information service activities
K – Financial and insurance activities (total section)	
K 64	Financial service activities, except insurance and pension funding
K 65	Insurance, reinsurance, and pension funding, except compulsory social security
K 66	Activities auxiliary to financial services and insurance activities
M – Professional, scientific, and technical activities (total section)	
M 69	Legal and accounting activities
M 70	Activities of head offices; management consultancy activities
M 71	Architectural and engineering activities; technical testing and analysis
M 72	Scientific research and development

NACE Rev. 2	Division
M 73	Advertising and market research
M 74	Other professional, scientific, and technical activities
M 75	Veterinary activities
N 78	Employment activities
N 79	Travel agency, tour operator, and other reservation service and related activities
N 80	Security and investigation activities
R – Arts, entertainment and recreation (total section)	
R 90	Creative, arts, and entertainment activities
R 91	Libraries, archives, museums, and other cultural activities
R 92	Gambling and betting activities
R 93	Sports activities and amusement and recreation activities

Notes:

In general, according to Eurostat, the total divisions O (Public administration and defence; compulsory social security), P (Education), and Q (Human health and social work activities) are also counted among the knowledge-intensive services (KIS). However, the focus of this study is the market-oriented economy, while O, P, and Q are mainly public-based. Anyway, it might be the case that data inconsistencies force us also to include O, P, and Q in the analysis. In some data sources, such as the structural business statistics (SBS) which reflects only the market-oriented economy (B-N, S95), data for O, P, Q and R are not available at all.

C 32 has been left out as a whole, as a considerable part is made up of the four-digit 'manufacture of medical and dental instruments and supplies', a branch which is only counted among the less knowledge-intensive services (LKIS) and therefore is not part of the knowledge-intensive services (KIS).

G 47 has been left out as a whole, as the majority of the four-digits making up retail trade is not related to the creative economy. Source: own elaboration

The relevance of the ICT sector

Information and communication technologies (ICT) constitute one of the so-called key enabling technologies (KET) which have been transforming the entire economy and the way of doing business for decades. They are seen to be pivotal in enhancing competitiveness, enabling development, and bringing progress to all levels of society[51]. Goods and services are increasingly sold over electronic marketplaces. Digital technologies are being integrated in virtually all industrial sectors, including advanced/smart manufacturing (the fourth industrial revolution), robotics, smart buildings, the health sector, energy production, and public services, etc. New technological opportunities and areas of application are constantly emerging such as big data, cloud computing, or social media.

The ICT sector value added (VA) amounted to € 516.50 billion in 2012. This represented a share of 3.99% of EU GDP, a share that has declined slightly over the last few years. ICT services contributed by far the largest share of ICT sector VA (92.27%, or € 476.58 billion in 2012), accounting for 3.68% of EU GDP, while ICT manufacturing VA contributed 7.73% of ICT sector VA (€ 39.92 billion), totalling 0.31% of GDP.[52]

In 2012, 6.18 million people worked in the EU ICT sector, representing 2.76% of total employment. ICT sector employment is highly concentrated in ICT services (87.03%). Overall

[51] World Economic Forum (2015), The Global Information Technology Report 2015, p xiii.

[52] JRC-IPTS (2015): The 2015 PREDICT report – an analysis of ICT R&D in the EU and beyond. The Institute for Prospective Technological Studies of the European Commission, Seville http://is.jrc.ec.europa.eu/pages/ISG/ictI.html.

ICT sector employment increased by 0.97% – in absolute terms, almost 59,000 people – from 2011 to 2012. This figure represented job losses in ICT manufacturing (-33,000 people, -3.96%) and job creation in ICT services (92,000 people, +1.75%). Thus, ICT manufacturing lost jobs, while ICT services generated employment.

The Joint Research Centre (JRC) of the European Commission undertakes a yearly mapping and analysis of the dynamics in the ICT industry and of its R&D and innovation potential. One of its main results is that the annual R&D expenditure of the ICT industry represents a quarter of total European Business Expenditure in Research and Development (BERD), and thus shows to be a major engine of innovation and competitiveness.[53]

Indeed, academic studies into the drivers of total factor productivity (TFP) in the European Union conclude that 'the role of ICT consists in offering a platform on which network externalities can operate' (Schreyer 2000), and consequently spur TFP. At the country level, O'Mahony and Van Ark (2003) and Basu et al. (2004) for a sample of OECD countries and Gordon (2000) for the USA find that ICT has a significant and positive effect on aggregate productivity. Moreover, Van Ark, O'Mahony, and Timmer (2008) argue that the productivity gap between the EU and the USA is most likely due to the underperformance of the European countries in terms of the 'knowledge economy', among which ICT plays a significant role.'[54]

Determinants – Drivers – Barriers

The 13 new Member States together employed 30.75% of all employees from the EU ICT manufacturing sector, significantly above the 22.18% employed by Germany. One of the explanations for this is the relocation of production activities, especially in manufacturing, from the EU-15 to the new Member States. In services, however, the contribution of the new MS was only half that value (15.21%). In terms of single-country contributions, Germany dominated ICT manufacturing (providing 22.18% of EU ICT manufacturing employment), while ICT services employment was concentrated in the UK (18.45% of EU). [55]

Also, the Digital Entrepreneurship Scoreboard reveals very different patterns and performance of the ICT sector across Europe, fitting into the overall diversity in development pathways and trajectories of innovation across European regions.[56] For example, the value added share of the ICT sector varies from approx. 2.5% of total value added in Latvia to approx. 6.5% in Sweden. Start-up rates (birth rates) in the ICT sector also differ markedly: while Aus-

[53] JRC-IPTS (2015): The 2015 PREDICT report – an analysis of ICT R&D in the EU and beyond. The Institute for Prospective Technological Studies of the European Commission, Seville http://is.jrc.ec.europa.eu/pages/ISG/ictI.html.
[54] Gehringer, A., Martínez-Zarzoso, I., Nowak-Lehmann Danzinger, F. (2016): What are the drivers of total factor productivity in the European Union? Economics of Innovation and New Technology, Vol. 25:4, 406-434.
[55] JRC-IPTS (2015): The 2015 PREDICT report – an analysis of ICT R&D in the EU and beyond. The Institute for Prospective Technological Studies of the European Commission, Seville http://is.jrc.ec.europa.eu/pages/ISG/ictI.html.
[56] EC (2015): Digital Entrepreneurship Scoreboard 2015. DG for Internal Market, Industry, Entrepreneurship and SME, Brussels.

tria, Belgium, and Italy exhibit comparably low rates of around 7%, birth rates in some of the eastern European Member States amount to approx. 20%.[57]

This indicates that important location factors are at work in the ICT sector. Based on a broad definition of digital entrepreneurship, four types of enabling environments have been identified in the Digital Entrepreneurship Scoreboard as a result of a hierarchical cluster analysis conducted on five composite indicators representing the framework components.[58] The five enabling framework dimensions are:

- *The digital knowledge base and ICT market,* including factors supporting digital innovation and commercialization, country competitiveness in the production of ICT related products, and the ability of investing abroad in ICT-related activities;
- *Digital business environment,* describing the degree of development and use of infrastructures enabling the use of digital tools as well as determinants for an improved business environment;
- *Taxation and financial environment,* including the ease of finding the necessary financial resources for entrepreneurial investments;
- *Digital skills and e-leadership,* describing the efforts of companies in hiring and training professionals in the domain of digital skills as well as the possibility of acquiring such skills through formalized educational institutions;
- *Entrepreneurial mind-set,* encompassing aspects related to the entrepreneurial impetus of society.

The academic literature generally concludes that a region's position towards knowledge and technology, including ICT, is determined by three key features:[59]

- the accessibility to knowledge;
- the capacity to absorb knowledge;
- the capability to diffuse knowledge and technology.

Accessibility to knowledge is dependent on local infrastructure, connectivity, proximity to markets, incidence of knowledge and higher education institutions, R&D and innovation activities, and networks.

Absorption capacity depends on the level of skills, education, equipment, and professional networks, and on the availability of knowledge-intensive services. Absorption capacity has become a very important dimension of regional knowledge economies in Europe, and education and training is seen to be the most important challenge for future regional development.

Diffusion capability is determined by factor mobility, density, high-tech manufacturing, international trade, and foreign investments. All these factors can be facilitated or hindered by the public and private institutional environment.

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[57] EC (2015): Digital Entrepreneurship Scoreboard 2015. DG for Internal Market, Industry, Entrepreneurship and SME, Brussels.
[58] EC (2015): Digital Entrepreneurship Scoreboard 2015. DG for Internal Market, Industry, Entrepreneurship and SME, Brussels.
[59] For a summary, look at, e.g., Wintjes R. & Hollanders H. (2010): The regional impact of technological change in 2020. Synthesis report for the Framework Service Contract 150083-2005-02-BE (Ref SC36 Regional Impact) for DG Regional Policy.

Accessibility, absorption, and diffusion are in turn dependent on the connectivity of (and within) a region, its capital and competencies, its mobility and quality of the factors of production, and last but not least, on what it can learn from other neighbouring regions or from being part of a network.

The OECD (2016) concludes that it is metropolitan areas which specialize in the ICT sector. In 2013, 41% of patents granted in the 236 OECD metropolitan areas where data was available were in the ICT sector. This was followed by health care (15%), environment (9%), biotechnology (6%), and nanotechnology (1%). Metropolitan areas in Estonia, Finland, and Sweden are among the most specialized in ICT patents.[60]

A study[61] on establishing company-specific and regional factors that had a positive impact on the growth of German ICT businesses revealed amongst others the following factors:

- innovation and R&D activity;
- high equity capital;
- cooperation projects with other businesses.

Another piece of research in Germany investigating the growth performance of small technology-based firms confirms that being located in an agglomeration rich in knowledge resources is more conducive to firm growth than being located in a region that is less endowed with knowledge resources.[62]

The literature often cites the usual suspects when it comes to barriers: lack of risk capital, transfer and use of knowledge, limited cross-sectoral collaboration, lack of entrepreneurship, and the long-term negative effects of the financial crisis on R&D funding. Many drivers or barriers for the ICT sector work at the national level. For instance, copyright rules are nationally based and seen to prevent the full harnessing of the digital single market.[63]

It is generally also pointed out that Europe is facing an investment challenge in the financing of high-speed internet infrastructure because of a classical unevenness in the incentive structure; the benefits for society as a whole appear to be much greater than the private incentives to invest in faster internet network infrastructures. The large amount of investment required to achieve ubiquitous coverage requires a combined effort from a large number of investors from the private and public domains, the adoption of open and long-term investment models, and the use of a range of financial tools including grants and financial engineering.

Role in regional development and policy

ICT is generally seen as an important, but not fully exploited determinant of the global competitiveness of the European economy and a major source of growth as new digital opportuni-

[60] OECD (2016): OECD Regions at a Glance 2016. OECD Publishing, Paris.
[61] Schröder, C. (2011), Regional and company-specific factors for high growth dynamics of ICT companies in Germany.
[62] Audretsch, D.B. & D. Dohse (2007), Location: A Neglected Determinant of Firm Growth. In: Review of World Economics, Vol 143, Issue 1, pp 79-107.
[63] EC (2012). Guide to Research and Innovation Strategies for Smart Specialisations. DG Regional Policy, Brussels.

ties may create new business opportunities.[64] Consequently, the European Union has dedicated one of seven flagship initiatives under the Europe 2020 strategy for smart, sustainable, and inclusive growth to a *Digital Agenda for Europe.*[65] In line with the Digital Agenda, the Commission's communication entitled *A Strategy for ICT R&D and Innovation in Europe: Raising the Game*[66] proposes the strategy to establish Europe's industrial and technology leadership in ICT and to make Europe more attractive for ICT investments and skills. Building on the many ICT industrial clusters of Europe, the strategy seeks to step up the effort in ICT research and innovation and to maximise its impact in today's economic context. Similarly, the *Entrepreneurship 2020 Action Plan*[67]also proposes a broad variety of measures to foster the digital economy. In this context, DG Growth has launched the Digital Entrepreneurship Scoreboard which is monitoring the digital economy in Europe[68]. Furthermore, a Strategic Policy Forum on Digital Entrepreneurship, a pan-European awareness raising campaign called Watify and an eMentoring system (Euromentors Association for Digital Entrepreneurs) have been set up. The EU adopted a *Digital Single Market* priority in May 2015[69], which is also strongly supported by *ERDF and Cohesion Fund investments* into ICT infrastructure, services, and various applications as well as support to ICT-related smart specialisation strategies.

Improving access, use and quality of ICTs is one of the 11 thematic objectives for cohesion policy in 2014-2020. Within this objective, the ERDF will focus on:

- Extending broadband deployment and the roll-out of high-speed networks;
- Developing ICT products and services and e-commerce;
- Strengthening ICT applications for e-government, e-learning, e-inclusion, e-culture, and e-health.

Overall, more than € 20 billion from the European Regional Development Fund (ERDF) and Cohesion Fund is available for ICT investments during the 2014-2020 funding period. However, ICT-related measures may also receive support under other thematic objectives. To benefit from funding regions need to develop a 'strategic policy framework for digital growth' and/or a 'Next Generation Network (NGN) Plan' as an *ex ante* conditionality.

Broadly speaking, the Structural Funds interventions target three dimensions of ICT: (i) ICT as horizontal, cross-cutting technology where SMEs from all industries can profit from the potential of enhanced ICT application; (ii) ICT skills; and (iii) *ICT as a sector* comprising specialized ICT firms.

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[64] World Economic Forum (2015), The Global Information Technology Report 2015, p xvi.
[65] See http://ec.europa.eu/digital-agenda/[10.6.2016] and COM (2010): 245 final/2.
[66] COM (2009): 116 final.
[67] COM (2012): 795 final.
[68] A related instrument is the Digital Economy and Society Index (DESI), which measures the progress of EU Member States towards a digital economy and society. It consists of a set of indicators on Europe's current digital policy mix.
[69] COM (2015): 192 final.

ICT is prominent in smart specialisation strategies. A Digital Agenda Toolbox on the S3 Platform supports regions in developing ICT-based RIS 3 and Digital Growth Strategies. There is also an online tool available to display planned ICT investments on a regional basis.

The EU's Cohesion and Rural Development Policies are also joining forces with Horizon 2020 (where ICT-related topics can be found in all priorities, from 'Excellence Science' to 'Industrial Leadership', to 'Societal Challenges') as well as the Connecting Europe Facility in supporting open, affordable, and good quality high-speed networks in areas of market failure, as well as ensuring investment in digital service infrastructures (trans-European high-speed backbone connections for public administrations, cross-border delivery of eGovernment services, enabling access to public sector information and multilingual services, online safety and security, intelligent energy networks, and smart energy services). To best harness EU funding from these various financial instruments, one of the key challenges for management authorities is therefore to select investment models and strategic priorities that will foster the above efforts.

Working definition

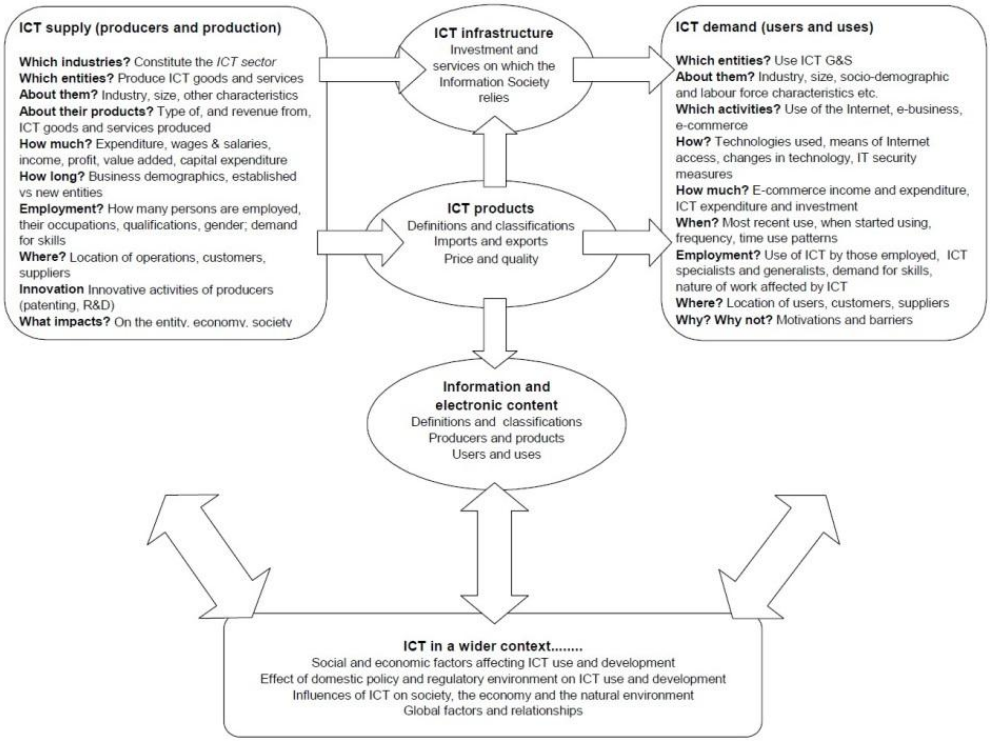
The definition of the ICT sector in policy papers is still largely based on an OECD paper from the year 2005.[70] In the *Guide to Measuring the Information Society,* the OECD documents the statistical definition of the information society by a standing working party, and it has since become a standard reference for statisticians and others working in the field. The conceptual model underpinning the definition is based on the broadly agreed elements of ICT supply, ICT demand, ICT infrastructure, ICT products, and electronic content.

The in-detail discussion of the above categories resulted in an OECD definition of the ICT sector which formed the basis for the follow-up statistical definition in 2007, which was then taken up by the European Commission and Eurostat. According to Eurostat, ICT 'covers all technical means used to handle information and aid communication. This includes computer and network hardware, as well as software.'[71]

The OECD[72] makes clear that the information economy sector consists of both the ICT and the content and media sector (the latter is not the focus here). The United Nations Statistics Division agreed to integrate the OECD definitions into the 2007 ISIC as an alternative aggregate.

[70] OECD (2005): DSTI/ICCP/IIS(2005)6/FINAL, and OECD (2011): OECD Guide to Measuring the Information Society 2011. OECD Publishing.
[71] Eurostat: Definition of information and communication technology (ICT). Available from: http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Information_and_communication_technology_(ICT) [10.6.2016].
[72] OECD (2011): OECD Guide to Measuring the Information Society 2011. OECD Publishing.

Figure 2.3: Information society statistics conceptual model



Source: OECD (2005): DSTI/ICCP/IIS(2005)6/FINAL, p. 9.

Eurostat further specifies that the ICT sector consists of all enterprises/units (including both natural and legal persons) whose principal activity (which contributes 50% or more to the value added) belongs to the following divisions and groups (classes) of the NACE rev. 2 classification.[73]

Table.2 5: Statistical definition of the ICT sector (2007 OECD definition)

NACE Rev. 2	Description of sub-sectors
261-264, 268 261 262 263 264 268 465, 582, 61, 62, 631, 951	ICT manufacturing industries Manufacture of electronic components and boards Manufacture of computers and peripheral equipment Manufacture of communication equipment Manufacture of consumer electronics Manufacture of magnetic and optical media ICT total services
465 4651 4652	ICT trade industries Wholesale of computers, computer peripheral equipment, and software Wholesale of electronic and telecommunications equipment and parts
582, 61, 62, 631, 951 5820 61 62 631 951	ICT services industries Software publishing Telecommunications (wired, wireless, satellite, and other) Computer programming, consultancy, and related activities Data processing, hosting, and related activities; web portals Repair of computers, peripheral equipment, and communication equipment

Source: JRC-IPTS (2015): The 2015 PREDICT report; OECD (2007): DSTI/ICCP/IIS(2006)2/FINAL, Annex 1; OECD (2011): OECD Guide to Measuring the Information Society 2011, Annex 7.A1; and Eurostat: ICT sector dataset details. Available from: http://ec.europa.eu/eurostat/web/products-datasets/-/tin00074 [10/06/2016].

[73] Eurostat: NACE rev. 2. Statistical classification of economic activities in the European Community https://www.czso.cz/documents/10180/23169794/01_ict_sector_list_of_principal_economic_activities.pdf/0e5b61a9-7066-40b3-9721-4cc7b698d0f6?version=1.0 [10.6.2016].

With regard to the study at hand, this definition unfortunately produces two main challenges. Firstly, data at the NUTS 3 level from central sources are not available below the two-digit level of NACE. For some sectors such as ICT manufacturing this means that the data analysis cannot reflect the level of detail the definition requires. In some sectors, the analysis will be only slightly distorted, e.g. if the three-digit sub-sector included in the definition forms the vast majority of the statistical units of the relevant two-digit sector. This is the case for NACE 26 and 63. In case of the ICT trade industries, the lack of data on the three-digit sub-sector level for NUTS 3 means that only analyses of the wholesale sector (NACE 46) in its entirety would be possible.

We are therefore applying the following definition of the ICT sector in the context of this study:

- NACE 26: Manufacture of computer, electronic, and optical products
- NACE 61: Telecommunications
- NACE 62: Computer programming, consultancy, and related activities
- NACE 63: Information service activities

Low-carbon economy

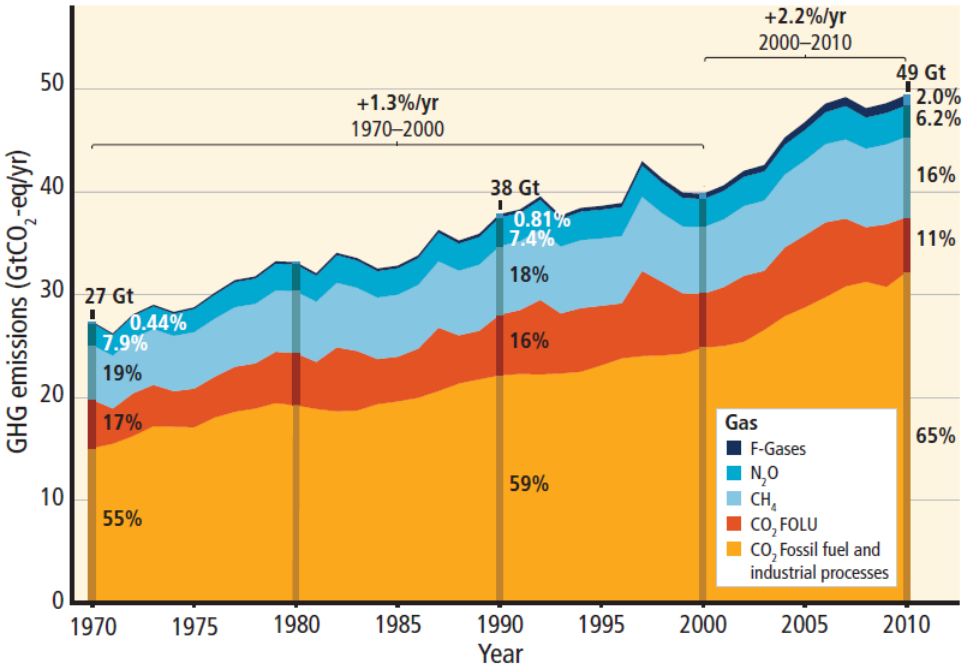
The ubiquitous and noxious nature of climate change has pushed the international community to take measures towards the establishment of a low-carbon economy. Anthropogenic greenhouse gas (GHG) emissions are regarded as the main cause for global warming. The term low-carbon economy is usually associated with an economy that is based on reducing greenhouse gas (GHG) emissions into the air by using low-carbon power sources. Such sources include renewable energy (sunlight, wind, rain, tides, geothermal heat, etc.) and sustainable bio fuels, but also nuclear power. The transition to a low-carbon economy entails a shift to more climate-friendly and less-energy consuming living patterns and reportedly holds the key to staying within planetary boundaries, i.e. enabling humans' very survival on earth.

According to the UN's Intergovernmental Panel on Climate Change (IPCC)[74], it is extremely likely that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic forcings together (e.g. carbon-intensive industries, consumer behaviour). As shown in Figure 2.4 below, globally, anthropogenic GHG emissions have continued to increase over the period from 1970 to 2010 with larger absolute increases between 2000 and 2010, despite a growing number of climate change mitigation policies. Following the argumentation of the IPCC (2014), changes in climate have caused impacts on natural and human systems on all continents, in all regions, and across the oceans. It includes altering hydrological systems due to melting snow and ice, effects on water resources in terms of quantity and quality, decreasing crop yields, and the increase of extreme weather events. As a consequence, humans and animals have shifted their geographic ranges, seasonal activities, mi-

[74] IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

gration patterns, abundances, and interactions in response to ongoing climate change. Climate change will amplify existing risks and create new risks for natural and human systems, such as increased extinction risks of a large fraction of species, undermining food security or increasing displacement of people.

Figure 2.4: Global annual anthropogenic GHG emissions by gases between 1970 and 2010



Source: IPCC (2014): Climate Change 2014. Synthesis Report. Summary for Policymakers, p. 5

According to the OECD[75], climate change will have various effects on labour markets at the local level. It affects carbon-intensive industries in particular, but also green industries and drivers of eco-innovation – especially those labour market areas where such industries are concentrated. The transition to a green economy will require local flexibility in vocational training systems, as they have to adapt to changing business needs and evolving low-carbon strategies at the local level. There will be employment changes, such as job losses or restructuring of existing jobs in some sectors, but there will also be job opportunities in 'new' sectors. Low-carbon economy brings the potential for innovation and local industrial development, particularly in rural areas, as exploitation of major renewable energy sources requires enough space. In any case, businesses need incentives and support to transition their workforce, for instance through training programmes and funds. Furthermore, local leadership is needed to accelerate the transition.

[75] OECD (2014): Job creation and local economic development. Paris: OECD

Determinants – Drivers – Barriers

As the OECD[76] points out, both *market and public policy are significant forces driving local industry change towards the low-carbon economy.* Industry investment and employment trends are increasingly associated with a price on carbon (or anticipation of a carbon price), restrictions on more carbon intensive activities, and direct action to provide incentives for low-carbon industries. In OECD countries, households are beginning to change their consumer preferences towards products and services with green attributes, particularly when they are well-informed and are given incentives to shift towards greener consumption. This shows that public policy can re-orient incentives towards patterns of production and consumption that reduce emissions, encourage clean energy, and facilitate the growth of low-carbon industries.

In the European Union, the Directorate-General for Climate Action (DG CLIMA) leads the European Commission's efforts to fight climate change at the EU and international levels. It is the responsibility of DG CLIMA *'to formulate and implement climate policies and strategies, to take a leading role in international negotiations on climate, to implement the EU's Emissions Trading System (EU ETS), to monitor national emissions by EU member countries, and to promote low-carbon technologies & adaptation measures'*[77]. In order to achieve these goals, the EU has set specific targets for reducing its GHG emissions progressively up to the year 2050[78]:

- The *'2020 climate & energy package'* is a set of binding legislation that entered into force in 2009 to ensure the EU meets its climate and energy targets for the year 2020. It includes three key targets, which are also headline targets of the Europe 2020 Strategy for smart, sustainable, and inclusive growth[79]:
- 20% cut in greenhouse gas emissions (from 1990 levels);
- 20% of EU energy from renewables;
- 20% improvement in energy efficiency.

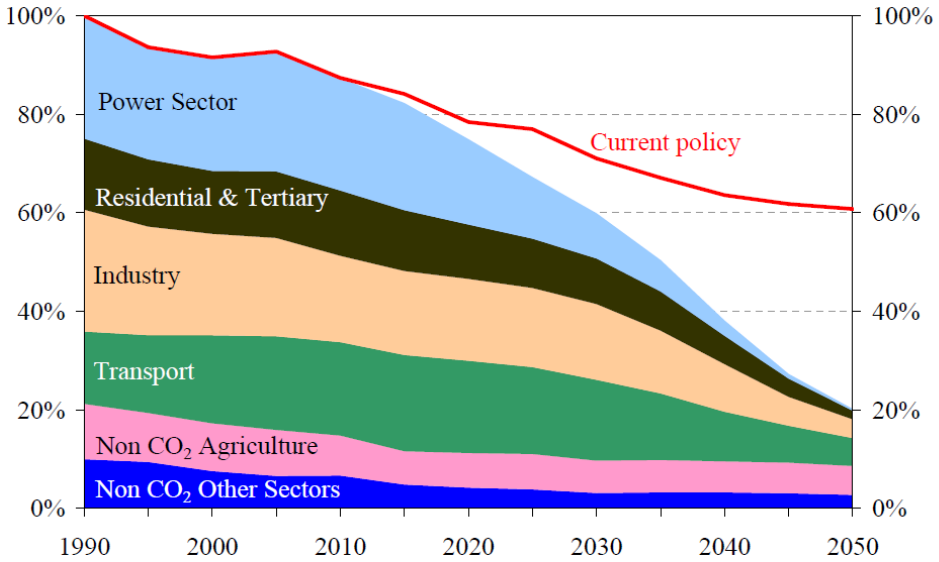
- Building on the above mentioned package, the *'2030 climate and energy framework'* was adopted in 2014. It sets three key targets for the year 2030:
- At least 40% cuts in greenhouse gas emissions (from 1990 levels);
- At least 27% share for renewable energy;
- At least 27% improvement in energy efficiency.

- The 'low-carbon economy roadmap'[80] determines that:
- by 2050, the EU should cut emissions to 80% below 1990 levels;
- milestones to achieve this are 40% emissions cuts by 2030 and 60% by 2040;
- all sectors need to contribute and claims that the low-carbon transition shall be feasible and affordable.

[76] OECD (2012): Enabling local green growth: addressing climate change effects on employment and local development. Paris: OECD
[77] http://ec.europa.eu/clima/about-us/mission/index_en.htm
[78] http://ec.europa.eu/clima/policies/strategies/index_en.htm
[79] European Commission (2010): EUROPE 2020. A strategy for smart, sustainable and inclusive growth. COM(2010) 2020 final
[80] European Commission (2011): A Roadmap for moving to a competitive low-carbon economy in 2050. COM(2011) 112 final

The following figure shows the targets of the roadmap in terms of emission cuts for the main sectors responsible for Europe's emissions, i.e. power generation, industry, transport, buildings, construction, and agriculture.

Figure 2.5: EU GHG emissions towards an 80% domestic reduction (Index: 1990 = 100%)



Source: European Commission (2011): A Roadmap for moving to a competitive low-carbon economy in 2050, COM(2011) 112 final, p. 5

One cornerstone of the EU policy to combat climate change is the *EU Emissions Trading System (EU ETS)*[81]. It is a key tool for cost-effectively reducing industrial greenhouse gas emissions. EU ETS works on the 'cap and trade' principle, which means that a cap is set on the total amount of certain greenhouse gases that can be emitted by installations covered by the system. The cap is reduced over time so that total emissions fall. Within the cap, companies receive or buy emission allowances which they can trade with one another as needed. After each year, a company must surrender enough allowances to cover all its emissions, otherwise heavy fines are imposed. If a company reduces its emissions, it can keep the spare allowances to cover its future needs or else sell them to another company that is short of allowances. Trading brings flexibility that ensures emissions are cut where it costs least to do so. A robust carbon price also promotes investment in clean, low-carbon technologies.

The roadmap concludes that the *transition to a low-carbon society* is feasible and affordable, but requires innovation and investments. The main issue here concerns carbon capture and storage (CCS) which, along with energy efficiency and renewable energy technologies, is expected to make an important contribution to meet global greenhouse gas emission targets. The development of clean technologies and low- or zero-carbon energy would spur growth and jobs, thereby boosting the European economy. Low-carbon technologies in industry are essential to achieve the EU's climate and energy targets (as explained above) and contribute

[81] http://ec.europa.eu/clima/policies/ets/index_en.htm

to implementing the industrial roadmaps that various sectors are developing in a low-carbon economy perspective.

The *Sustainable Industry Low Carbon (SILC)* programmes[82] support the industrial sector by providing grants for the development, demonstration, and dissemination of low-carbon technologies and for the adoption of such technologies within and across sectors. SILC has been/is being implemented in two funding phases with specific objectives:

- SILC I (2011-2013): The SILC I programme funded technological and non-technological innovation measures to reduce greenhouse gas emissions at plant level. SILC I focused on identifying, developing, deploying, and disseminating measures that can be implemented in the short term. Through three rounds of calls for proposals, eight projects have been selected for funding under SILC I. The projects cover the following sectors in particular: iron and steel, ferroalloys, cement, glass, ceramics, and pulp and paper.
- SILC II (2014 onwards): SILC II is a Horizon 2020 initiative, which funds large-scale demonstrators for low-carbon technologies with a special focus on energy-intensive industries. It looks at breakthrough solutions that can bring significant greenhouse gas emission reduction (35% compared to current 'best available techniques') and that have a high potential for technology transfer within and across sectors.

In addition to SILC, industries can also get financial support for low-carbon technologies from Horizon 2020, the NER programme, and the European Structural and Investment Funds.

Role in regional development and policy

The endeavours and policy measures undertaken by the EC (as listed above) are likewise passed on to all European governance levels. As regards the regional level, in the 2014-2020 programming period, the European Structural and Investment Funds, in particular the European Regional Development Fund (ERDF), the European Social Fund (ESF), and the Cohesion Fund, will support 11 investment priorities (i.e. thematic objectives), of which the following directly relate to the low-carbon economy:

- Thematic objective 4. Supporting the shift towards a low-carbon economy in all sectors (one of the main priorities of ERDF, but also supported by the Cohesion Fund);
- Thematic objective 5. Promoting climate change adaptation, risk prevention and management (supported by the Cohesion Fund);
- Thematic objective 6. Preserving and protecting the environment and promoting resource efficiency (supported by the Cohesion Fund).

The *European Regional Development Fund (ERDF)* requires Member States to allocate a mandatory minimum proportion of the available funding to the low-carbon economy. This initiative and the resulting investments support Member States, regions, local governments, and cities to foster energy efficiency measures, renewable energies, smart grids, or sustainable transportation solutions. The importance of the 'Roadmap 2050' is considerable to 'help to

[82] https://ec.europa.eu/growth/industry/sustainability/low-carbon-economy/silc-programmes_en

decrease costly energy imports, diversify energy sources, tackle energy poverty, cut emissions, create jobs, and support small and medium-sized businesses'[83].

The objective of the ESPON GREECO project[84] – 'Regional Potential for a Greener Economy' – was to identify key economic areas where policy support through territorial and cohesion policies could contribute to spark economic recovery, create new employment opportunities, and strengthen environmental sustainability at the regional and local levels. In this context, the following key economic sectors were identified: agriculture, building and construction, energy production, green research and eco-innovation, manufacturing, tourism, transport, waste management, and water management. Furthermore, the following economic spheres were identified: environmental sphere (as source function and sink function), social sphere (health, well-being), territorial/regional sphere (territorial capacities/endowment assets, management of cultural and natural assets), economic sphere ('greenness' of economic activities), and econosphere (linking the environment with economy). The project mapped many indicators of green economic performances and potentials to assist regions in designing their own transformations to a green economy. Among others, the following policy implications have been identified:

- the investment in green transformations can have considerable impact on employment and income generation at the regional and local levels;
- an economy with high rates of green growth is not necessarily a green(er) economy (keyword 'Jevons paradox' or relying on conventional solutions/technologies in several steps of the value chain);
- there are distinct regional factors (e.g. social, physical assets, place-specific factors) that either drive or hinder a systematic transition to low-carbon economy;
- the factors driving, hindering or enabling green economic transformations are not concentrated within any specific category of regions;
- the capacity to capitalise on the natural assets is strongly linked to non-physical factors, such as governance and strategic framework in a specific region.

Working definition

The concept of a low-carbon economy is not sector specific but a rather cross-cutting concept which includes companies, research organisations and eco-innovation activities imbricated within vertical sectors. In order to allow an alignment with the NACE Rev. 2 classification and therefore to estimate the contribution of SMEs, the notion of 'green economy' could be helpful.

The ESPON GREECO project in line with previous assessments from the OECD[85] and UNEP[86] selected five sectors based on their relevance for the green economy as a whole. The selected sectors are: bio-economy (sub-divided into agriculture, forestry, and fishery), manufacturing, renewable energy, tourism and transport. Four additional sectors, which

[83] http://ec.europa.eu/regional_policy/en/policy/themes/low-carbon-economy/
[84] http://www.espon.eu/main/Menu_Projects/Menu_AppliedResearch/greeco.html
[85] OECD. (2011). Towards Green Growth: Monitoring Progress. OECD Indicators. OECD Publishing. doi:10.1787/9789264111356-en
[86] UNEP. (2011). Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication (p. 626). Retrieved from www.unep.org/greeneconomy

cross-cut the above sectors and possess clear territorial dimensions, have also been considered. These include water management, waste management, building and construction, and green research activities encompassing the implementation of clean technologies such as carbon capture technologies.

The following NACE Rev. 2 sections and underlying divisions (two-digit level) can be used as an approximation to measure SME activity in the market-oriented 'low-carbon economy' (excluding agriculture) or in industries that will be affected by the low-carbon economy (i.e. carbon-intensive branches):

- Manufacturing: under section C:
- C 16: Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
- C 17: Manufacture of paper and paper products
- C 19: Manufacture of coke and refined petroleum products
- Electricity, gas, steam and air conditioning supply: Section D:
- D 35: Electricity, gas, steam and air conditioning supply
- Water management: under section E:
- E 36: Water collection, treatment and supply
- E 37: Sewerage
- Waste management: under section E:
- E 38: Waste collection, treatment and disposal activities; materials recovery;
- E 39: Remediation activities and other waste management services
- Building and construction: section F:
- F 41: Construction of buildings
- F 42: Civil engineering
- F 43: Specialised construction activities
- Transport: under section H:
- H 49: Land transport and transport via pipelines
- H 50: Water transport
- H 51: Air transport
- Renewable energy, power generation: under section M:
- M 71: Architectural and engineering activities; technical testing and analysis
- M 72: Scientific research and development
- Bio-economy, green research activities: under section M:
- M 72: Scientific research and development

As mentioned above, due to its cross-cutting nature, this list of NACE sections/divisions does not adequately cover the concept of the low-carbon economy. Therefore, statistical analysis based on these selected economic activities may be not suitable to deliver statements on 'low carbon SMEs'. Consequently, we suggest the low-carbon economy to be primarily analysed *in the context of the case studies,* rather than in the statistical part of the project.

2.2 Data collection process

2.2.1 SME data collection

Step 1: collecting harmonised data from central sources

In a first step, data from central sources at Eurostat were gathered. This refers in particular to the following data sources:

Regional Structural Business Statistics (SBS): SBS provides information on the number of enterprises (country level), number of local units (regional level) as well as persons employed. It is available for 29 countries (not available for CH, IS and LI) and covers NACE B-N and S95. Data are provided at NUTS 2 level (not NUTS 3!) and NACE, but do not include any information on enterprise size. Information on both NACE and enterprise size is only stated on NUTS 0 level. SBS on the country level can be used for small countries, where NUTS 0 equals NUTS 2 (EE, LV, LT, MT) or NUTS 3 (CY, LU). The general data availability ranges from 2000-2007 (NACE Rev.1.1) and 2008-2014 (NACE Rev. 2), with exceptions for some countries.

Regional business demography (BD): BD provides information on the number of active enterprises, number of persons employed in active enterprises, number of employees in active enterprises, enterprise births[87], enterprise birth rate[88], enterprise deaths, enterprise death rate, and survival rate, on both regional and country levels. It is available for 22 countries (not available for BE, CH, DE, EL, IE, IS, LI, NO, SE, UK) and therefore leaves out large countries such as DE and the UK that are important for data analysis. In general, BD covers NACE B-S. Data are provided at NUTS 3 level and include information either on NACE (1-digit level, groups of 1-digits) or on enterprise size. The available enterprise size categories are 0, 1-9, and 10+ persons employed – therefore it is not possible to identify SMEs because the size categories up to 249 and 250+ are missing. BD on the country level can be used for small countries, where NUTS 0 equals NUTS 2 (EE, LV, LT, MT) or NUTS 3 (CY, LU).The general data availability ranges from 2008-2014 (NACE Rev. 2), with exceptions for some countries.

Regional (employer) business demography (EBD): Just like BD, EBD provides information on the number of active enterprises, number of persons employed in active enterprises, number of employees in active enterprises, enterprise births, enterprise birth rate, enterprise deaths, enterprise death rate and survival rate, on both regional and country levels. However, the definition of enterprise births and enterprise birth rate is different, as EBD only includes births of enterprises with at least one employee[89]. EBD is available for 21 countries (not available for BE, CH, DE, EL, IE, IS, LI, NO, PL, SE, UK) and therefore leaves out large countries such

[87] Enterprise births: a birth occurs when an enterprise starts from scratch and actually starts activity; excluding mergers, break-ups, split-off or restructuring of a set of enterprises.
[88] Birth rate: number of births as a percentage of the population of active enterprises
[89] Employer enterprise birth: Birth of an enterprise with at least one employee. This population consists of enterprise births that have at least one employee in the birth year and of enterprises that existed before the year in consideration, but were below the threshold of one employee (‘entry by growth”).

as DE, PL, and the UK that are important for data analysis. Just like BD, EBD generally covers NACE B-S. Data are provided at NUTS 3 level and include information either on NACE (1-digit level, groups of 1-digits) or on enterprise size. The available size categories are 1-9, and 10+. Again, it is not possible to identify SMEs because the size categories up to 249 and 250+ are missing. EBD on the country level can be used for small countries, where NUTS 0 equals NUTS 2 (EE, LV, LT, MT) or NUTS 3 (CY, LU).The general data availability ranges from 2008-2014 (NACE Rev. 2), with exceptions for some countries.

Regional business demography versus regional employer business demography

In terms of the general use of regional BD data vs. regional EBD data, it has to be pointed out that the objective of the project is to collect data at NUTS 3 level with a broad geographical coverage. As regards the regional BD, in case of missing data and missing countries (e.g. BE, CH, DE, EE, IS, NO, PL, SE, SI, UK), data on births/birth rates can be collected from national sources – in total, 29 countries can be covered. As regards the regional EBD, no further data collection from national sources was possible due to the different definitions of enterprise births/birth rates, etc. In total, 21 countries can be covered here, leaving out large countries such as DE, PL, and the UK. As a consequence, for the statistical analysis and mapping and due to conceptual reasons[90], the project team decided on using data from regional BD rather than regional EBD.

Furthermore, it must be pointed out that SBS and BD/EBD have fundamental differences when it comes to the definition of firms and employment. This has to be taken into account in the data analysis, as indicators from both data sources cannot be combined just simultaneously.

The following table sums up the available data dimensions from Eurostat data sources:

Table 2.6: Available data dimensions from Eurostat

	NUTS 0	NUTS 2	NUTS 3	Enter-prise size	Size classifi-cation	NACE
Structural Business Statistics (SBS) – country level*	x			x	250	x
Regional Structural Business Statistics (SBS)		x				x
Business Demography (BD) – country level*	x			x	10+0	x
Regional Business Demography (BD)		x	x	x	10+0	
Regional Business Demography (BD)		x	x			x
Employer Business Demography (EBD) – country level*	x			x	10-0	x
Regional Employer Business Demography (EBD)		x	x	x	10-0	
Regional (Employer) Business Demography (EBD)		x	x			x

*Note: * Data sources on country level can be used for small countries, where NUTS 0 equals NUTS 2 or NUTS 3; size classification '250': categories 0-9, 10-19, 20-49, 50-249, 250+; size classification '10+0': categories 0, 1-9, 10+; size classification '10-0': 1-9, 10+*
Source: Eurostat

[90] The inclusion of enterprises with no employees (size category '0") is important to illustrate employment and dynamics in the regions. There are countries in Europe where the percentage of one-person-enterprises is relatively high – it does not seem to be justified to leave out such an important group from the regional analysis.

The data from central sources were collected in November 2016 in order to make sure that most of the data from 2014 are already included in the Eurostat data sets.[91]

Step 2: collecting data from national sources

Following step 1 and due to the aforementioned shortcomings of both Eurostat Regional SBS and Eurostat Regional BD/EBD, a guideline[92] was sent out in November 2016 to the national partners in order to collect complementary data on the national level (=step 2). It comprised the collection of data in countries that are not included in Eurostat regional SBS and/or BD, but also the attempt to gather the requested data combination of NUTS 2/3 regions *and* NACE *and* enterprise size for as many countries as possible. The guideline had to be formulated in an open way to make sure that the national partners tap all relevant sources and gather as much relevant data as possible. For instance, in all countries, there exist several data sources for the number of firms and employment (national SBS, national BD, but also other sources). Particularly in those countries where SBS and BD data were neither available at Eurostat nor nationally, other sources had to be tapped such as tax registry, financial agencies, public employment services, business registers, or chambers of commerce[93].

The data collection took much longer than expected – many national partners had to make a specific request at the National Statistical Office or other institutions because data was not freely available on their websites. In some countries this took more than several weeks. In some countries (e.g. BE and UK), data on employment was not available at all for NUTS 2 or NUTS 3 regions. In total, the duration for the data collection ranged from November 2016 to the end of January 2017. Data from national sources was not always available free of cost. Some data had to be bought at the statistical offices or from other institutions. For some countries no relevant data was available from official institutions. In these cases, data from the ORBIS database was extracted, i.e. for CZ, EL and for some cases also for FR and HU.

For every single country, a streamlining and controlling procedure of the collected data from national sources was necessary, as not all collected data could be used for further analysis. This concerned redundant data collection at the national level as well as specific data selection in terms of assuring comparability with data from Eurostat and other countries. Also, in many countries, the requested data combination of NUTS 2/3 regions *and* NACE *and* enterprise size for the indicators do not exist – this is due to confidentiality issues or the combination being not surveyed at all. Here, the project team had to make sure that the collected data are at least available by NUTS 2/3 *and* enterprise size or by NUTS 2/3 *and* NACE.

[91] Usually, final data for SBS ought to be sent to Eurostat 18 months after the end of the reference period. The most recent data is from 2014 was therefore available in mid-2016 at the earliest. For BD, data generally should be published within two calendar years from the end of the reference year. This means that the most recent data from 2014 should usually be available by the end of 2016.
[92] For details on the guideline, please see the Annex to the Interim Report.
[93] Data comparability had to be taken into account.

Shortcomings of ORBIS database (Bureau van Dijk)

ORBIS is a commercial database which consists mainly of active enterprises, with inactive firms being removed from the database from time to time[94]. This fact very much restricts what can be retrieved from the database, as there is no access to historic data. Hence it is not possible to gather information about the situation of all enterprises in a specific region for the most recent year or previous years.[95] Therefore, statements on firm births, closures, and survival are not possible. However, ORBIS has information on the situation of *currently* active enterprises for past years up to the most recent year (e.g. employees, value added), ranging from 2007 to 2015. The requested indicators were not available for all active enterprises. For instance, approx. only 60% of the enterprises in the ORBIS database have indicated their number of employees or their value added. Furthermore, with regard to employment, the information on employees in an enterprise – both as regards data availability and the number of employees as such – can vary considerably from year to year. Due to this, an average number of employees over the last 5 years (2015, 2014, 2013, 2012, and 2011) had to be calculated in order to be able to assign at least an enterprise size category to each enterprise. In general, data from ORBIS were extracted for CZ, EL, FR, and HU. Due to the above-mentioned data restrictions, data from ORBIS can only be used as proxies for employment structures in specific sectors.

Step 3: data imputations

As shown in the previous sections, regional data available at Eurostat do not allow the distinction of SMEs, as enterprise size is usually provided only for the following categories: '0', '1-9' and '10+'. Size categories that would make it possible to identify SMEs, i.e. '10-249' and '250+', are not available. Nevertheless, with the help of data gathered from national sources it was possible to recalculate data on 10-249 employees for the indicators 'number of firms' and 'employment'.[96]

The starting point for the data imputation was the regional BD at Eurostat: data are available by NUTS 3 level and by enterprise size (0, 1-9, 10+). The advantage of this data set is that size information is available and comparable across all 22 countries. Furthermore, it distinguishes between 0 and 1-9. The target was to enhance this data set with more detailed data from national sources and to provide comparable data on SMEs for those countries not included in the regional BD.

[94] Provided that the data provider Bureau van Dijk gets information on those enterprises who have closed their business.
[95] While there is information on active firms, there is no information on formerly active but now inactive or deleted firms.
[96] For the indicators birth/birth rate, death/death rate, value added, and survival rate, this recalculation was not possible due to the lack of data from national sources providing SME size categories.

For most of the countries, data could be collected for the number of firms and employment by NUTS 2/3 and size categories 10-49, 50-249, 250+. This size structure could be applied to the 10+ category of the regional BD. In more detail, the following steps were taken:

- calculation of the percentage of 250+ in the 10+ size category of the data from national sources;
- applying this percentage to the 10+ size category of the data from the regional BD in order to receive absolute numbers for 250+ in the regional BD;
- calculation of the size category 10-249 in the regional BD by subtracting the newly included 250+ from the 10+ size category in the regional BD.

The result of these calculations led to the following size categories in the regional BD for the indicators 'number of firms' and 'employment': '0', '1-9', '10-249', and '250+'.

The remaining 10 countries that are not reflected in the regional BD (BE, CH, DE, EL, IE, IS, LI, NO, SE, UK) we had to rely totally on national data sources. Usually, size categories have been provided that allow the identification of SMEs: '0', '1-9', '0-9'[97], '10-49', '50-249', and '250+'.

The data imputations resulted in the provision of the following indicators at NUTS 3 level:

- *Number of SME by size:* 27 countries, calculation not possible for BG, DK, NL, SI, SK due to missing data
- *Employment by size:* 25 countries, calculation not possible for BE, BG, ES, NL, SI, SK, UK due to missing data

The datasets with SME-related data on NUTS 3 level were used for the statistical analyses of development opportunities and obstacles to SMEs (Chapter 4) and for the creation of the regional typology (Chapter 4.5). For the mapping of SMEs in European regions and cities (Chapter 3) available NUTS 3 data was complemented by NUTS 2 or NUTS 0 data for those countries with missing data on the regional level, to provide a more complete picture of Europe. In these cases, data from the structural business statistics was used and harmonized with regional business demography data by using correction factors, which were calculated by comparing the total employment values of both statistics (SBS only relates to NACE Rev. 2 sections B-N while BD relates to NACE Rev. 2 sections B-S).

2.2.2 Context data collection

Step 1: Collecting harmonised data from central sources

The vast majority of context indicators were collected from Eurostat for the longest time series available, if possible 2000-2015. Indicators later used to describe relevant determinants/explanatory factors for SME patterns and performance stemming from Eurostat are (NUTS level in brackets):

- poopulation aged 30-34 by educational attainment level (ISCED 2011 levels 0-2, 3-4, 5-8) (NUTS 2);

[97] Some countries provided data on '0" and '1-9" employees, some countries could provide data only on '0-9" employees.

- patent applications to the EPO, international patent classification (IPC) sections and classes per million inhabitants – Total (NUTS 3);
- population density by age (NUTS 3);
- employed persons (NUTS 3);
- gross domestic product (GDP) at current market prices; purchasing power standard per inhabitant (NUTS 3);
- disposable income, net (uses) per capita in PPS (NUTS 2);
- self-employed persons (NUTS 2);
- unemployment rates by sex and age (NUTS 2).

In many other domains, data could not be obtained from Eurostat and alternative sources had to be tapped, which sometimes only offer data at NUTS 0 level (indicated in brackets):

- ESPON: Potential accessibility by road, rail and air: population in all destination regions and accessibility potential of the origin region weighted by travel time (index related to ESPON average) (NUTS 3)
- DG Regio, Regional Competitiveness Index 2016: Gender balance employment; absolute difference between female and male employment rates (NUTS 2)
- DG Regio, Regional Competitiveness Index 2016: Innovative SME collaborating (NUTS 2)
- DG Regio, Regional Competitiveness Index 2016: Corruption (NUTS 2)
- DG Regio, Regional Competitiveness Index 2016: Quality and accountability of government services (NUTS 2)
- DG Regio, Regional Competitiveness Index 2016: Impartiality of government services (NUTS 2)
- DG Regio: Urban-rural typology (NUTS 3)
- DG Regio: Typology: Metropolitan regions (NUTS 3)
- World Economic Forum: Global Competitiveness Index – Ease of access to loans (NUTS 0)
- World Economic Forum: Global Competitiveness Index – Burden of government regulation (NUTS 0)
- World Economic Forum: Global Competitiveness Index – Effect of taxation on incentives to invest (NUTS 0)
- World Economic Forum: Global Competitiveness Index – Extent of market dominance (NUTS 0)
- World Economic Forum: Global Competitiveness Index – State of cluster development (NUTS 0)
- World Bank: Worldwide Governance Indicators 2016 (WGI) – Government Effectiveness (NUTS 0)

Step 2: Collecting data from national sources

In parallel with the data request to the national partners regarding SME data, a request to collect complementary context indicators from NSIs was sent out in November 2016. The aim was to fill data gaps in Eurostat datasets by additional (national) sources in cases, where national sources follow the Eurostat rules of data collection. These cases were:

- population;
- share of self-employment on employment;
- employment by economic activity;
- gross domestic product (GDP);

- population by educational attainment level (ISCED).

The data obtained by the national partners could only be integrated into the context database in a limited amount of cases, due to data comparability issues. Some data gaps could be filled by this data collection activity (e.g. GDP in CH, IS, population in SI).

In many cases, national data was not comparable with Eurostat's definitions (e.g. disposable income in EE, LV, and NO, number of students by level of education in CH, population aged 30-34 by educational attainment level in LT, self-employed persons and unemployment rates in SI). Additionally, for many indicators the national partners sent the same datasets with the same data gaps as those from Eurostat because many NSI's do not publish those specific Eurostat indicators on their databases, but rather refer to Eurostat (e.g. in the case of total intramural R&D expenditure (GERD)).

Step 3: Data imputations

In limited cases where no data could be obtained from other sources and data gaps were not too huge, data imputations were done for single years, only for context indicators. This had to be done in order to get the most complete territorial coverage of context indicators used for PCA and cluster analysis. Data imputations were flagged in the database to be able to distinguish between original and estimated data. Data estimations were conducted with the following methodologies:

- In case of only the last year missing, the closest year available was applied (e.g. values for 2013 for 2014).
- 'Territorial keys' were calculated on NUTS 3 level with existing population (demo_r_pjanaggr3) and employment (nama_10r_3empers) data from Eurostat. These keys describe the territorial split-up of employment and population from NUTS 0 to NUTS 3 regions for a time series from 2000-2015 and were used for the breakdown of thematically similar count data from higher territorial levels to NUTS 3 (e.g. employment data and self-employed persons from LFS at NUTS 2 level to NUTS 3 level).
- In the case of only single years were missing in a time series, interpolation and extrapolation were used to fill data gaps. Existing data at upper territorial levels were used to correct estimated data.
- For count data on GDP at NUTS 3 level as well as education statistics on NUTS 2, data gaps were filled by applying the development at the higher territorial level (NUTS 2 or NUTS 1) to the connected NUTS 3/2 regions.
- In the case of changes in NUTS delimitation and existing data before and after the NUTS change, continuity of the time series was established by adapting the data existing before change and, where possible, by applying correction factors calculated from the territorial shares of the regions.

The database was improved by data imputations following a strict procedure, aiming for a low degree of uncertainty. No advanced modelling of data gaps was conducted, which would increase the degree of uncertainty of the dataset and would therefore negatively influence the statistical analyses. Therefore, in some cases, data gaps had to remain.

2.3 Overview of data gathered

The following tables inform about data availability on small and medium-sized enterprises as well as about the data gathered in the course of the project.

2.3.1 SME data collection

Eurostat structural business statistics (SBS)

Indicators related to the number of firms: local units, enterprises

Indicators related to employment: persons employed, employees

Table 2.7: Data gathered related to the number of firms and employment (Eurostat SBS)

	NUTS 0	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE	Years	Countries
Enterprises	x			x	250	x	2008-2014	EE, LV, LT, MT (NUTS 2 level) CY, LU (NUTS 3 level)
Local units		x				x	2008-2014; 2000-2007	29 countries (not CH, IS, LI)
Persons employed	x			x	250	x	2008-2014	EE, LV, LT, MT (NUTS 2 level) CY, LU (NUTS 3 level)
Persons employed		x				x	2008-2014; 2000-2007	29 countries (not CH, IS, LI)

Note: data missing for CH, IS, LI; size classification '250': enterprise size according to EU definition
Source: Eurostat

Eurostat regional (employer) business demography (BD)

Indicators related to the number of firms: active enterprises

Indicators related to employment: persons employed in active enterprises, employees in active enterprises

Table 2.8: Data gathered related to number of firms and employment (Eurostat BD)

	NUTS 0	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE	Years	Countries
Active enter-prises	x			x	10	x	2008-2014	EE, LV, LT, MT (NUTS 2 level) CY, LU (NUTS 3 level)
Active enter-prises		x	x			x	2008-2014	19 countries (AT, BG, CZ, DK, EE, ES, FI, FR, HR, HU, IT, LT, NL, PL, PT, RO, SI, SK)
Active enter-prises		x	x	x	10		2008-2014	19 countries (AT, BG, CZ, DK, EE, ES, FI, FR, HR, HU, IT, LT, NL, PL, PT, RO, SI, SK)
Persons em-ployed in active enterprises	x			x	10	x	2008-2014	EE, LV, LT, MT (NUTS 2 level) CY, LU (NUTS 3 level)
Persons em-ployed in active enterprises		x	x			x	2008-2014	19 countries (AT, BG, CZ, DK, EE, ES, FI, FR, HR, HU, IT, LT, NL, PL, PT, RO, SI, SK)
Persons em-ployed in active enterprises		x	x	x	10		2008-2014	19 countries (AT, BG, CZ, DK, EE, ES, FI, FR, HR, HU, IT, LT, NL, PL, PT, RO, SI, SK)
Employees in active enter-prises	x			x	10	x	2008-2014	EE, LV, LT, MT (NUTS 2 level) CY, LU (NUTS 3 level)

	NUTS 0	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE	Years	Countries
Employees in active enter-prises		x	x			x	2008-2014	19 countries (AT, BG, CZ, DK, EE, ES, FI, FR, HR, HU, IT, LT, NL, PL, PT, RO, SI, SK)
Employees in active enter-prises		x	x	x	10		2008-2014	19 countries (AT, BG, CZ, DK, EE, ES, FI, FR, HR, HU, IT, LT, NL, PL, PT, RO, SI, SK)

Note: data missing for BE, CH, DE, EL, IE, IS, LI, NO, SE, UK; size classification '10': categories 0, 1-9, 10+

Source: Eurostat

Indicators related to business demography: births, closures, birth rate, and death rate

Table 2.9: Data gathered related to births and closures (Eurostat BD)

	NUTS 0	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE	Years	Countries
Births	x			x	10	x	2008-2013/14	EE, LV, LT, MT (NUTS 2 level) CY, LU (NUTS 3 level)
Births		x	x			x	2008-2013/14	19 countries (AT, BG, CZ, DK, EE, ES, FI, FR, HR, HU, IT, LT, NL, PL, PT, RO, SI, SK)
Births		x	x	x	10		2008-2013/14	19 countries (AT, BG, CZ, DK, EE, ES, FI, FR, HR, HU, IT, LT, NL, PL, PT, RO, SI, SK)
Birth rate	x			x	10	x	2008-2013/14	EE, LV, LT, MT (NUTS 2 level) CY, LU (NUTS 3 level)
Birth rate		x	x			x	2008-2013/14	19 countries (AT, BG, CZ, DK, EE, ES, FI, FR, HR, HU, IT, LT, NL, PL, PT, RO, SI, SK)
Birth rate		x	x	x	10		2008-2013/14	19 countries (AT, BG, CZ, DK, EE, ES, FI, FR, HR, HU, IT, LT, NL, PL, PT, RO, SI, SK)
Closures	x			x	10	x	2008-2013/14	EE, LV, LT, MT (NUTS 2 level) CY, LU (NUTS 3 level)
Closures		x	x			x	2008-2013/14	19 countries (AT, BG, CZ, DK, EE, ES, FI, FR, HR, HU, IT, LT, NL, PL, PT, RO, SI, SK)
Closures		x	x	x	10		2008-2013/14	19 countries (AT, BG, CZ, DK, EE, ES, FI, FR, HR, HU, IT, LT, NL, PL, PT, RO, SI, SK)
Death rate	x			x	10	x	2008-2013/14	EE, LV, LT, MT (NUTS 2 level) CY, LU (NUTS 3 level)
Death rate		x	x			x	2008-2013/14	19 countries (AT, BG, CZ, DK, EE, ES, FI, FR, HR, HU, IT, LT, NL, PL, PT, RO, SI, SK)
Death rate		x	x	x	10		2008-2013/14	19 countries (AT, BG, CZ, DK, EE, ES, FI, FR, HR, HU, IT, LT, NL, PL, PT, RO, SI, SK)

Note: data missing for BE, CH, DE, EL, IE, IS, LI, NO, SE, UK; size classification '10': categories 0, 1-9, 10+
Source: Eurostat

Data from national sources

On the one hand, data from national sources originate from the national SBS and the national BD, thereby providing more detailed data than available from Eurostat. This refers in particular to the provision of a more detailed NUTS level, i.e. NUTS 3 instead of NUTS 2, or the pro-

vision of enterprise size categories. Most of the data from national sources could be provided on NUTS 3 level, either by enterprise size or by NACE. In countries such as Austria and Sweden, data could be provided by NUTS 2 and enterprise size and NACE. For a detailed list of indicators, data sources, and countries, please see the annex.

Table 2.10: Data gathered related to the number of firms, employment, births, and closures (national sources)

Indicator	Data sources	Combination NUTS 2/3 and size and NACE provided	Time period
Number of firms: enterprises, local units (mainly SBS)	national SBS (AT, CH, FI, HU, LU, NL, RO, SE), but also Business Register (ES, SK, UK), Public Employment Services (DE), Employment in Business Statistics (DK) or Financial Agency (HR)	5 countries: AT, DK, ES, FI, RO	Often 2008-2014; data back to 2000 for DE, ES, HR
Number of firms: active enterprises, active local units (mainly BD)	national BD (BE, CH, CY, DE, EE, FI, FR, HU, IE, IS, IT, LI, LT, LU, LV, NO, PL, PT, SE, SI), but also Business Register (ES), Financial Agency (HR) or Business Agency (SK)	13 countries: BE, CH CY, ES, FI, HU, IS, IT, LT, LV, NO, SE, SK	Often 2008-2014; data back to 2000 for ES, HR; CH only 2011-2014
Employment: persons employed, employees (mainly SBS)	national SBS (AT, CH, DK, EE, FI, HU, LU, RO, SE), but also Public Employment Services (DE), Financial Agency (HR) or Regional Accounts (SI)	7 countries: AT, CH, DE, DK, EE, RO, SK	Often 2008-2014; data back to 2000 for DE, DK, RO
Employment: persons employed, employees (mainly BD)	national BD (BE, CH, CY, FI, FR, IE, IT, LI, LT, NO, PL, PT, SE) and tax registry (IS)	10 countries: BE, CH, CY, FI, FR, IS, IT, LT, NO, SE	In general 2008-2014; CH only 2011-2014
Births, closures, birth rate, death rate	national BD (BE, CH, DK, EE, HU, IS, LT, LV, NO, PL, PT, RO, SE, SI, UK) and Gewerbeanzeigenstatistik (DE), Statistics Belgium, Demografie Ondernemingen (BE), Business Register (ES), Financial Agency (HR), Chamber of Commerce (NL)	6 countries: BE, DE CH, IS, LT, LV	In general 2008-2014

Source: National Statistical Offices, Public Employment Services, Business Registers, Financial Agencies, Chambers of Commerce

ORBIS database (Bureau van Dijk)

The data extraction of ORBIS data showed that the data are far from complete, both in terms of covering the actual number of enterprises as well as providing reliable information on the indicators. Data were available at NUTS 3 level.

Indicators related to number of firms and employment: active enterprises, employees in active enterprises:

- Combination NUTS 2/3 *and* enterprise size *and* NACE: CZ, EL, FR, HU
- Time period: 2015.

2.3.2 Availability of SME data by country

Eurostat structural business statistics

Table 2.11: Eurostat structural business statistics: data availability with regard to the number of firms

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
AT	local_units	x	x	x				x	x	2008-2014, 2000-2007	Regional SBS
BE	local_units	x		x				x	x	2008-2014, 2000-2001; 2007	Regional SBS
BG	local_units	x	x	x				x	x	2007-2014, 2006 NUTS 0 only	Regional SBS
CH	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CY	enter	x		x	x	x	250	x	x	2005-2014	SBS (country level)
CY	local_units	x		x	x			x	x	2008-2014, 2005-2007	Regional SBS
CZ	local_units	x		x				x	x	2008-2014, 2002, 2004-2007	Regional SBS
DE	local_units	x	x	x				x	x	2008-2014, 2000-2007	Regional SBS
DK	local_units	x		x				x	x	2008-2014, 2000-2007 NUTS 0 only	Regional SBS
EE	enter	x		x		x	250	x	x	2008-2014	SBS (country level)
EE	local_units	x		x				x	x	2008-2014, 2000-2002, 2004-2007	Regional SBS
EL	local_units	x		x				x	x	2008-2014, 2000-2007	Regional SBS
ES	local_units	x		x				x	x	2008-2014, 2000-2007	Regional SBS
FI	local_units	x	x	x				x	x	2008-2015, 2002-2007, 2000	Regional SBS
FR	local_units	x	x	x				x	x	2012-2014, 2008-2010, 2000-2007	Regional SBS
HR	local_units			x				x	x	2014	Regional SBS
HU	local_units	x		x				x	x	2008-2014, 2001-2007	Regional SBS
IE	local_units	x		x				x	x	2008-2012, 2000-2007	Regional SBS
IS	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
IT	local_units	x		x				x	x	2008-2014, 2000-2007	Regional SBS
LI	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
LT	enter	x		x		x	250	x	x	2008-2014	SBS (country level)
LT	local_units	x		x				x	x	2008-2015, 2002-2007, 2000	Regional SBS
LU	enter	x		x	x	x	250	x	x	2008-2014	SBS (country level)
LU	local_units	x		x	x			x	x	2009-2014, 2006-2007	Regional SBS
LV	enter	x		x		x	250	x	x	2008-2014	SBS (country level)
LV	local_units	x		x				x	x	2008-2014, 2001-2007	Regional SBS
MT	enter	x		x		x	250	x	x	2008-2014	SBS (country level)
MT	local_units	x		x				x	x	2008-2014	Regional SBS
NL	local_units	x	x	x				x	x	2008-2014, 2000-2006	Regional SBS
NO	local_units	x		x				x	x	2008-2014, 2000-2007	Regional SBS
PL	local_units			x				x	x	2008-2014, 2000-2007	Regional SBS
PT	local_units			x				x	x	2008-2014, 2000-2007	Regional SBS
RO	local_units	x		x				x	x	2008-2014, 2000-2007	Regional SBS
SE	local_units	x	(x)	x				x	x	2008-2014, 2000-2007	Regional SBS
SI	local_units			x				x	x	2008-2014, 2007, 2000-2006 NUTS 0 only	Regional SBS
SK	local_units	x		x				x	x	2008-2014, 2003-2007	Regional SBS
UK	local_units			x				x	x	2008-2014, 2000, 2002-2007	Regional SBS

Note: Indicator: enter…number of enterprises; local_units…number of local units; size classification '250': enterprise size according to EU definition; NACE: 2008-2014: NACE Rev. 2 B-N, S95; 2000-2007: NACE Rev. 1.1 C-K (excluding J)

Table 2.12: Eurostat structural business statistics: data availability with regard to employment

Coun-try	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE 1-digit	NACE 2-digit	Years	Source
AT	pers_empl	x	x	x				x	x	2008-2014, 2000-2007	Regional SBS
BE	pers_empl	x		x				x	x	2008-2014, 2000-2001, 2003-2007	Regional SBS
BG	pers_empl	x	x	x				x	x	2007-2014; 200-2006 NUTS 0 only	Regional SBS
CH	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CY	pers_empl	x		x	x			x	x	2008-2014, 2005-2007	Regional SBS
CY	pers_empl	x		x	x	x	250	x	x	2005-2014	SBS (country level)
CZ	pers_empl	x		x				x	x	2008-2014, 2002, 2004-2007	Regional SBS
DE	pers_empl	x	x	x				x	x	2008-2014, 2000-2007	Regional SBS
DK	pers_empl	x		x				x	x	2008-2014, 2000-2007 NUTS 0 only	Regional SBS
EE	pers_empl	x		x				x	x	2008-2014, 2000-2002, 2004-2007	Regional SBS
EE	pers_empl	x		x		x	250	x	x	2008-2014	SBS (country level)
EL	pers_empl	x		x				x	x	2008-2014, 2000-2007	Regional SBS
ES	pers_empl	x		x				x	x	2008-2014, 2000-2007	Regional SBS
FI	pers_empl	x	x	x				x	x	2008-2015, 2002-2007, 2000	Regional SBS
FR	pers_empl	x	x	x				x	x	2012-2014, 2010, 2000-2007	Regional SBS
HR	pers_empl			x				x	x	2014	Regional SBS
HU	pers_empl	x		x				x	x	2008-2014, 2001-2007	Regional SBS
IE	pers_empl	x		x				x	x	2008-2012, 2000-2007	Regional SBS
IS	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
IT	pers_empl	x		x				x	x	2008-2014, 2000-2007	Regional SBS
LI	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
LT	pers_empl	x		x				x	x	2008-2015, 2000-2007	Regional SBS
LT	pers_empl	x		x		x	250	x	x	2008-2014	SBS (country level)

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
LU	pers_empl	x		x	x			x	x	2009-2014, 2006-2007	Regional SBS
LU	pers_empl	x		x	x	x	250	x	x	2008-2014	SBS (country level)
LV	pers_empl	x		x				x	x	2008-2014, 2000-2007	Regional SBS
LV	pers_empl	x		x		x	250	x	x	2008-2014	SBS (country level)
MT	pers_empl	x		x				x	x	2008-2014	Regional SBS
MT	pers_empl	x		x		x	250	x	x	2008-2014	SBS (country level)
NL	pers_empl	x	x	x				x	x	2008-2014, 2000-2007	Regional SBS
NO	pers_empl	x		x				x	x	2008-2014, 2000-2007	Regional SBS
PL	pers_empl			x				x	x	2008-2014	Regional SBS
PT	pers_empl			x				x	x	2008-2014, 2000-2007	Regional SBS
RO	pers_empl	x		x				x	x	2008-2014, 2000-2007	Regional SBS
SE	pers_empl	x	(x)	x				x	x	2008-2014, 2000-2007	Regional SBS
SI	pers_empl	x		x				x	x	2008-2014, 2007, 2000-2005 NUTS 0 only	Regional SBS
SK	pers_empl	x		x				x	x	2008-2014, 2000-2007	Regional SBS
UK	pers_empl			x				x	x	2008-2014, 2000, 2002-2007	Regional SBS

Note: Indicator: pers_empl…number of persons employed; empl…number of employees; size classification '250': enterprise size according to EU definition; NACE: 2008-2014: NACE Rev. 2 B-N, S95; 2000-2007: NACE Rev. 1.1 C-K (excluding J)

Eurostat business demography

Table 2.13: Eurostat regional business demography: data availability with regard to the number of firms

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
AT	act_enter	x	x	x	x			x		2008-2014	Regional Business Demography
AT	act_enter	x	x	x	x	x	10			2008-2014	Regional Business Demography
BE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BG	act_enter	x	x	x	x			x		2011-2014	Regional Business Demography
BG	act_enter	x	x			x	10			2011-2014	Regional Business Demography
BG	act_enter			x	x	x	10			2008-2014	Regional Business Demography
CH	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CY	act_enter	x		x	x	x	10	x	x	2008-2014	Business Demography (country level)
CZ	act_enter			x	x			x		2010, 2013-2014	Regional Business Demography
CZ	act_enter			x	x	x	10			2010, 2013-2014	Regional Business Demography
DE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
DK	act_enter			x	x			x		2008-2013	Regional Business Demography
DK	act_enter			x	x	x	10			2008-2013	Regional Business Demography
EE	act_enter	x		x		x	10	x	x	2008-2014	Business Demography (country level)
EE	act_enter	x		x	x			x		2008-2010	Regional Business Demography
EE	act_enter	x		x	x	x	10			2008-2010	Regional Business Demography
EL	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ES	act_enter				x			x		2008-2014	Regional Business Demography
ES	act_enter				x	x	10			2008-2014	Regional Business Demography
FI	act_enter			x	x			x		2008-2010	Regional Business Demography
FI	act_enter			x	x	x	10			2008-2010	Regional Business Demography
FR	act_enter				x			x		2008-2013	Regional Business Demography
FR	act_enter				x	x	10			2008-2013	Regional Business Demography
HR	act_enter			x	x			x	x	2011-2014	Regional Business Demography

Coun-try	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE 1-digit	NACE 2-digit	Years	Source
HR	act_enter			x	x	x	10			2011-2014	Regional Business Demography
HU	act_enter			x	x			x		2008-2014	Regional Business Demography
HU	act_enter			x	x	x	10			2008-2014	Regional Business Demography
IE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
IS	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
IT	act_enter				x			x		2008-2014	Regional Business Demography
IT	act_enter				x	x	10			2008-2014	Regional Business Demography
LI	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
LT	act_enter	x		x	x			x		2011-2014	Regional Business Demography
LT	act_enter	x		x	x	x	10			2011-2014	Regional Business Demography
LT	act_enter	x		x		x	10		x	2008-2014	Business Demography (country level)
LU	act_enter	x		x	x	x	10	x	x	2008-2014	Business Demography (country level)
LV	act_enter	x		x				x	x	2008-2014	Business Demography (country level)
MT	act_enter	x		x		x	10	x	x	2010-2014, data gaps for 2014	Business Demography (country level)
NL	act_enter			x	x			x		2008-2010	Regional Business Demography
NL	act_enter			x	x	x	10			2008-2010	Regional Business Demography
NO	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
PL	act_enter				x			x		2008-2010	Regional Business Demography
PL	act_enter				x	x	10			2008-2010	Regional Business Demography
PT	act_enter				x				x	2013-2014, 2008-2010	Regional Business Demography
PT	act_enter				x	x	10			2013-2014, 2008-2010	Regional Business Demography
RO	act_enter				x			x		2008-2014	Regional Business Demography
RO	act_enter				x	x	10			2008-2014	Regional Business Demography
SE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SI	act_enter			x	x			x		2008-2010	Regional Business Demography

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
SI	act_enter				x	x	10			2008-2010	Regional Business Demography
SK	act_enter			x	x			x		2008-2014	Regional Business Demography
SK	act_enter			x	x	x	10			2008-2014	Regional Business Demography
UK	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Note: Indicator: act_enter…Population of active enterprises; size classification '10': categories 0, 1-9, 10+; NACE: 2008-2014: NACE Rev. 2 B-S

Table 2.14: Eurostat Regional Business Demography: Data availability with regard to employment

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
AT	act_pers_empl	x	x	x	x			x		2008-2014	Regional Business Demography
AT	act_pers_empl	x	x	x	x	x	10			2008-2014	Regional Business Demography
AT	act_empl	x	x	x	x			x		2008-2014	Regional Business Demography
AT	act_empl	x	x	x	x	x	10			2008-2014	Regional Business Demography
BE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BG	act_pers_empl	x	x	x	x			x		2008-2014	Regional Business Demography
BG	act_pers_empl	x	x			x	10			2008-2014	Regional Business Demography
BG	act_pers_empl			x	x	x	10			2008-2014	Regional Business Demography
BG	act_empl	x	x	x	x			x		2008-2014	Regional Business Demography
BG	act_empl	x	x			x	10			2008-2014	Regional Business Demography
BG	act_empl			x	x	x	10			2008-2014	Regional Business Demography
CH	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CY	act_pers_empl	x		x	x	x	10	x	x	2008-2014	Business Demography (country level)
CY	act_empl	x		x	x	x	10	x	x	2008-2014	Business Demography (country level)
CZ	act_pers_empl			x	x			x		2010, 2013-2014	Regional Business Demography
CZ	act_pers_empl			x	x	x	10			2010, 2013-2014	Regional Business Demography
CZ	act_empl			x	x			x		2010, 2013-2014	Regional Business Demography

Coun-try	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE 1-digit	NACE 2-digit	Years	Source
CZ	act_empl			x	x	x	10			2010, 2013-2014	Regional Business Demography
DE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
DK	act_pers_empl			x	x			x		2008-2013	Regional Business Demography
DK	act_pers_empl			x	x	x	10			2008-2013	Regional Business Demography
DK	act_empl			x	x			x		2008-2013	Regional Business Demography
DK	act_empl			x	x	x	10			2008-2013	Regional Business Demography
EE	act_pers_empl	x		x		x	10	x	x	2008-2014	Business Demography (country level)
EE	act_pers_empl	x		x	x			x		2008-2010	Regional Business Demography
EE	act_pers_empl	x		x	x	x	10			2008-2010	Regional Business Demography
EE	act_empl	x		x		x	10	x	x	2008-2014	Business Demography (country level)
EE	act_empl	x		x	x			x		2008-2010	Regional Business Demography
EE	act_empl	x		x	x	x	10			2008-2010	Regional Business Demography
EL	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ES	act_pers_empl				x			x		2008-2014	Regional Business Demography
ES	act_pers_empl				x	x	10			2008-2014	Regional Business Demography
ES	act_empl				x			x		2008-2014	Regional Business Demography
ES	act_empl				x	x	10			2008-2014	Regional Business Demography
FI	act_pers_empl			x	x			x		2008-2010	Regional Business Demography
FI	act_pers_empl			x	x	x	10			2008-2010	Regional Business Demography
FI	act_empl			x	x			x		2008-2010	Regional Business Demography
FI	act_empl			x	x	x	10			2008-2010	Regional Business Demography
FR	act_pers_empl				x			x		2008-2013	Regional Business Demography
FR	act_pers_empl				x	x	10			2008-2013	Regional Business Demography
FR	act_empl				x			x		2008-2013	Regional Business Demography
FR	act_empl				x	x	10			2008-2013	Regional Business Demography
HR	act_pers_empl			x	x			x	x	2011-2014	Regional Business Demography

Coun-try	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE 1-digit	NACE 2-digit	Years	Source
HR	act_pers_empl			x	x	x	10			2011-2014	Regional Business Demography
HR	act_empl			x	x			x	x	2011-2014	Regional Business Demography
HR	act_empl			x	x	x	10			2011-2014	Regional Business Demography
HU	act_pers_empl			x	x			x		2008-2014	Regional Business Demography
HU	act_pers_empl			x	x	x	10			2008-2014	Regional Business Demography
HU	act_empl			x	x			x		2008-2014	Regional Business Demography
HU	act_empl			x	x	x	10			2008-2014	Regional Business Demography
IE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
IS	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
IT	act_pers_empl				x			x		2008-2014	Regional Business Demography
IT	act_pers_empl				x	x	10			2008-2014	Regional Business Demography
IT	act_empl				x			x		2008-2014	Regional Business Demography
IT	act_empl				x	x	10			2008-2014	Regional Business Demography
LI	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
LT	act_pers_empl	x		x	x			x		2011-2014	Regional Business Demography
LT	act_pers_empl	x		x	x	x	10			2011-2014	Regional Business Demography
LT	act_pers_empl	x		x		x	10		x	2008-2014	Business Demography (country level)
LT	act_empl	x		x	x			x		2011-2014	Regional Business Demography
LT	act_empl	x		x	x	x	10			2011-2014	Regional Business Demography
LT	act_empl	x		x		x	10		x	2008-2014	Business Demography (country level)
LU	act_pers_empl	x		x	x	x	10	x	x	2008-2014	Business Demography (country level)
LU	act_empl	x		x	x	x	10	x	x	2008-2014	Business Demography (country level)
LV	act_pers_empl	x		x				x	x	2008-2014	Business Demography (country level)

Coun-try	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE 1-digit	NACE 2-digit	Years	Source
LV	act_empl	x		x				x	x	2008-2014	Business Demography (country level)
MT	act_pers_empl	x		x		x	10	x	x	2010-2014, data gaps for 2014	Business Demography (country level)
MT	act_empl	x		x		x	10	x	x	2010-2014, data gaps for 2014	Business Demography (country level)
NL	act_pers_empl			x	x			x		2008-2010	Regional Business Demography
NL	act_pers_empl			x	x	x	10			2008-2010	Regional Business Demography
NL	act_empl			x	x			x		2008-2010	Regional Business Demography
NL	act_empl			x	x	x	10			2008-2010	Regional Business Demography
NO	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
PL	act_pers_empl				x			x		2008-2010	Regional Business Demography
PL	act_pers_empl				x	x	10			2008-2010	Regional Business Demography
PL	act_empl				x			x		2008-2010	Regional Business Demography
PL	act_empl				x	x	10			2008-2010	Regional Business Demography
PT	act_pers_empl				x			x		2013-2014, 2008-2010	Regional Business Demography
PT	act_pers_empl				x	x	10			2013-2014, 2008-2010	Regional Business Demography
PT	act_empl				x			x		2013-2014, 2008-2010	Regional Business Demography
PT	act_empl				x	x	10			2013-2014, 2008-2010	Regional Business Demography
RO	act_pers_empl				x			x		2008-2014	Regional Business Demography
RO	act_pers_empl				x	x	10			2008-2014	Regional Business Demography
RO	act_empl				x			x		2008-2014	Regional Business Demography
RO	act_empl				x	x	10			2008-2014	Regional Business Demography
SE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SI	act_pers_empl			x	x			x		2008-2010	Regional Business Demography

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
SI	act_pers_empl				x	x	10			2008-2010	Regional Business Demography
SI	act_empl			x	x			x		2008-2010	Regional Business Demography
SI	act_empl				x	x	10			2008-2010	Regional Business Demography
SK	act_pers_empl			x	x			x		2008-2014	Regional Business Demography
SK	act_pers_empl			x	x	x	10			2008-2014	Regional Business Demography
SK	act_empl			x	x			x		2008-2014	Regional Business Demography
SK	act_empl			x	x	x	10			2008-2014	Regional Business Demography
UK	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Note: Indicator: act_pers_empl…number of persons employed in active enterprises; act_empl…number of employees in active enterprises; size classification '10': categories 0, 1-9, 10+; NACE: 2008-2014: NACE Rev. 2 B-S

Table 2.15: Eurostat Regional Business Demography: Data availability with regard to enterprise births and deaths

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
AT	birth_rate	x	x	x	x			x		2008-2013	Regional Business Demography
AT	birth_rate	x	x	x	x	x	10			2008-2014	Regional Business Demography
AT	births	x	x	x	x			x		2008-2014	Regional Business Demography
AT	births	x	x	x	x	x	10			2008-2014	Regional Business Demography
AT	closures	x	x	x	x			x		2008-2013	Regional Business Demography
AT	closures	x	x	x	x	x	10			2008-2013	Regional Business Demography
AT	death_rate	x	x	x	x			x		2008-2013	Regional Business Demography
AT	death_rate	x	x	x	x	x	10			2008-2013	Regional Business Demography
BE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
BG	birth_rate	x	x	x	x			x		2011-2014	Regional Business Demography
BG	birth_rate	x	x	x	x	x	10			2011-2014	Regional Business Demography
BG	births	x	x	x	x			x		2011-2014	Regional Business Demography
BG	births	x	x			x	10			2011-2014	Regional Business Demography
BG	births			x	x	x	10			2008-2014	Regional Business Demography

Coun-try	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE 1-digit	NACE 2-digit	Years	Source
BG	closures	x	x	x	x			x		2011-2013	Regional Business Demography
BG	closures	x	x			x	10			2011-2013	Regional Business Demography
BG	closures			x	x	x	10			2008-2009, 2011-2013	Regional Business Demography
BG	death_rate	x	x	x	x			x		2011-2013	Regional Business Demography
BG	death_rate	x	x	x	x	x	10			2011-2013	Regional Business Demography
CH	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CY	birth_rate	x		x	x	x	10	x	x	2008-2014	Business Demography (country level)
CY	births	x		x	x	x	10	x	x	2008-2014	Business Demography (country level)
CY	closures	x		x	x	x	10	x	x	2008-2013	Business Demography (country level)
CY	death_rate	x		x	x	x	10	x	x	2008-2013	Business Demography (country level)
CZ	birth_rate			x	x			x		2013-2014	Regional Business Demography
CZ	birth_rate			x	x	x	10			2013-2014	Regional Business Demography
CZ	births			x	x			x		2010, 2013-2014	Regional Business Demography
CZ	births			x	x	x	10			2010, 2013-2014	Regional Business Demography
CZ	closures			x	x			x		2008-2013	Regional Business Demography
CZ	closures			x	x	x	10			2008-2013	Regional Business Demography
CZ	death_rate			x	x			x		2013	Regional Business Demography
CZ	death_rate			x	x	x	10			2013	Regional Business Demography
DE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
DK	birth_rate			x	x			x		2011-2013	Regional Business Demography
DK	birth_rate			x	x	x	10			2011-2013	Regional Business Demography
DK	births			x	x			x		2008-2013	Regional Business Demography
DK	births			x	x	x	10			2008-2013	Regional Business Demography
DK	closures			x	x			x		2008-2013	Regional Business Demography

Coun-try	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE 1-digit	NACE 2-digit	Years	Source
DK	closures			x	x	x	10			2008-2013	Regional Business Demography
DK	death_rate			x	x			x		2011-2013	Regional Business Demography
DK	death_rate			x	x	x	10			2011-2013	Regional Business Demography
EE	birth_rate	x		x		x	10	x	x	2008-2014	Business Demography (country level)
EE	births	x		x	x			x		2008-2010	Regional Business Demography
EE	births	x		x	x	x	10			2008-2010	Regional Business Demography
EE	births	x		x		x	10	x	x	2008-2014	Business Demography (country level)
EE	closures	x		x	x			x		2008-2009	Regional Business Demography
EE	closures	x		x	x	x	10			2008-2009	Regional Business Demography
EE	closures	x		x		x	10	x	x	2008-2014	Business Demography (country level)
EE	death_rate	x		x		x	10	x	x	2008-2013	Business Demography (country level)
EL	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ES	birth_rate				x			x		2011-2014	Regional Business Demography
ES	birth_rate				x	x	10			2011-2014	Regional Business Demography
ES	births				x			x		2008-2014	Regional Business Demography
ES	births				x	x	10			2008-2014	Regional Business Demography
ES	closures				x			x		2008-2009, 2011-2013	Regional Business Demography
ES	closures				x	x	10			2008-2009, 2011-2013	Regional Business Demography
ES	death_rate				x			x		2011-2013	Regional Business Demography
ES	death_rate				x	x	10			2011-2013	Regional Business Demography
FI	births			x	x			x		2008-2010	Regional Business Demography
FI	births			x	x	x	10			2008-2010	Regional Business Demography
FI	closures			x	x			x		2008-2010	Regional Business Demography

Coun-try	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE 1-digit	NACE 2-digit	Years	Source
FI	closures			x	x	x	10			2008-2010	Regional Business Demography
FR	birth_rate				x	x	10			2011-2013	Regional Business Demography
FR	births				x			x		2008-2013	Regional Business Demography
FR	births				x	x	10			2008-2013	Regional Business Demography
FR	closures				x			x		2008-2013	Regional Business Demography
FR	closures				x	x	10			2008-2013	Regional Business Demography
FR	death_rate				x	x	10			2011-2013	Regional Business Demography
HR	birth_rate			x	x			x	x	2011-2013	Regional Business Demography
HR	birth_rate			x	x	x	10			2011-2013	Regional Business Demography
HR	births			x	x			x	x	2011-2014	Regional Business Demography
HR	births			x	x	x	10			2011-2014	Regional Business Demography
HR	closures			x	x			x	x	2011-2013	Regional Business Demography
HR	closures			x	x	x	10			2011-2013	Regional Business Demography
HR	death_rate			x	x			x	x	2011-2012	Regional Business Demography
HR	death_rate			x	x	x	10			2011-2013	Regional Business Demography
HU	birth_rate			x	x			x		2011-2014	Regional Business Demography
HU	birth_rate			x	x	x	10			2011-2014	Regional Business Demography
HU	births			x	x			x		2008-2014	Regional Business Demography
HU	births			x	x	x	10			2008-2014	Regional Business Demography
HU	closures			x	x			x		2008-2009, 2011-2013	Regional Business Demography
HU	closures			x	x	x	10			2008-2009, 2011-2013	Regional Business Demography
HU	death_rate			x	x			x		2011-2013	Regional Business Demography
HU	death_rate			x	x	x	10			2011-2013	Regional Business Demography
IE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
IS	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
IT	birth_rate				x			x		2011-2014	Regional Business Demography

Coun-try	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE 1-digit	NACE 2-digit	Years	Source
IT	birth_rate				x	x	10			2011-2014	Regional Business Demography
IT	births				x			x		2008-2014	Regional Business Demography
IT	births				x	x	10			2008-2014	Regional Business Demography
IT	closures				x			x		2008-2009, 2011-2013	Regional Business Demography
IT	closures				x	x	10			2008-2009, 2011-2013	Regional Business Demography
IT	death_rate				x			x		2011-2013	Regional Business Demography
IT	death_rate				x	x	10			2011-2013	Regional Business Demography
LI	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
LT	birth_rate	x		x	x			x		2014 NUTS 2 only, 2011-2013	Regional Business Demography
LT	birth_rate	x		x	x	x	10			2011-2014	Regional Business Demography
LT	birth_rate	x		x		x	10		x	2008-2014	Business Demography (country level)
LT	births	x		x	x			x		2011-2014	Regional Business Demography
LT	births	x		x	x	x	10			2011-2014	Regional Business Demography
LT	births	x		x		x	10		x	2007-2014	Business Demography (country level)
LT	closures	x		x	x			x		2011-2014	Regional Business Demography
LT	closures	x		x	x	x	10			2011-2014	Regional Business Demography
LT	closures	x		x		x	10		x	2007-2014	Business Demography (country level)
LT	death_rate	x		x	x			x		2014 NUTS 2 only, 2011-2013	Regional Business Demography
LT	death_rate	x		x	x	x	10			2011-2014	Regional Business Demography
LT	death_rate	x		x		x	10		x	2008-2014	Business Demography (country level)
LU	birth_rate	x		x	x	x	10	x	x	2008-2014	Business Demography (country level)

Coun-try	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE 1-digit	NACE 2-digit	Years	Source
LU	births	x		x	x	x	10	x	x	2004-2014	Business Demography (country level)
LU	closures	x		x	x	x	10	x	x	2008-2014	Business Demography (country level)
LU	death_rate	x		x	x	x	10	x	x	2008-2013	Business Demography (country level)
LV	birth_rate	x		x				x	x	2008-2014	Business Demography (country level)
LV	births	x		x				x	x	2004-2014	Business Demography (country level)
LV	closures	x		x				x	x	2008-2014	Business Demography (country level)
LV	death_rate	x		x				x	x	2008-2013	Business Demography (country level)
MT	birth_rate	x		x		x	10	x	x	2010-2014, data gaps for 2014	Business Demography (country level)
MT	births	x		x		x	10	x	x	2010-2014, data gaps for 2014	Business Demography (country level)
MT	closures	x		x		x	10	x	x	2010-2014, data gaps for 2014	Business Demography (country level)
MT	death_rate	x		x		x	10	x	x	2010-2014, data gaps for 2014	Business Demography (country level)
NL	births			x	x			x		2008-2010	Regional Business Demography
NL	births			x	x	x	10			2008-2010	Regional Business Demography
NL	closures			x	x			x		2008-2009	Regional Business Demography
NL	closures			x	x	x	10			2008-2009	Regional Business Demography
NO	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
PL	births				x			x		2008-2010	Regional Business Demography
PL	births				x	x	10			2008-2010	Regional Business Demography
PL	closures				x			x		2008-2009	Regional Business Demography
PL	closures				x	x	10			2008-2009	Regional Business Demography

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
PT	birth_rate				x			x		2013-2014	Regional Business Demography
PT	birth_rate				x	x	10			2013-2014	Regional Business Demography
PT	births				x			x		2013-2014, 2008-2010	Regional Business Demography
PT	births				x	x	10			2013-2014, 2008-2010	Regional Business Demography
PT	closures				x			x		2013	Regional Business Demography
PT	closures				x	x	10			2013	Regional Business Demography
PT	death_rate				x			x		2013	Regional Business Demography
PT	death_rate				x	x	10			2013	Regional Business Demography
RO	birth_rate				x			x		2011-2014	Regional Business Demography
RO	birth_rate				x	x	10			2011-2014	Regional Business Demography
RO	births				x			x		2008-2014	Regional Business Demography
RO	births				x	x	10			2008-2014	Regional Business Demography
RO	closures				x			x		2008-2009, 2011-2013	Regional Business Demography
RO	closures				x	x	10			2008-2009, 2011-2013	Regional Business Demography
RO	death_rate				x			x		2011-2013	Regional Business Demography
RO	death_rate				x	x	10			2011-2013	Regional Business Demography
SE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SI	births			x	x			x		2008-2010	Regional Business Demography
SI	births				x	x	10			2008-2010	Regional Business Demography
SI	closures			x	x			x		2008-2009	Regional Business Demography
SI	closures				x	x	10			2008-2009	Regional Business Demography
SK	birth_rate			x	x			x		2011-2014	Regional Business Demography
SK	birth_rate			x	x	x	10			2011-2014	Regional Business Demography
SK	births			x	x			x		2008-2014	Regional Business Demography

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
SK	births			x	x	x	10			2008-2014	Regional Business Demography
SK	closures			x	x			x		2008-2009, 2011-2013	Regional Business Demography
SK	closures			x	x	x	10			2008-2009, 2011-2013	Regional Business Demography
SK	death_rate			x	x			x		2011-2013	Regional Business Demography
SK	death_rate			x	x	x	10			2011-2013	Regional Business Demography
UK	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Note: Indicator: birth_rate… birth rate: number of enterprise births in the reference period (t) divided by the number of enterprises active in t; births… number of births of enterprises in t; closures… number of deaths of enterprises in t; size classification '10': categories 0, 1-9, 10+; NACE: 2008-2014: NACE Rev. 2 B-S

National data sources

Table 2.16: Data availability with regard to the number of firms (mainly SBS)

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
AT	enter	x		x		x	250	x	x	2008-2014, 2002, 2004, 2007	SBS
AT	local_units				x				x	2002-2007	SBS
AT	local_units				x				x	2008-2014	SBS
CH	local_units				x	x	250		x	2011-2014	SBS
CH	local_units	x			x	x	250		x	1995, 2001, 2005, 2008	SBS – Eidgenössische Betriebszählung (predecessor)
DE	local_units				x	x	250		x	2000-2015	Beschäftigtenstatistik Bundesagentur
DK	local_units				x	x	100	x		2008-2014	Employment in Businesses (EiB) statistic
DK	local_units				x	x	100	x		2002-2006	Employment in Businesses (EiB) statistic
ES	enter; act_enter			x	x	x	200			2000-2016	Central Business Register

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
ES	enter; act_enter			x					x	2008, 2012, 2015	Central Business Register
ES	enter; act_enter			x					x	2000, 2003, 2007	Central Business Register
ES	enter; act_enter			x		x	200		x	2000, 2008, 2015	Central Business Register
ES	local_units; act_local_units			x	x	x	200			2000-2016	Central Business Register
ES	local_units; act_local_units			x		x	200		x	2000, 2003, 2007, 2010, 2012, 2015	Central Business Register
FI	enter	x				x	250		x	2013-2015	SBS
FI	local_units				x			x	x	2007-2012	SBS
HR	enter				x				x	2000-2015	Financial Agency
HR	enter				x	x	250			2000-2015	Financial Agency
HU	enter	x		x		x	250			2013-2015	SBS
LU	enter	x		x	x			x (defined groups)		2005-2014	SBS
NL	local_units				x				x	2007-2016, provisional data for 2015 and 2016	SBS
RO	local_units				x	x	250		x	2002-2008	SBS
RO	local_units				x	x	250		x	2008-2014	SBS
SE	local_units				x				x	2007-2014	SBS
SK	enter				x			x		2008-2015	Business Statistics, Business Register
UK	enter				x			x		2008-2013	Business Register
UK	enter				x	x	250			2008-2013	Business Register

Note: Indicator: enter…number of enterprises; act_enter…number of active enterprises; local_units…number of local units; act_local_units…number of active local units; size classification '250': enterprise size according to EU definition; '100' and '200': enterprise classification using '100' or '200' to delineate large companies from smaller companies; NACE: 2008-2014: NACE Rev. 2; Sources that do not originate from the national SBS have been assigned here, when they are not the basis for BD data. One exception are the data from Spain that have been assigned to both to SBS and BD.

Table 2.17: Data availability with regard to the number of firms (mainly BD)

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
BE	act_enter		x	x	x	x	250		x	2008-2015	BD
BE	act_enter		x	x	x				x	2003-2007	BD
CY	act_enter	x		x	x	x	250		x	2008-2015	BD – Business register
CY	act_enter	x		x	x	x	250		x	2005	BD – Census 2005
CY	act_local_units	x		x	x				x	2008-2015	BD – Business register
CY	act_local_units	x		x	x	x	250		x	2005	BD – Census 2005
DE	act_local_units	x	x	x	x	x	250			2006-2013	BD – Unternehmensregister
EE	act_enter	x		x	x	x	10	x		2004-2014	BD – Business register
EE	act_enter_2	x		x	x	x	250			2002-2015	BD – Business register
ES	enter; act_enter			x	x	x	200			2000-2016	Central Business Register
ES	enter; act_enter			x					x	2008, 2012, 2015	Central Business Register
ES	enter; act_enter			x					x	2000, 2003, 2007	Central Business Register
ES	enter; act_enter			x		x	200		x	2000, 2008, 2015	Central Business Register
ES	local_units; act_local_units			x	x	x	200			2000-2016	Central Business Register
ES	local_units; act_local_units			x		x	200		x	2000, 2003, 2007, 2010, 2012, 2015	Central Business Register
FI	act_local_units				x	x	250	x	x	2006-2014	BD
FR	act_enter				x	x	250		x	2014	BD
FR	act_local_units				x	x	250		x	2006-2015	BD
HR	act_enter				x					2000-2015	Financial Agency
HU	act_enter			x	x			x		2008-2014	BD
HU	act_enter			x	x					1999-2014	BD
HU	act_enter			x		x	250	x		2004-2014 (4 files)	BD
IE	act_enter				x			x		2008-2014	BD
IE	act_enter				x	x	250			2008-2014	BD
IS	act_enter				x	x	250		x	2003-2015	BD

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
IT	act_enter				x	x	250		x	2011	BD
IT	act_local_units				x	x	250		x	2012-2014	BD
LI	act_enter	x		x	x	x	250	x	x (groups)	2002-2014, 2015	BD
LT	act_local_units	x		x		x	250		x	2006-2015	BD
LT	act_local_units				x	x	250			2006-2015	BD
LU	act_enter	x		x	x			x (broad groups)		1998-2007	BD
LU	act_enter	x		x	x	x	250	x (broad groups)		2010-2014	BD
LV	act_enter	x		x	x	x	250	x	x	2013-2015	BD
NO	act_enter				x	x	250		x	2008-2014, 2000-2007	BD
NO	act_enter_2				x				x	2008-2014	BD
PL	act_enter	x		x	x	x	250			2002-2015	BD
PL	act_enter	x		x	x			x	x	2012-2015, 2009-2011	BD
PL	act_enter	x		x		x	250			2009-2014	BD
PT	act_enter				x				x	2008-2014	BD
PT	act_enter				x	x	250			2008-2014	BD
SE	act_local_units			x		x	200	x		2008, 2012, 2014, 2000, 2004	BD
SI	act_enter	x		x	x					2004-2014	BD
SK	act_enter	x				x	250		x	2008-2014	Slovak Business Agency
SK	act_enter				x	x	250			2008-2014	Slovak Business Agency

Note: Indicator: pers_empl…number of persons employed; empl…number of employees; size classification '250': enterprise size according to EU definition; '10' and '200': enterprise classification using '10' or '200' to delineate larger companies from smaller companies; NACE: 2008-2014: NACE Rev. 2; Sources that do not originate from the national BD have been assigned here, when they include active enterprises. One exception are the data from Spain that have been assigned to both to SBS and BD.

Table 2.18: Data availability with regard to employment (mainly SBS)

Coun-try	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE 1-digit	NACE 2-digit	Years	Source
AT	pers_empl	x		x		x	250	x	x	2008-2014, 2002, 2004, 2007	SBS
AT	pers_empl				x				x	2002-2007	SBS
AT	pers_empl				x				x	2008-2014	SBS
CH	pers_empl				x	x	250		x	2011-2014	SBS
CH	pers_empl	x			x	x	250		x	1995, 2001, 2005, 2008	SBS – Eidgenössische Betrieb-szählung (Predecessor)
DE	empl				x	x	250		x	2000-2015	Beschäftigtenstatistik Bundesagentur
DK	empl			x				x		2000-2014	SBS
DK	pers_empl				x	x	250		x	2000-2014	SBS
EE	pers_empl	x		x		x	250		x	2005-2014	SBS
EE	pers_empl	x		x		x	250			2000-2014	SBS
FI	pers_empl				x			x	x	2007-2012	SBS
HR	empl				x				x	2001-2015	Financial Agency
HR	empl				x	x	250			2000-2015	Financial Agency
HU	pers_empl	x		x		x	250			2013-2015	SBS
HU	empl	x		x		x	250			2013-2015	SBS
LU	pers_empl	x		x	x			x (defined groups)		2005-2014	SBS
LU	empl	x		x	x			x (defined groups)		2005-2014	SBS
RO	pers_empl			x		x	250	x		2000-2008	SBS
RO	pers_empl			x		x	250	x		2008-2014	SBS
SE	empl				x				x	2007-2014	SBS
SI	pers_empl	x			x			x		2000-2015	Regional acounts
SI	empl	x			x			x		2000-2015	Regional acounts
SK	empl				x			x		2009-2015	Enterprise statistics
SK	empl_2	x				x	250	x		2008-2014	Statistical Office of Slovak Republic

Note: Indicator: pers_empl…number of persons employed; empl…number of employees; size classification '250': enterprise size according to EU definition; NACE: 2008-2014: NACE Rev. 2; Sources that do not originate from the national SBS have been assigned here, when they are not the basis for BD data. One exception are the data from Spain that have been assigned to both to SBS and BD.

Table 2.19: Data availability with regard to employment (mainly BD)

Coun-try	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE 1-digit	NACE 2-digit	Years	Source
BE	act_pers_empl				x	x	200			2008, 2015	Statistics Belgium, Demografie Ondernemingen
CY	act_pers_empl	x		x	x	x	250		x	2008-2015	BD – Business register
CY	act_pers_empl_2	x		x	x			x		1995, 2000, 2005-2013	National accounts
FI	act_pers_empl				x	x	250	x	x	2006-2014	BD
FR	act_empl				x	x	250		x	2014	BD
IE	act_pers_empl				x			x		2008-2014	BD
IE	act_pers_empl				x	x	250			2008-2014	BD
IE	act_empl				x			x		2008-2014	BD
IE	act_empl				x	x	250			2008-2014	BD
IS	act_empl				x	x	250		x	2003-2015	Tax registry
IT	act_pers_empl				x	x	250		x	2012-2014	BD
LI	act_pers_empl	x		x	x	x	250	x	x (groups)	2002-2008	BD
LI	act_pers_empl	x		x	x	x	250	x	x (groups)	2009-2015	BD
LT	act_pers_empl	x		x		x	250		x	2006-2015	BD
LT	act_pers_empl				x	x	250			2006-2015	BD
NO	act_pers_empl				x	x	250		x	2008-2014, 2000-2007	BD
PL	act_empl	x		x		x	250			2009-2014	BD
PT	act_empl				x				x	2008-2014	BD
PT	act_empl				x	x	250			2008-2014	BD
SE	act_empl			x		x	200	x		2008, 2012, 2014, 2000, 2004	BD

Note: Indicator: act_pers_empl…number of persons employed in active enterprises; act_empl…number of employees in active enterprises; size classification '250': enterprise size according to EU definition; '200': enterprise classification using '200' to delineate large companies from smaller companies; NACE: 2008-2014: NACE Rev. 2; Sources that do not originate from the national BD have been assigned here, when they include active enterprises.

Table 2.20: Data availability with regard to enterprise births and deaths (mainly BD)

Coun-try	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE 1-digit	NACE 2-digit	Years	Source
BE	births		x	x	x	x	250		x	2008-2015	BD
BE	births		x	x	x				x	2003-2007	BD
BE	birth_rate		x	x	x					2007-2016	BD
BE	closures		x	x	x	x	250		x	2008-2015	BD
BE	closures		x	x	x				x	2003-2007	BD
BE	death_rate		x	x	x					2007-2016	BD
CH	births	x		x	x					2013, 2014	BD
CH	births				x	x	250		x	2001-2013	BD
CH	closures	x			x					2003, 2004	BD
CH	death_rate	x			x					2003, 2004	BD
DE	births	x	x	x	x					2000-2015	Gewerbeanzeigenstatistik
DE	closures	x	x	x	x					2000-2015	Gewerbeanzeigenstatistik
DK	births			x				x		2007-2014	BD
DK	closures			x				x		2007-2014	BD
EE	births	x		x	x	x	10	x		2004-2014	BD
EE	births	x		x	x	x	10			2000-2003	BD
EE	births	x		x	x			x		2004-2014	BD
EE	birth_rate	x		x	x					2004-2014	BD
EE	closures	x		x	x	x	10	x		2004-2014	BD
EE	closures	x		x	x	x	10			2000-2003	BD
EE	closures	x		x	x			x		2004-2014	BD
EE	death_rate	x		x	x					2004-2014	BD
ES	births			x		x	10			2009-2013	Central Business Register
ES	closures			x		x	10			2009-2013	Central Business Register
HR	births				x					2000-2015	Financial Agency
HR	closures				x					2000-2015	Financial Agency

Coun-try	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enter-prise size	Size classi-fication	NACE 1-digit	NACE 2-digit	Years	Source
HU	births			x	x					1999-2014	BD
HU	closures			x	x					1999-2014	BD
IS	births				x	x	250		x	2005-2015	BD
IS	closures				x	x	250		x	2003-2015	BD
LT	births	x		x		x	250		x	2001-2015	BD
LT	births				x	x	250			2006-2015	BD
LT	closures	x		x		x	250		x	2001-2015	BD
LT	closures				x	x	250			2006-2015	BD
LV	births				x	x	250		x	2001-2014	BD
LV	closures				x	x	250		x	2001-2014	BD
NL	births				x					1988-2010	Chamber of Commerce
NL	birth_rate				x					1988-2010	Chamber of Commerce
NL	closures				x					1988-2010	Chamber of Commerce
NL	death_rate				x					1988-2010	Chamber of Commerce
NO	births				x	x	250			2001-2015	BD
NO	births				x				x	2008-2015, 2001-2008	BD
NO	closures				x				x	2008-2014, 2001-2008	BD
PL	births	x		x	x			x	x	2009-2015	BD
PL	closures	x		x	x			x	x	2009-2015	BD
PL	death_rate	x		x	x					2003-2015	BD
PT	births				x				x	2010-2014	BD
PT	closures				x				x	2010-2014	BD
RO	births			x						2002-2014	BD
RO	birth_rate			x						2002-2014	BD
SE	births				x					2000-2015	BD
SE	closures				x					2001-2015	BD

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
SI	births	x			x					2004-2014	BD
SI	birth_rate	x			x					2004-2014	BD
SI	closures	x			x					2008-2014	BD
SI	death_rate	x			x					2008-2014	BD
UK	births				x					2008-2015	BD
UK	closures				x					2008-2015	BD

Note: Indicator: act_pers_empl…number of persons employed in active enterprises; act_empl…number of employees in active enterprises; size classification '250': enterprise size according to EU definition; '10': enterprise classification using '10' to delineate larger companies from smaller companies; NACE: 2008-2014: NACE Rev. 2; Sources that do not originate from the national BD have been assigned here, when they include active enterprises.

ORBIS database

Table 2.21: Data availability with regard to the number of firms and employment

Country	Indicator	NUTS 0	NUTS 1	NUTS 2	NUTS 3	Enterprise size	Size classification	NACE 1-digit	NACE 2-digit	Years	Source
CZ	act_enter				x	x	250		x	2015	ORBIS
CZ	act_empl				x	x	250		x	2015	ORBIS
EL	act_enter				x	x	250		x	2015	ORBIS
EL	act_empl				x	x	250		x	2015	ORBIS
FR	act_enter				x	x	250		x	2015	ORBIS
FR	act_empl				x	x	250		x	2015	ORBIS
HU	act_enter				x	x	250		x	2015	ORBIS
HU	act_empl				x	x	250		x	2015	ORBIS

Note: Indicator: act_enter…number of active enterprises; act_empl…number of employees in active enterprises; size classification '250': enterprise size according to EU definition; NACE: NACE Rev

2.3.3 Context data collection

For a detailed overview of the territorial context data gathered and data availability by country, please refer to the following tables.

Table 2.22: Check of data availability per country: % of available data points in respective NUTS 2 regions, per indicator time series

		Territorial context					Regional economy and labour market – NAMA											Regional economy and labour market – LFS											Reg. econ. and lab. m. – LFS		
	Indicator	Access ICT	Network length canal	Network length river	Network length road	Network length rail	Empl. pers. NACE total	Empl. pers. NACE A	Empl. pers. NACE B-E	Empl. pers. NACE F	Empl. pers. NACE G-I	Empl. pers. NACE J	Empl. pers. NACE K	Empl. pers. NACE L	Empl. pers. NACE M-N	Empl. pers. NACE O-Q	Empl. pers. NACE R-U	Empl. pers. NACE total	Empl. pers. NACE A	Empl. pers. NACE B-E	Empl. pers. NACE F	Empl. pers. NACE G-I	Empl. pers. NACE J	Empl. pers. NACE K	Empl. pers. NACE L	Empl. pers. NACE M-N	Empl. pers. NACE O-Q	Empl. pers. NACE R-U	Empl. pers. tot.	Employ-ees tot.	Self-empl. tot.
	Source	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat
NUTS code	NUTS NAME (2010) Time series	2006-15	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2008-14	2008-14	2008-14	2008-14	2008-14	2008-14	2008-14	2008-14	2008-14	2008-14	2008-14	2000-15	2000-15	2000-15
AL	ALBANIA	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AT	ÖSTERREICH	89%	0%	7%	100%	0%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	97%	100%	100%	100%	86%	100%	44%	100%	100%	100%	100%	100%	100%
BE	BELGIQUE-BELGIË	80%	0%	0%	75%	7%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	100%	88%	100%	100%	100%	100%	100%	57%	100%	100%	100%	100%	100%	100%
BG	БЪЛГАРИЯ (BULGARIA)	80%	0%	24%	72%	73%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	90%	88%	12%	100%	100%	100%	84%	84%	84%
CH	Switzerland	10%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	96%	100%	100%	100%	94%	94%	94%
CY	ΚΥΠΡΟΣ (KÝPROS)	80%	0%	0%	100%	0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
CZ	ČESKÁ REPUBLIKA	80%	80%	30%	100%	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
DE	DEUTSCHLAND	0%	56%	24%	58%	16%	100%	93%	93%	93%	0%	0%	0%	0%	0%	0%	0%	100%	89%	100%	100%	100%	100%	100%	44%	100%	100%	100%	97%	97%	97%
DK	DANMARK	80%	0%	0%	13%	0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	97%	100%	100%	100%	56%	56%	56%
EE	EESTI	80%	0%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
EL	ΕΛΛΑΔΑ (ELLADA)	0%	8%	0%	0%	67%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	80%	80%	80%	80%	80%	45%	62%	10%	80%	80%	80%	57%	57%	57%
ES	ESPAÑA	90%	0%	0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	89%	92%	97%	100%	89%	89%	74%	100%	100%	98%	100%	100%	100%
FI	SUOMI/FINLAND	58%	76%	76%	100%	63%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	80%	80%	80%	100%	80%	80%	80%	80%	100%	80%	81%	81%	76%
FR	FRANCE	18%	71%	71%	93%	92%	100%	88%	88%	88%	0%	0%	0%	0%	0%	88%	0%	92%	85%	89%	92%	92%	69%	80%	62%	90%	92%	88%	87%	87%	86%
HR	HRVATSKA	80%	0%	0%	0%	0%	40%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	56%	56%	56%
HU	MAGYARORSZÁG	70%	24%	85%	100%	100%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	100%	100%	100%	100%	100%	98%	100%	20%	100%	100%	100%	100%	100%	100%
IE	IRELAND	80%	0%	0%	93%	0%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	100%	100%	71%	100%	100%	100%	100%	100%	100%
IS	ÍSLAND	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
IT	ITALIA	94%	0%	0%	85%	94%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	92%	94%	67%	100%	100%	100%	97%	97%	97%
LI	Liechtenstein	0%	7%	7%	7%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
LT	LIETUVA	70%	100%	100%	100%	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LU	LUXEMBOURG	80%	87%	87%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
LV	LATVIJA	60%	0%	0%	100%	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
ME	MONTENEGRO	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
MK	Former Yugoslav Republic of Macedonia, the	60%	0%	0%	0%	0%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	100%	57%	57%	57%	57%	57%	57%	57%	57%	57%	57%	63%	63%	63%
MT	MALTA	70%	0%	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
NL	NEDERLAND	100%	67%	67%	100%	67%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	100%	100%	85%	100%	100%	100%	100%	100%	100%
NO	NORWAY	100%	0%	0%	60%	67%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
PL	POLSKA	0%	0%	0%	100%	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	100%	85%	100%	67%	100%	100%	100%	100%	100%
PT	PORTUGAL	90%	0%	0%	27%	61%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	45%	49%	27%	92%	100%	100%	100%	100%	100%
RO	ROMÂNIA	70%	100%	100%	100%	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	89%	96%	5%	100%	100%	100%	100%	100%	100%
RS	SERBIA	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SE	SVERIGE	60%	41%	47%	100%	53%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
SI	SLOVENIJA	10%	0%	0%	7%	0%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%	25%	25%	25%
SK	SLOVENSKO	90%	25%	50%	100%	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	100%	100%	82%	100%	100%	100%	100%	100%	100%
TR	TURKEY	0%	0%	0%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	86%	86%	86%	86%	85%	85%	76%	86%	86%	86%	63%	63%	63%
UK	UNITED KINGDOM	0%	0%	0%	2%	2%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	91%	69%	91%	91%	91%	86%	83%	71%	91%	91%	91%	88%	88%	88%

Table 2.22: Check of data availability per country: % of available data points in respective NUTS 2 regions, per indicator time series [continued]

		Regional economy and labour market – NAMA												Socio-economic context					Innovative milieu								Socio-economic context					Innovative milieu
	Indicator	GDP PPS/cap.	GVA NACE total	GVA NACE A	GVA NACE B-E	GVA NACE F	GVA NACE G-I	GVA NACE J	GVA NACE K	GVA NACE L	GVA NACE M-N	GVA NACE O-Q	GVA NACE R-U	Area	Pop tot	Pop 0-14	Pop 15-64	Pop 65+	Hi-tech patent appl.	ICT patent appl.	Bio tech. patent appl.	Total patent appl.	Phys-ics patent appl.	Elec-tricity patent appl.	EUTM appl.	CD appl.	Econ. act. 15-64	Stud. ISCED 97 total	Stud. ISCED 97 5-6	30-34 ISCED 2011 0-2	30-34 ISCED 2011 3-4	30-34 ISCED 2011 5-8Disp. inc. net GERD all sectors GERD busin. enterp. sect. GERD govt. sector GERD higher edu sector GERD priv. n.p. sector R & D pers. total R & D pers. b. ent. sect. R & D pers. govt. sector R & D pers. higher edu R & D pers. priv. n.p. Empl. techn. knowl. NACE total Empl. techn. knowl. NACE J Empl. techn. knowl. NACE M Empl. techn. knowl. NACE R HRST total HRST scientists, engineers
	Source	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Eurostat	EurostatEurostat Eurostat
NUTS code	NUTS NAME (2010) Time series	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2015	2000-15	2000-15	2000-15	2000-15	2000-12	2000-12	2000-12	2000-12	2000-12	2000-12	2000-15	2000-15	2000-15	2000-12	2000-12	2000-15	2000-15	2000-152000-14 2000-13 2000-13 2000-13 2000-13 2000-13 2000-13 2000-13 2000-13 2000-13 2000-13 2000-13 2008-15 2008-15 2008-15 2008-15 2000-15 2000-15
AL	ALBANIA	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%
AT	ÖSTERREICH	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	100%	100%	90%	100%	100%	100%	81%	100%	92%	92%	85%	100%	96%93% 50% 50% 37% 39% 33% 50% 50% 36% 39% 33% 100% 85% 100% 79% 100% 93%
BE	BELGIQUE-BELGIË	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	100%	100%	100%	100%	100%	100%	99%	99%	100%	99%	100%	81%	100%	100%	100%	100%	100%	100%73% 60% 9% 9% 8% 9% 53% 8% 9% 8% 9% 100% 100% 100% 91% 100% 100%
BG	БЪЛГАРИЯ (BULGARIA)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	40%	49%	12%	86%	44%	35%	77%	58%	84%	69%	69%	81%	81%	81%93% 87% 62% 85% 50% 57% 81% 54% 76% 43% 52% 100% 90% 96% 85% 81% 81%
CH	Switzerland	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	99%	100%	100%	100%	81%	94%	15%	15%	94%	94%	94%0% 0% 14% 0% 0% 0% 0% 14% 0% 0% 0% 100% 100% 100% 98% 94% 94%
CY	ΚΥΠΡΟΣ (KÝPROS)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	85%	100%	38%	100%	92%	77%	100%	81%	100%	100%	100%	100%	100%	100%93% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100%
CZ	ČESKÁ REPUBLIKA	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	80%	89%	59%	100%	92%	87%	93%	78%	100%	92%	92%	100%	100%	100%93% 93% 93% 93% 93% 93% 93% 93% 93% 93% 93% 93% 100% 100% 100% 100% 100%
DE	DEUTSCHLAND	100%	100%	93%	93%	93%	0%	0%	0%	0%	0%	0%	0%	100%	96%	96%	96%	96%	93%	93%	92%	93%	93%	93%	100%	81%	97%	18%	18%	90%	97%	97%93% 39% 41% 77% 82% 0% 39% 42% 78% 83% 0% 100% 99% 100% 88% 97% 97%
DK	DANMARK	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	56%	56%	56%	56%	46%	46%	45%	46%	46%	46%	100%	81%	56%	38%	46%	56%	56%	56%100% 43% 43% 43% 43% 41% 36% 43% 43% 43% 41% 100% 100% 100% 100% 56% 56%
EE	EESTI	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	92%	100%	100%	85%	100%	75%	100%	100%	100%	100%	100%	100%33% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100%
EL	ΕΛΛΑΔΑ (ELLADA)	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	39%	39%	39%	39%	14%	16%	14%	21%	15%	12%	89%	34%	57%	14%	14%	56%	57%	57%53% 9% 11% 11% 11% 6% 19% 19% 21% 21% 16% 100% 55% 100% 69% 100% 99%
ES	ESPAÑA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	73%	76%	66%	89%	75%	71%	98%	72%	100%	98%	98%	100%	99%	98%27% 99% 98% 94% 96% 92% 100% 98% 95% 96% 91% 100% 89% 89% 91% 100% 95%
FI	SUOMI/FINLAND	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	88%	89%	78%	98%	89%	88%	98%	68%	81%	52%	52%	61%	61%	61%93% 74% 74% 71% 69% 0% 67% 67% 66% 59% 0% 100% 80% 80% 80% 88% 68%
FR	FRANCE	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	84%	84%	84%	84%	79%	79%	76%	81%	79%	79%	89%	67%	87%	81%	81%	77%	79%	78%93% 76% 75% 76% 76% 6% 76% 74% 76% 76% 40% 85% 67% 80% 65% 83% 77%
HR	HRVATSKA	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	0%	94%	94%	94%	94%	54%	58%	38%	92%	54%	69%	28%	22%	56%	23%	23%	56%	56%	56%13% 43% 43% 43% 43% 32% 43% 43% 43% 43% 32% 100% 100% 100% 100% 56% 56%
HU	MAGYARORSZÁG	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	90%	90%	68%	100%	80%	87%	87%	69%	100%	92%	92%	100%	100%	100%93% 100% 100% 100% 100% 0% 100% 100% 100% 100% 0% 100% 98% 100% 100% 100% 100%
IE	IRELAND	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	63%	63%	63%	100%	100%	100%	100%	100%	100%	100%	81%	100%	85%	85%	100%	100%	100%80% 79% 86% 86% 86% 0% 79% 86% 86% 86% 0% 100% 100% 100% 100% 100% 100%
IS	ÍSLAND	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	92%	100%	100%	77%	100%	75%	100%	38%	38%	100%	100%	100%0% 79% 86% 79% 86% 79% 57% 57% 57% 57% 57% 100% 100% 100% 100% 100% 100%
IT	ITALIA	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	99%	99%	99%	99%	94%	96%	79%	99%	94%	95%	99%	79%	97%	98%	97%	95%	95%	94%100% 77% 77% 77% 74% 69% 75% 76% 76% 73% 67% 100% 92% 100% 93% 97% 96%
LI	Liechtenstein	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	94%	94%	100%	0%	0%	0%	0%	0%	0%	100%	81%	0%	31%	31%	0%	0%	0%0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%
LT	LIETUVA	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	100%	92%	85%	100%	77%	77%	100%	75%	100%	100%	100%	100%	100%	100%67% 100% 100% 100% 100% 0% 100% 100% 100% 100% 0% 100% 100% 100% 100% 100% 100%
LU	LUXEMBOURG	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	85%	100%	100%	100%	100%	81%	100%	100%	69%	100%	100%	100%0% 86% 86% 100% 93% 29% 86% 86% 100% 93% 36% 100% 100% 100% 100% 100% 100%
LV	LATVIJA	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	92%	77%	62%	100%	54%	77%	88%	75%	100%	100%	100%	100%	100%	100%93% 100% 100% 100% 100% 50% 100% 100% 100% 100% 50% 100% 100% 100% 100% 100% 100%
ME	MONTENEGRO	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%
MK	Former Yugoslav Republic of Macedonia, the	33%	100%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	63%	38%	38%	63%	63%	63%0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 100% 63% 63% 63% 63% 63%
MT	MALTA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	38%	62%	8%	92%	46%	62%	100%	75%	100%	100%	100%	100%	100%	100%0% 86% 86% 86% 86% 86% 86% 86% 86% 86% 86% 100% 100% 100% 100% 100% 100%
NL	NEDERLAND	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	99%	100%	97%	100%	100%	96%	100%	81%	100%	100%	100%	100%	100%	100%93% 70% 51% 17% 14% 5% 71% 70% 15% 14% 5% 100% 100% 100% 99% 100% 100%
NO	NORWAY	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	100%	100%	100%	100%	100%	96%	95%	88%	100%	92%	88%	99%	74%	100%	54%	54%	100%	100%	100%20% 64% 71% 71% 64% 0% 64% 71% 71% 64% 0% 100% 100% 100% 100% 100% 100%

Table 2.22: Check of data availability per country: % of available data points in respective NUTS 2 regions, per indicator time series [continued]

		Regional economy and labour market – NAMA												Socio-economic context					Innovative milieu								Socio-economic context					Innovative milieu
	Indicator	GDP PPS/cap.	GVA NACE total	GVA NACE A	GVA NACE B-E	GVA NACE F	GVA NACE G-I	GVA NACE J	GVA NACE K	GVA NACE L	GVA NACE M-N	GVA NACE O-Q	GVA NACE R-U	Area	Pop tot	Pop 0-14	Pop 15-64	Pop 65+	Hi-tech patent appl.	ICT patent appl.	Bio tech. patent appl.	Total patent appl.	Phys-ics patent appl.	Elec-tricity patent appl.	EUTM appl.	CD appl.	Econ. act. 15-64	Stud. ISCED 97 total	Stud. ISCED 97 5-6	30-34 ISCED 2011 0-2	30-34 ISCED 2011 3-4	30-34 ISCED 2011 5-8Disp. inc. net GERD all sectors GERD busin. enterp. sect. GERD govt. sector GERD higher edu sector GERD priv. n.p. sector R & D pers. total R & D pers. b. ent. sect. R & D pers. govt. sector R & D pers. higher edu R & D pers. priv. n.p. Empl. techn. knowl. NACE total Empl. techn. knowl. NACE J Empl. techn. knowl. NACE M Empl. techn. knowl. NACE R HRST total HRST scientists, engineers
	Source	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	EurostatEurostat Eurostat
NUTS code	NUTS NAME (2010) Time series	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2015	2000-15	2000-15	2000-15	2000-15	2000-12	2000-12	2000-12	2000-12	2000-12	2000-12	2000-15	2000-15	2000-15	2000-12	2000-12	2000-15	2000-15	2000-152000-14 2000-13 2000-13 2000-13 2000-13 2000-13 2000-13 2000-13 2000-13 2000-13 2000-13 2000-13 2008-15 2008-15 2008-15 2008-15 2000-15 2000-15
PL	POLSKA	100%	100%	93%	93%	93%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%	63%	71%	47%	96%	67%	63%	89%	77%	100%	92%	92%	95%	100%	100%93% 100% 79% 47% 69% 38% 99% 84% 58% 70% 49% 100% 84% 99% 85% 100% 100%
PT	PORTUGAL	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	53%	58%	44%	80%	54%	51%	94%	60%	100%	77%	77%	100%	79%	71%93% 100% 100% 100% 100% 100% 100% 100% 100% 100% 45% 71% 45% 100% 73%
RO	ROMÂNIA	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	47%	67%	11%	88%	63%	50%	70%	45%	100%	100%	100%	100%	100%	100%93% 93% 93% 90% 93% 46% 93% 93% 90% 93% 41% 100% 91% 100% 23% 100% 69%
RS	SERBIA	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%
SE	SVERIGE	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	100%	100%	87%	100%	100%	100%	100%	81%	100%	92%	92%	87%	100%	99%93% 43% 50% 43% 43% 0% 36% 50% 43% 43% 0% 100% 100% 100% 100% 100% 100%
SI	SLOVENIJA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	13%	13%	13%	13%	0%	0%	0%	0%	0%	0%	94%	81%	25%	0%	0%	25%	25%	25%93% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 50% 50% 50% 50% 25% 25%
SK	SLOVENSKO	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	71%	75%	44%	98%	62%	73%	81%	75%	100%	100%	100%	84%	100%	100%93% 100% 100% 100% 100% 91% 100% 100% 100% 100% 91% 100% 100% 100% 100% 100% 100%
TR	TURKEY	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	50%	50%	50%	50%	9%	10%	3%	19%	9%	10%	41%	24%	63%	38%	38%	63%	63%	63%0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 100% 87% 88% 81% 63% 63%
UK	UNITED KINGDOM	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	89%	89%	89%	89%	86%	87%	83%	87%	87%	86%	95%	77%	88%	2%	2%	84%	89%	89%93% 55% 73% 70% 67% 21% 50% 73% 64% 50% 23% 92% 87% 92% 90% 88% 88%

Table 2.23: Check of data availability per country: % of available data points in respective NUTS 3 regions, per indicator time series

		Territorial context								Regional economy and labour market – NAMA										Regional economy and labour market – NAMA										Socio-economic context					Innovative milieu								
	Indicator	U-R Typo	Typ Metro	Typ Sparsely	Typ chang. ind.	Ac-cess road	Ac-cess rail	Ac-cess air	Ac-cess hi-lvl	Empl. pers. NACE total	Empl. pers. NACE A	Empl. pers. NACE B-E	Empl. pers. NACE F	Empl. pers. NACE G-I	Empl. pers. NACE J	Empl. pers. NACE K	Empl. pers. NACE L	Empl. pers. NACE M-N	Empl. pers. NACE O-Q	Empl. pers. NACE R-U	GDP PPS/cap.	GVA NACE total	GVA NACE A	GVA NACE B-E	GVA NACE F	GVA NACE G-I	GVA NACE J	GVA NACE K	GVA NACE L	GVA NACE M-N	GVA NACE O-Q	GVA NACE R-U	Area	Pop tot	Pop 0-14	Pop 15-64	Pop 65+	Hi-tech pat-ent appl.	ICT pat-ent appl.	Bio tech. pat-ent appl.	Total pat-ent appl.	Phys-ics pat-ent appl.	Elec-tricity pat-ent appl.	EUTM appl.	CD appl.
	Source	DG Regio	ESPON	ESPON	ESPON	ESPON	ESPON	ESPON	ESPON	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat	Euro-stat
NUTS code	NUTS NAME (2010) Time series	2010	2010	2010	2010	2011	2011	2011	2012	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2000-14	2015	2000-15	2000-15	2000-15	2000-15	2000-12	2000-12	2000-12	2000-12	2000-12	2000-12	2000-15	2000-15
AL	ALBANIA	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
AT	ÖSTERREICH	100%	100%	100%	100%	100%	100%	100%	100%	93%	93%	93%	93%	0%	0%	0%	0%	0%	0%	0%	93%	93%	93%	93%	93%	0%	0%	0%	0%	0%	0%	100%	94%	88%	88%	88%	75%	82%	51%	91%	80%	79%	98%	75%
BE	BELGIQUE-BELGIË	100%	100%	100%	100%	100%	100%	100%	100%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	100%	99%	99%	99%	99%	81%	83%	68%	98%	80%	80%	91%	66%
BG	БЪЛГАРИЯ (BULGARIA)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	10%	13%	2%	27%	10%	9%	46%	28%
CH	Switzerland	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	56%	56%	56%	86%	94%	71%	100%	95%	94%	98%	70%
CY	ΚΥΠΡΟΣ (KÝPROS)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	85%	100%	38%	100%	92%	77%	100%	81%
CZ	ČESKÁ REPUBLIKA	100%	100%	100%	100%	100%	100%	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	95%	95%	95%	95%	56%	70%	37%	92%	71%	65%	87%	73%
DE	DEUTSCHLAND	99%	91%	91%	91%	99%	99%	99%	99%	90%	90%	90%	90%	0%	0%	0%	0%	0%	0%	0%	90%	90%	90%	90%	90%	0%	0%	0%	0%	0%	0%	96%	95%	60%	60%	60%	81%	86%	51%	93%	85%	84%	93%	63%
DK	DANMARK	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	56%	56%	56%	56%	42%	43%	41%	46%	43%	42%	94%	76%
EE	EESTI	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	40%	39%	40%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	42%	45%	40%	57%	40%	31%	80%	41%
EL	ΕΛΛΑΔΑ (ELLADA)	81%	81%	81%	81%	81%	81%	81%	81%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	77%	83%	39%	39%	39%	39%	4%	4%	4%	10%	4%	3%	49%	14%
ES	ESPAÑA	100%	100%	100%	100%	100%	100%	100%	100%	93%	93%	93%	93%	20%	0%	20%	17%	17%	20%	0%	90%	92%	92%	92%	92%	30%	13%	30%	27%	13%	30%	13%	100%	89%	89%	89%	89%	43%	45%	32%	70%	43%	39%	96%	62%
FI	SUOMI/FINLAND	100%	32%	32%	32%	100%	100%	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	77%	87%	40%	98%	81%	83%	95%	64%
FR	FRANCE	98%	98%	98%	98%	94%	94%	94%	94%	92%	91%	91%	91%	0%	0%	0%	0%	0%	91%	0%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	99%	96%	96%	96%	96%	80%	85%	58%	94%	84%	82%	94%	69%
HR	HRVATSKA	100%	33%	33%	33%	0%	0%	0%	0%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	0%	94%	94%	94%	94%	7%	9%	4%	41%	9%	12%	7%	2%
HU	MAGYARORSZÁG	100%	100%	100%	100%	100%	100%	100%	100%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	88%	88%	88%	88%	44%	46%	30%	79%	40%	42%	69%	47%
IE	IRELAND	100%	100%	100%	100%	100%	100%	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	63%	63%	63%	99%	100%	75%	100%	96%	99%	100%	71%
IS	ÍSLAND	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	81%	56%	56%	56%	50%	62%	38%	77%	62%	38%	78%	38%
IT	ITALIA	100%	55%	55%	55%	92%	92%	92%	92%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	94%	94%	94%	94%	71%	76%	44%	89%	73%	69%	94%	65%
LI	Liechtenstein	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	94%	94%	100%	0%	0%	0%	0%	0%	0%	100%	81%
LT	LIETUVA	100%	100%	100%	100%	100%	100%	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	16%	18%	11%	37%	15%	13%	60%	34%
LU	LUXEMBOURG	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	85%	100%	100%	100%	100%	81%
LV	LATVIJA	100%	100%	100%	100%	100%	100%	100%	100%	93%	93%	93%	93%	47%	47%	47%	47%	47%	47%	47%	93%	93%	93%	93%	93%	60%	60%	60%	60%	60%	60%	100%	94%	94%	94%	94%	22%	22%	12%	55%	13%	22%	56%	48%
ME	MONTENEGRO	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%
MK	Former Yugoslav Republic of Macedonia, the	100%	0%	100%	100%	0%	0%	0%	0%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	0%	100%	50%	50%	50%	0%	0%	0%	0%	0%	0%	0%	0%
MT	MALTA	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	94%	94%	94%	94%	19%	27%	4%	54%	19%	38%	56%	47%
NL	NEDERLAND	100%	90%	90%	90%	90%	90%	90%	90%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	82%	82%	82%	82%	72%	73%	65%	78%	71%	68%	97%	76%
NO	NORWAY	100%	100%	100%	100%	100%	100%	100%	100%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	100%	69%	56%	56%	56%	40%	45%	31%	60%	43%	41%	82%	55%
PL	POLSKA	78%	78%	78%	78%	78%	78%	78%	78%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	79%	0%	0%	0%	0%	0%	0%	85%	79%	65%	65%	65%	23%	28%	16%	59%	24%	24%	64%	57%
PT	PORTUGAL	65%	65%	65%	65%	65%	65%	65%	65%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	54%	67%	67%	67%	67%	18%	22%	11%	38%	19%	16%	48%	26%
RO	ROMÂNIA	100%	100%	100%	100%	100%	100%	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	88%	88%	88%	12%	19%	2%	34%	17%	12%	42%	15%
RS	SERBIA	:	:	:	:	:	:	:	:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
SE	SVERIGE	100%	100%	100%	100%	100%	100%	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	87%	93%	51%	99%	92%	92%	99%	80%
SI	SLOVENIJA	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	28%	28%	28%	28%	10%	12%	8%	19%	12%	14%	55%	43%
SK	SLOVENSKO	100%	100%	100%	100%	100%	100%	100%	100%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	89%	89%	89%	89%	46%	55%	21%	82%	39%	50%	77%	68%
TR	TURKEY	100%	0%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	50%	50%	50%	50%	3%	3%	1%	7%	3%	3%	17%	8%
UK	UNITED KINGDOM	74%	65%	65%	65%	67%	67%	67%	67%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	76%	68%	68%	68%	61%	66%	45%	72%	64%	60%	91%	68%

3 Mapping and analysis of SMEs in European regions and cities

Within task 2, maps were elaborated showing the territorial patterns of SMEs for the reference year 2014 and developments between 2008 and 2014. The distribution patterns and employment in SMEs as well as contributions of SMEs to regional development, especially in terms of employment, growth, and innovation are analysed. Births and deaths are analysed for all active enterprises because data could not be broken down into size classes on a harmonized, pan-European basis. Special attention is given to the areas of knowledge and creative economy, ICT, and low-carbon economy, as far as data allows. The performance is analysed for different types of regions, e.g. urban vs. rural and core vs. peripheral regions.

3.1 Development of the number of enterprises: births, deaths, and survival rate

Enterprise birth rates

Birth rates are calculated as the number of enterprise births in one year divided by the total number of active enterprises in the same year. The majority of enterprises created are micro-enterprises with 0-9 employees. More precisely, by far the largest share of new enterprises (60% to 92%) is enterprises with 0 employees (one person enterprises or enterprises with one or several owners but no employees).[98]

The maps below depict the birth rate of new enterprises, regardless of their size. This allows for increasing the geographical coverage of regional business demography statistics by including national data which present birth rates for the total of all enterprises only.

In 2008 there were some countries with birth rates above 15% in various regions, i.e. Portugal, United Kingdom, Estonia, the Czech Republic, Slovakia, Romania, Bulgaria, Germany and the Netherlands. Estonia in particular has a very pronounced birth rate of above 30%. Birth rates in the new Member States are generally higher than in most western European countries. Birth rates tend to be higher in metropolitan regions (on average 14.3%) than in other regions (on average 12.1%).

Map 3.1 illustrates the birth rate for 2014. In 2014 the situation changed slightly, and there is more regional differentiation within the countries. However, Latvia, Portugal, Slovakia, Germany, the UK, and Norway have regionally rather uniform enterprise birth rates above the average of 11.5%. Especially Slovakia stands out with birth rates around 20% or higher all over the country. On the other hand, in several countries only a minority of regions show birth rates of 15% or higher. In Romania, birth rates above 10% can be seen in the more developed regions, and the capital region is even more dynamic with birth rates above 15%. Also in

[98] Only in Croatia and the non-capital regions of Lithuania do the largest share of new enterprises have 1-9 employees; in Vilnius, it is the other way around where 92 % of new enterprises have no employees. For more details, please refer to the annex.

Bulgaria the more developed regions in the east as well as the eastern harbour regions have birth rates above the average. In Hungary, the eastern part of the country is more dynamic than the west (except the region of Györ). In Germany, differences between the dynamic west and south are visible compared to the less dynamic east. Often higher birth rates are connected to economically well-performing regions and capital regions (France, Germany, Poland, Lithuania), but also touristic regions are dynamic (see southern Spain).

Enterprise death rates

Death rates of enterprises depict the number of enterprise deaths in one year divided by the total number of active enterprises in the same year.

Frequently, high birth rates coincide with high death rates as can be seen in regions in Estonia, Latvia, Lithuania, Romania, and Slovakia with death rates above 15% as well as in Portugal and western Germany. However, there are some regions with death rates above 10% which could not compensate this loss by high birth rates in the same year (e.g. regions in Estonia and Romania).

Annual net change rate (enterprise births – deaths)

In order to come to a conclusion on the persistence of enterprises in the regions, Map 3.3 shows the annual net change rate (of enterprise births minus deaths in the same year over the period of 2008-2014, respectively for the years available) and Map 3.4 shows the survival rate of enterprises three years after their birth, i.e. the share of enterprises surviving the first three years in business.

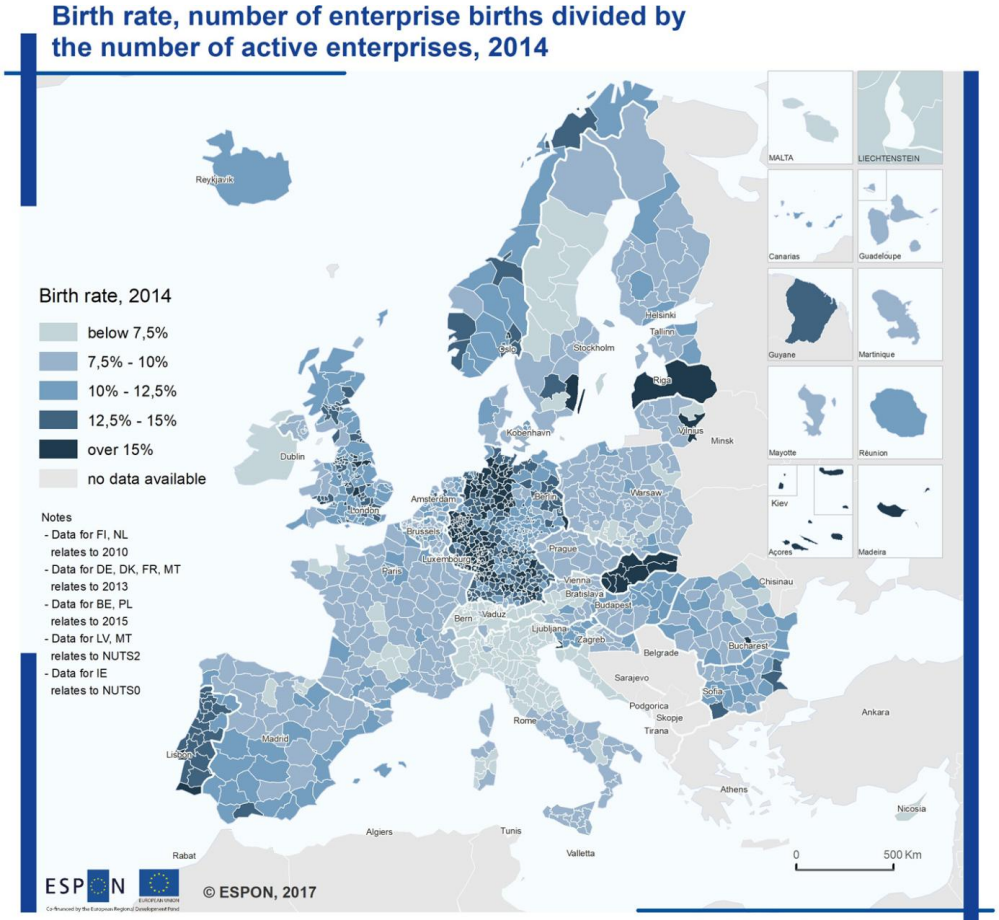
Here it can clearly be seen that after the economic crisis several countries show negative developments in the start-up and closure of enterprises. Clearly, not all countries with high birth rates had a positive development in the overall number of active enterprises. However, there are some regions where the number of enterprises developed positively in this period.

Regions suffering a net decrease in the number of enterprises can be found in Romania, Estonia, and Lithuania (more than -2% p.a.). In Estonia, only the capital region of Tallinn shows a slightly positive development of 0.4% p.a.

The decrease in the overall number of enterprises is a widespread phenomenon: in Bulgaria, Denmark, Finland, Italy, and the Netherlands the number of enterprises also largely declined. In Latvia, even the capital region of Vilnius had a highly negative development rate with a net change rate of -21% p.a. with very high birth rates (+30%), but also high death rates.

Comparably more nuanced sub-national differences can be observed in Germany and Austria with a quite scattered picture of slightly negative and slightly positively developing regions.

Map 3.1: Birth rate 2014; Number of enterprise births in 2014 divided by the number of active enterprises in 2014.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Statistics Belgium Demografie Ondernemingen, Bundesamt für Statistik Unternehmensdemographie, Orbis Database, Gewerbeanzeigenstatistik, Statistics Estonia Business demography, NACE B-S, Financial Agency, Statistics Iceland, Chamber of Commerce, Statistics Norway, Central Statistical Office of Poland, Statistics Sweden Structural Business Statistics Tillväxtanalys, Statistical Office of the Republic of Slovenia and own calculations (EIM), Office for National Statistics Business Demography SIC 2007 C G-N P-R
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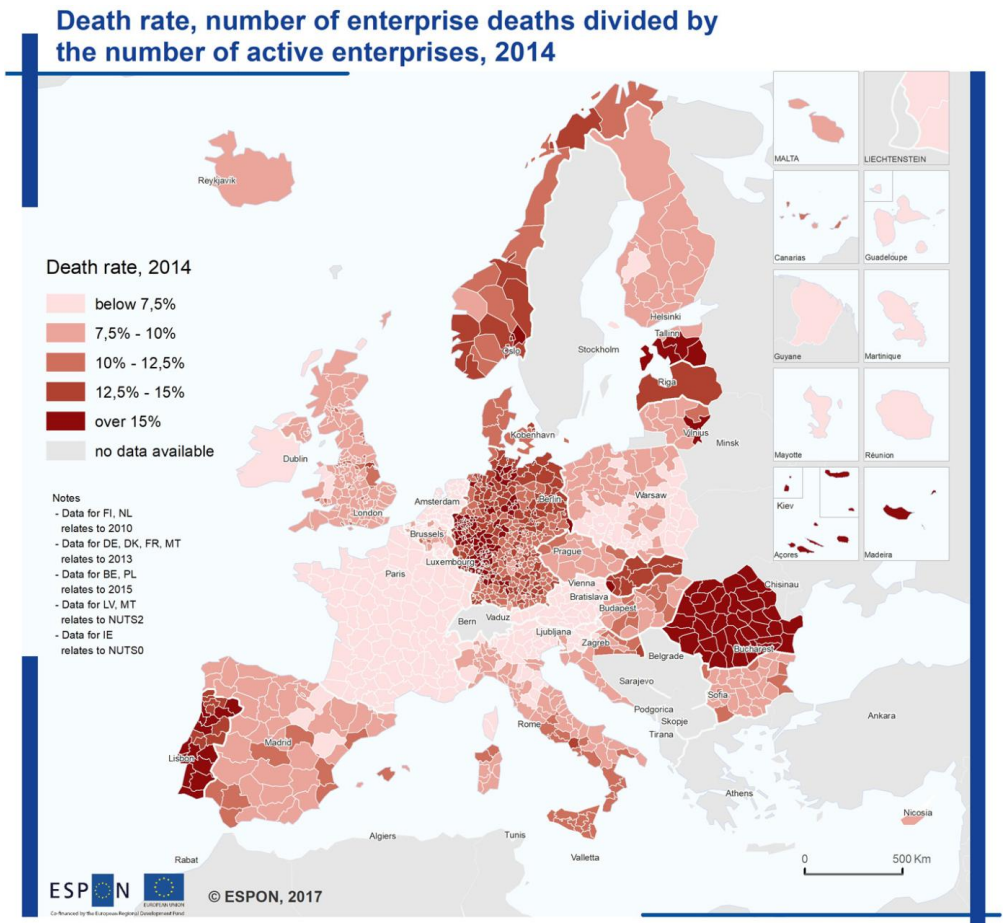
Map 3.2: Death rate 2014. Number of enterprise deaths in 2014 divided by the number of active enterprises in 2014.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013 / 2010)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Statistics Belgium Demografie Ondernemingen, Bundesamt für Statistik Unternehmensdemographie, Orbis Database, Gewerbeanzeigenstatistik, Statistics Estonia Business demography, NACE B-S, Financial Agency, Statistics Iceland, Chamber of Commerce, Statistics Norway, Central Statistical Office of Poland, Statistics Sweden Structural Business Statistics Tillväxtanalys, Statistical Office of the Republic of Slovenia and own calculations (EIM), Office for National Statistics Business Demography SIC 2007 C G-N P-R
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Sub-national differences are most pronounced in Poland, Bulgaria, Slovakia, and the UK. In France and Spain, some regions along the coastlines developed more positively in terms of enterprise numbers than others, but the dynamic is largely positive.

Differences of enterprise births, deaths, and net rates by regional typology

In general birth rates are slightly higher in predominantly urban regions (13% in 2014 or 15% in 2008) than in intermediate regions (11% in 2014 and 13% in 2008) or predominantly rural regions (10% in 2014 and 12% in 2008). Furthermore, birth rates were higher six years ago than in most recent years.

Death rates are also higher in predominantly urban areas, but the net rate (births – deaths) is highest in predominantly urban areas, i.e. there is a net surplus of the start up of enterprises in predominantly urban or intermediate regions than in predominantly rural regions, especially in recent years. Judging from the whole period of 2008-2014 the annual net rate change was negative in all types; however, metropolitan regions show a smaller decline than all other types of regions.

Figure 3.1: Average birth rates, death rates, and net rate by urban-rural typology and metropolitan regions

	Birth rate		**Death rate**		**Net rate**		**Annual net rate change**
Urban-rural typology	2008*	2014*	2008*	2014*	2008*	2014*	2008-14*
Predominantly urban	13.9	12.9	12.0	12.2	1.9	1.1	-0.3
Intermediate	12.9	11.4	11.3	11.1	1.7	0.4	-0.3
Predominantly rural	12.1	10.2	10.4	10.7	1.6	-0.6	-0.4
No data		9.7		5.2		4.5	
Metropolitan regions							
Metropolitan regions	14.3	13.0	12.3	12.2	2.1	0.9	-0.2
Non-metropolitan regions	12.1	10.5	10.5	10.9	1.6	-0.2	-0.4

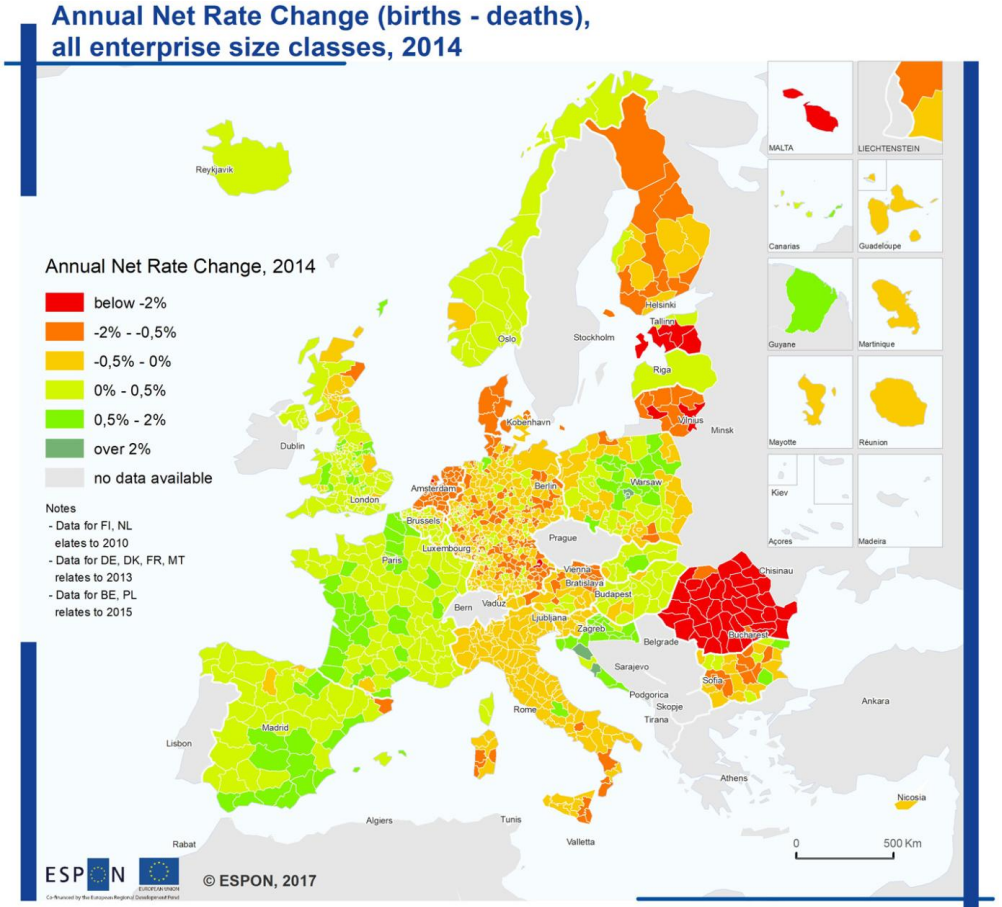
Source: Regional Business Demography, national statistics.
2014: 2014 or most recent year (2015, 2013); 2008 or first year available (2009 or 2010).*

Survival rate

The survival rate investigates the persistence of new enterprises. Unfortunately, this statistic is not available for all regions within the studies' scope. On average 55% of all new enterprises started in 2011 were still in business in 2014.

The differences in survival rate between regions are minor. Survival rates in predominantly rural regions (56%) are higher than in urban regions (53%) or intermediate regions (55%). In Spain, Hungary, and Bulgaria the survival rate is higher in urban regions (ES 47%, HR 60%) than in rural regions (ES and HR 35%), but in most regions the differences between urban and rural areas are minor. Lithuania had the highest survival rate in recent years (over 70%) in all regions but the capital Vilnius. Countries and regions showing survival rates above average in general show less dynamic birth rates, e.g. Austria, Belgium, or Finland.

Map 3.3: Annual enterprise birth and death net rate 2008-2014.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013 / 2010 / 2006)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, national statistical offices, 2014
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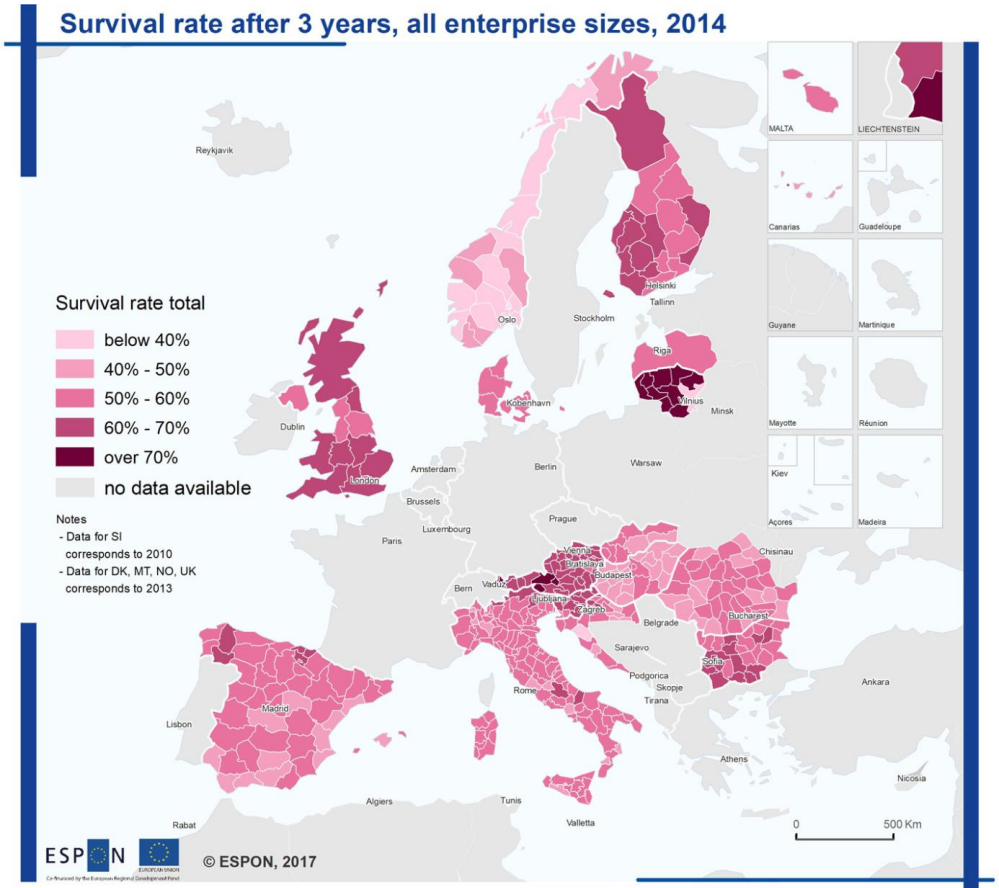
Map 3.4: Survival rate after three years. 2014, all enterprise sizes.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013 / 2010)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, national statistical offices, Sattistics Norway NACE B-S, Office for National Statistics Business Demography
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3.2 Number of enterprises by size class

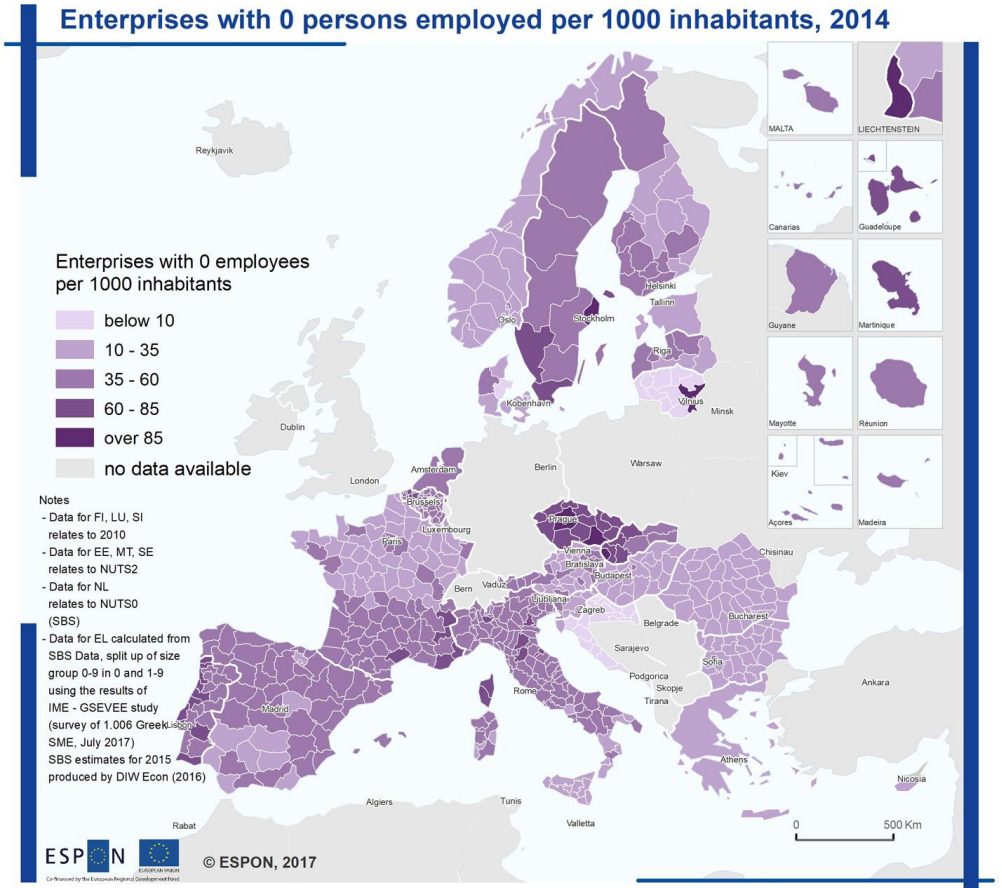
The number of enterprises by size class per 1,000 inhabitants gives an indication of the structure and relative importance of SMEs for the economy. The maps below provide an overall perception of the concentration or clustering of SMEs in different regions. One-person enterprises or sole entrepreneurs that run business without any persons employed except the entrepreneur him-/herself naturally are the highest in number compared to the other enterprise size classes. Up to above 85 enterprises of this size per 1,000 inhabitants can be found in capital city agglomerations (e.g. Prague, Stockholm, Vilnius) and also in tourism regions along the Mediterranean coast in Portugal and France. National differences are also visible: Croatia, Bulgaria, Lithuania, Romania, Hungary, and Norway exhibit comparably low figures of sole entrepreneurs, while on the other end of the spectrum high figures in the Czech Republic, Latvia, Slovakia, Sweden, and the Netherlands indicate a greater entrepreneurship culture. To a certain degree, this could be related to nationally different legal situations in relation to employment and social security laws and the attribution of enterprises to this specific size class.

The national and regional density of microenterprises with 1-9 persons employed is highest in Greece, Iceland, Switzerland, and large parts of the UK, followed by Estonia, Norway, and parts of Spain. France, Latvia, Lithuania, the Czech Republic, and Romania contain the lowest density of microenterprises.

The density of S&M enterprises with 10-249 persons employed per inhabitant is highest in Sweden and Switzerland. Apart from the national differences, two diverging patterns can be observed: on the one hand, the number of S&M enterprises is higher in agglomerations in some countries (especially in Germany, Poland, Portugal, and the UK, and to a lesser degree in Hungary, Romania, Italy, and Spain). On the other hand, the figures per 1,000 inhabitants are higher in less densely populated areas in Norway and Sweden.

Large enterprises are concentrated in more accessible regions with high population and workforce density and therefore often found in capital city regions and urban agglomerations. On the European scale, a north-south gradient in terms of concentration of large enterprises can be observed, with a comparably higher number of enterprises with more than 250 persons employed in the northern countries and central Europe and a lower number in southern European MS.

Map 3.5: Number of one-person enterprises per 1,000 inhabitants (no persons employed) 2014.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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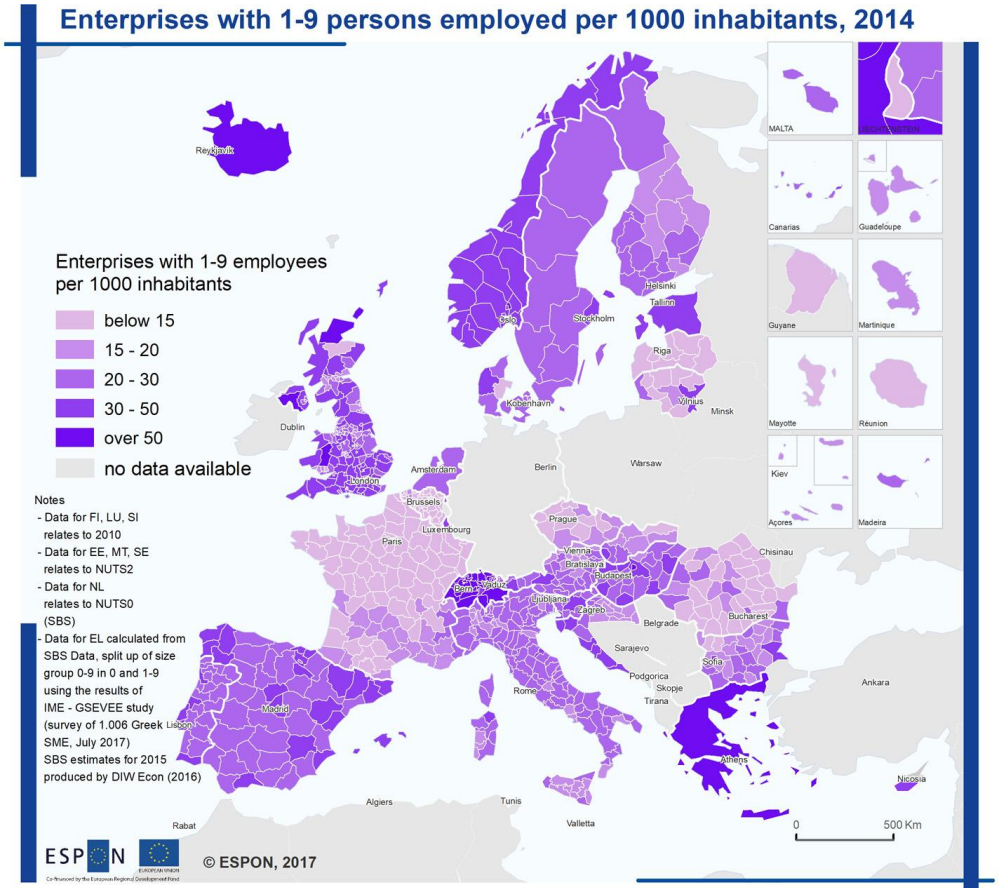
Map 3.6: Number of microenterprises per 1,000 inhabitants (1-9 persons employed) 2014.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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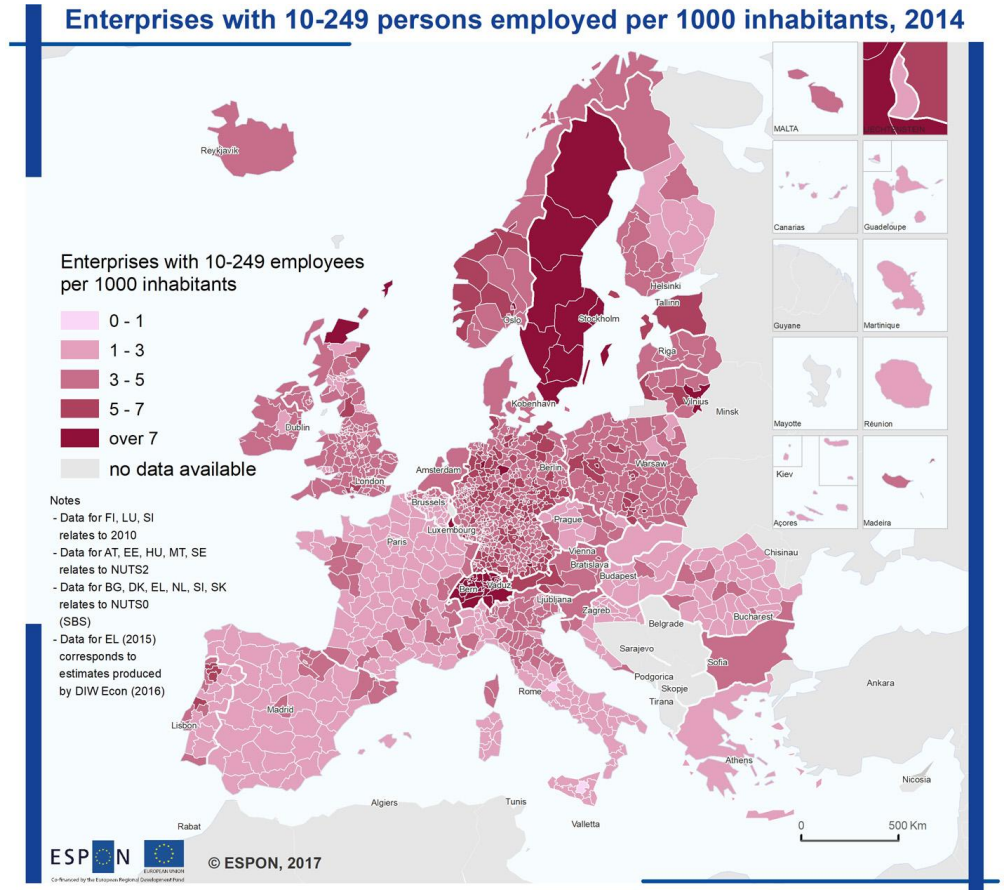
Map 3.7: Number of S&M enterprises per 1,000 inhabitants (10-249 persons employed) 2014.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016
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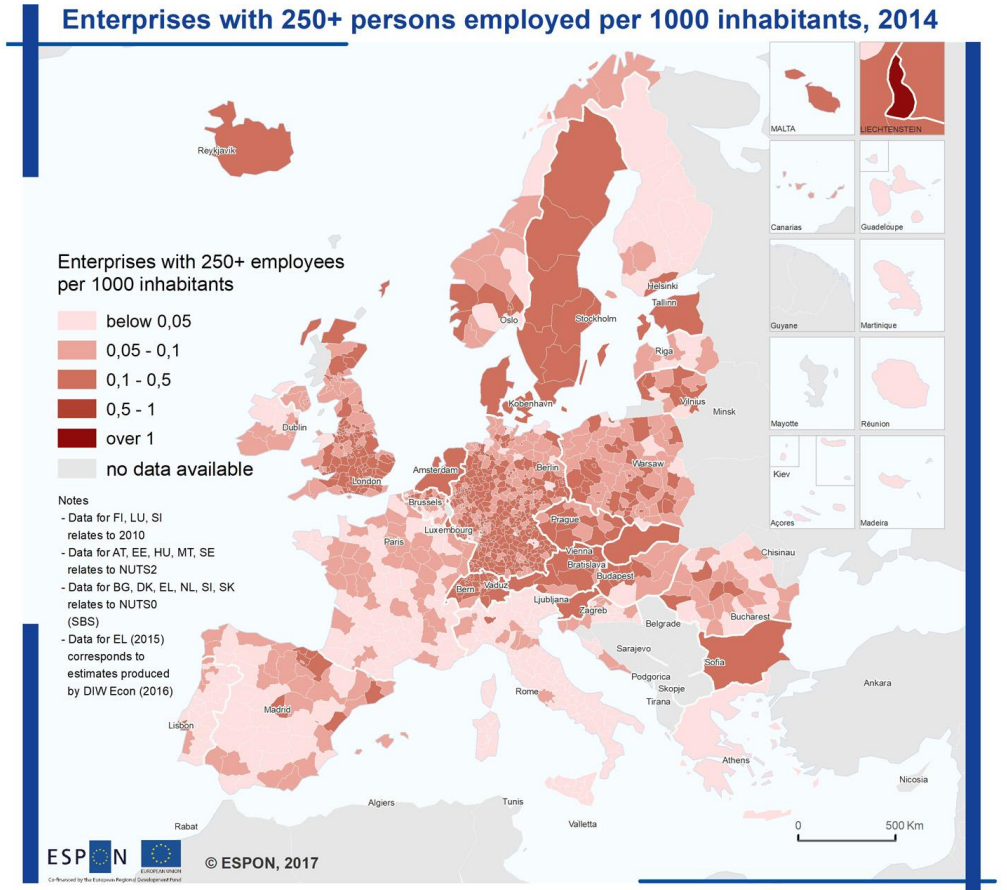
Map 3.8: Number of large enterprises per 1,000 inhabitants (250+ persons employed) 2014.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016
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3.3 Development of sole entrepreneurs

One-person enterprises represent a significant share of 10% to 35% of employment in European regions and cities. The share of one-person enterprises (i.e. sole entrepreneurs) in total employment for the year 2014 for those countries with data available is illustrated in Map 3.9.

Notably, the share of one-person enterprises is quite substantial in the south of France, Spain, a corridor in Italy reaching from Rome to Molise and Calabria, the Czech Republic, Slovakia, and notably Vilnius as the only region in the Baltic countries.

On the contrary, Bulgaria, Croatia, Austria, Romania, Hungary, Denmark, the Baltic countries, and Finland have low shares of one-person enterprises.

Looking at the development between 2008 and 2014 (see Map 3.10), the share of one-person-enterprises rose significantly with above 8% p.a. in Romania, Slovenia, and Slovakia. In France, especially the regions near Paris and in Lorraine developed very dynamically. Furthermore, one-person enterprises gained importance in Austria, parts of Bulgaria, Finland, and Spain. On the other hand, one-person enterprises lost importance in almost all Italian regions, Denmark, Hungary, Poland, and Estonia.

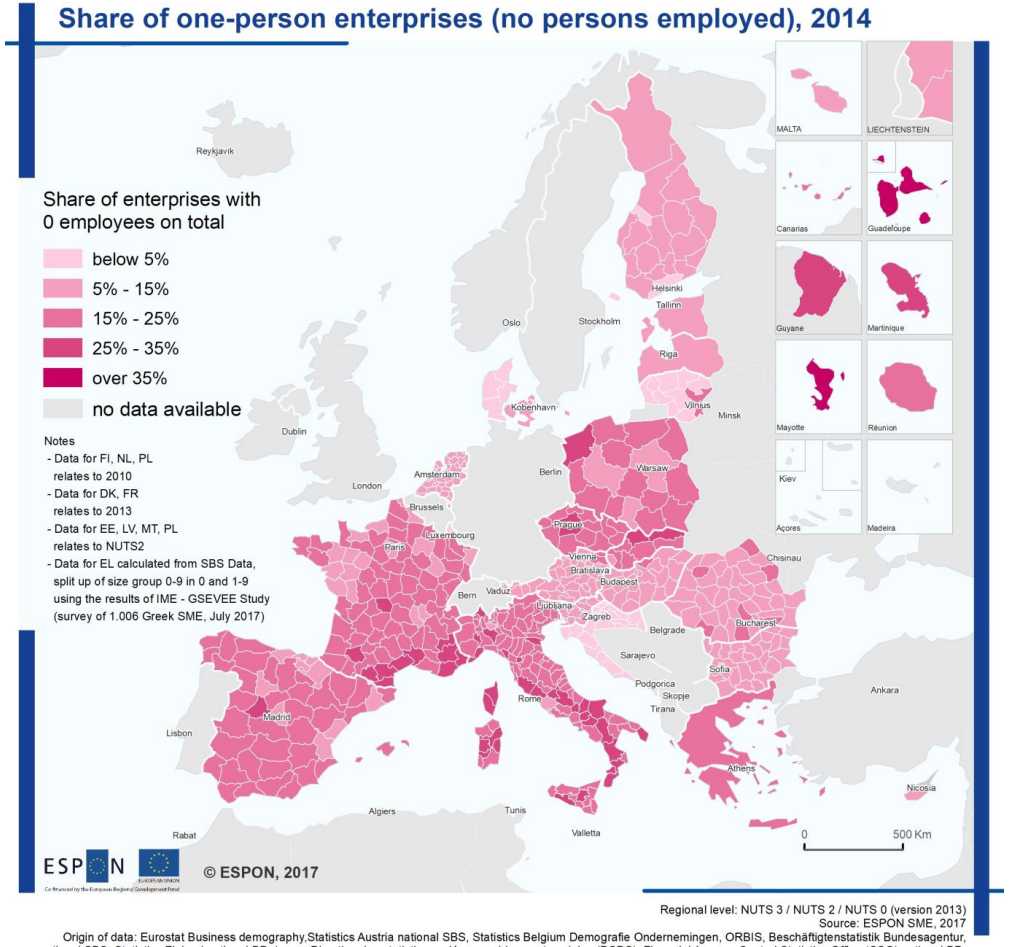
3.4 Share of persons employed in microenterprises (1-9 persons employed)

Map 3.12 shows the share of persons employed in microenterprises of total employment in 2014. Notably, the regions in southern Europe as well as in the very north of Europe have the highest shares of persons employed in microenterprises, according to both the latest data and that for 2008. The highest share of persons employed in microenterprises can be seen all over Portugal and in southern Italy.

In Spain, the share of employment in micros is generally high with the exception of Madrid (16%), Barcelona (24%), Navarra (24%), and Pais Vasco (22%). Notably, the Spanish Canary Islands and La Palma have high shares of employment in micros (50-60%). In Italy, the southern mainland and Sicily that show high employment in microenterprises.

In general, predominantly rural regions tend to have higher shares of employment in micros than urban regions. Furthermore, the share of employment in microenterprises is rather low in capital regions; peripheral regions tend to have higher shares (e.g. Hungary/Dél-Dunántúl or Békés, Romania/Suceava, the north of Norway).

Map 3.9: Share of one-person enterprises (no persons employed) 2014.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017

Origin of data: Eurostat Business demography,Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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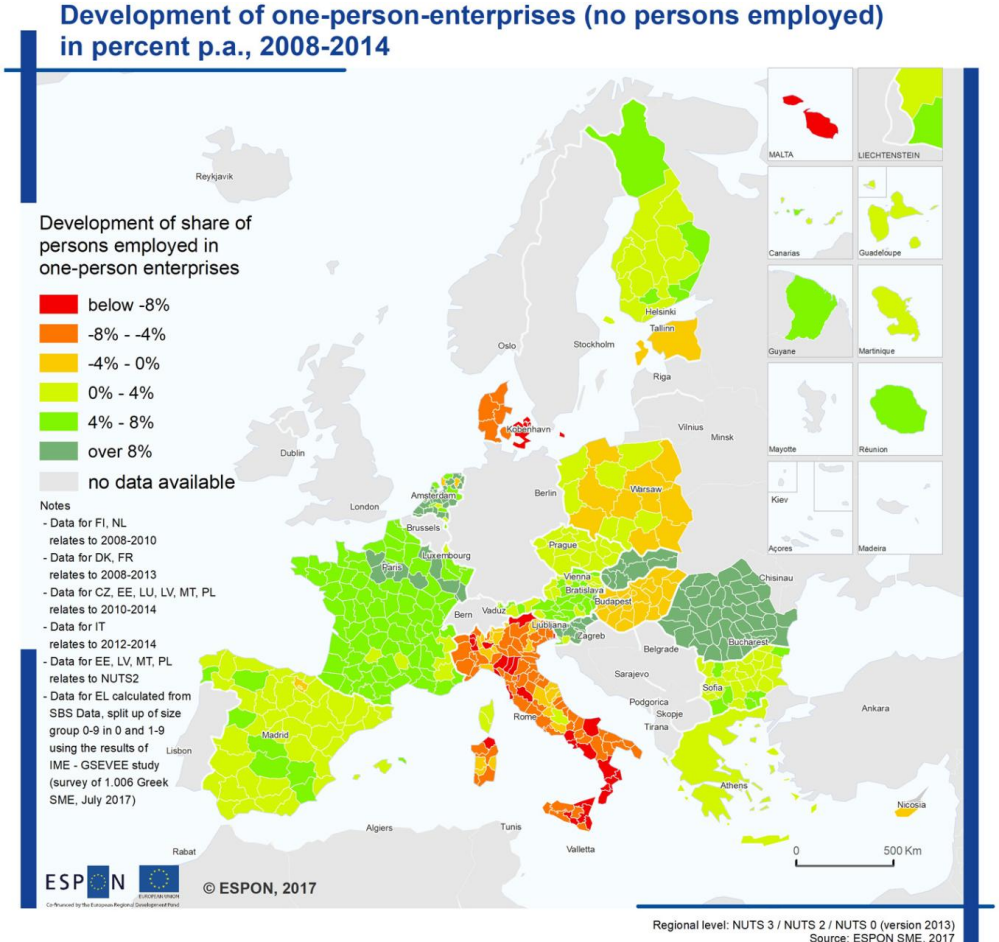
Map 3.10: Development of one-person enterprises (no persons employed), 2008-2014, in percent p.a.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017

Origin of data: Eurostat Business demography,Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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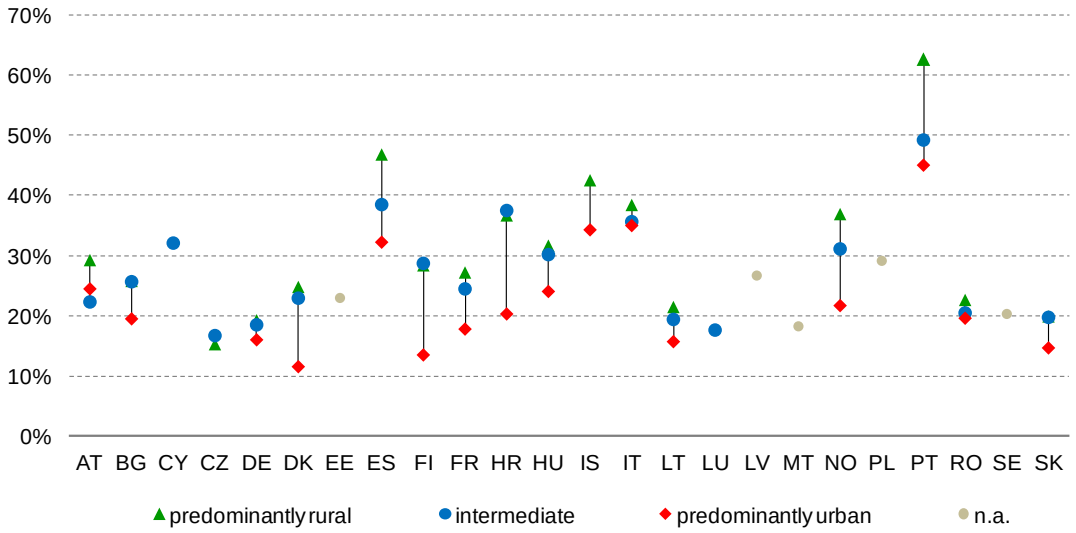
Figure 3.2: Share of persons employed in microenterprises in % of all employment, 2014; average by urban-rural typology



3.5 Development of persons employed in microenterprises

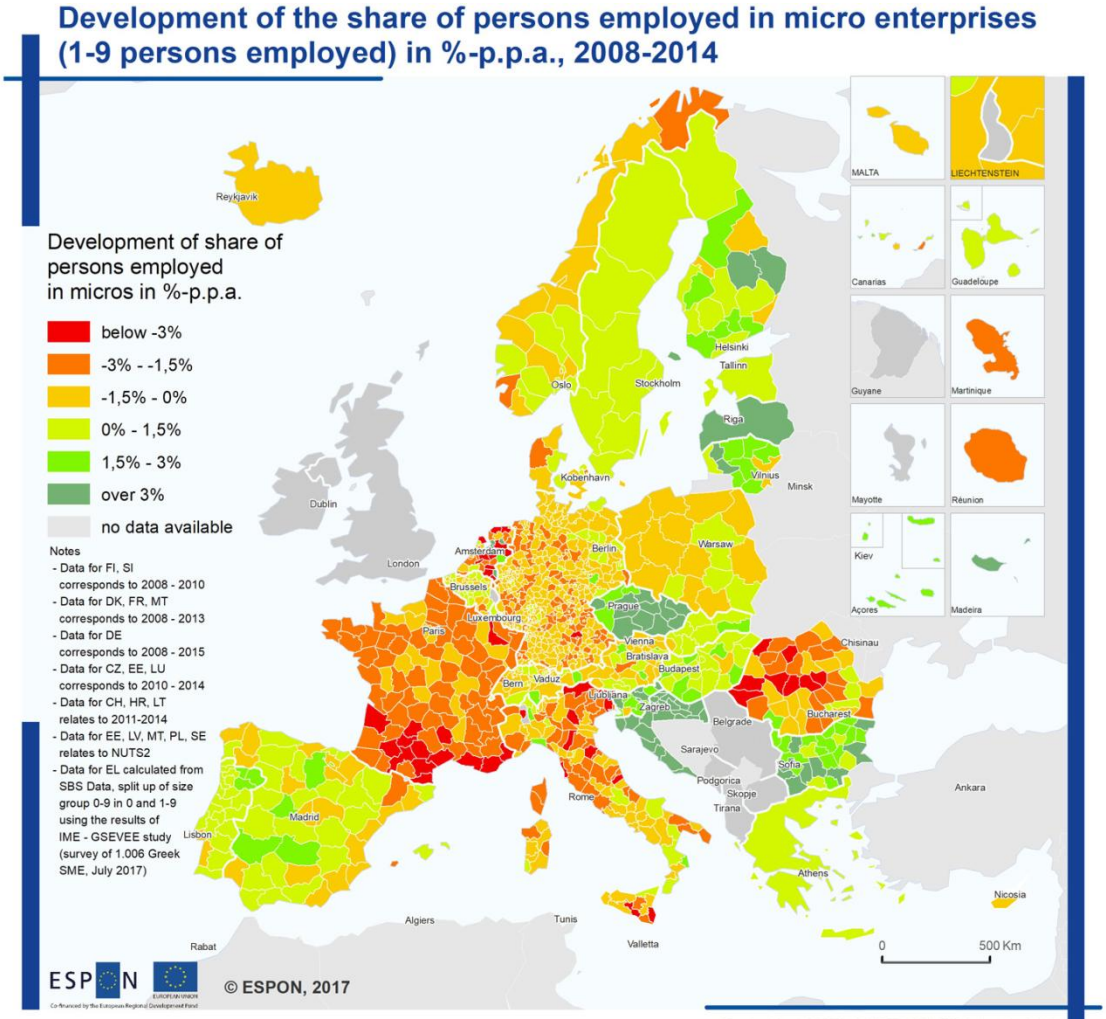
Looking at the annual development from 2008 to 2014 (Map 3.11), the importance of microenterprises as employers has changed in some countries. While in Portugal, Spain, the Czech Republic, Bulgaria, Croatia, the Baltic States, and Finland microenterprises in general gained relative importance, the opposite is true for most central European countries as well as Italy and Norway.

Although development is somewhat nationally shaped in general, there are regional differences in almost every country. In Portugal and Spain (more pronounced in the west) as well as in Italy (more pronounced in the south) regionally different developments of the share of employment in microenterprises are notable against the backdrop of a generally negative development of employment in these countries.

The situation in Bulgaria, Croatia, the Czech Republic, Slovakia, and Latvia is very different: here, microenterprises make up for a substantially increasing share of workplaces.

However the rise in significance in the labour market does not necessarily go hand in hand with a rise in the number of people employed. Map 3.13 below shows the development of persons employed in microenterprises in percentage between 2008 and 2014 and illustrates the decline in employment in the south of Europe. Portugal, Spain, Sardinia, Cyprus, Romania, and Slovakia experienced a massive drop of jobs in microenterprises. To a lesser extent, this is also true for France, Italy, the Netherlands, and Estonia. While Germany, Denmark, and Norway show a quite heterogeneous picture, Estonia, Latvia, Lithuania, Luxembourg, Liechtenstein, the Czech Republic, Croatia, and Sweden offer more jobs in microenterprises than in 2008.

Map 3.11: Development of the share of persons employed in microenterprises (1-9 persons employed), 2008-2014, in percent p.a.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017

Origin of data: Eurostat Business demography, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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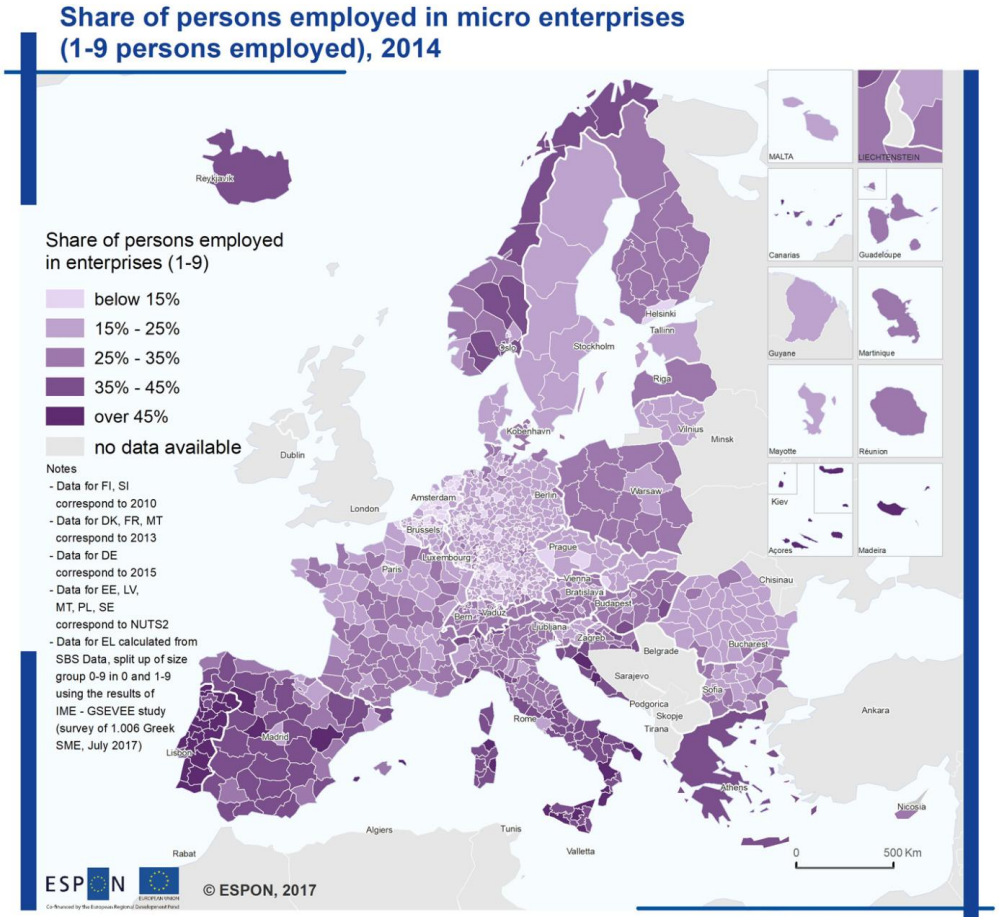
Map 3.12: Share of persons employed in microenterprises (1-9 persons employed) 2014.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017

Origin of data: Eurostat Business demography,Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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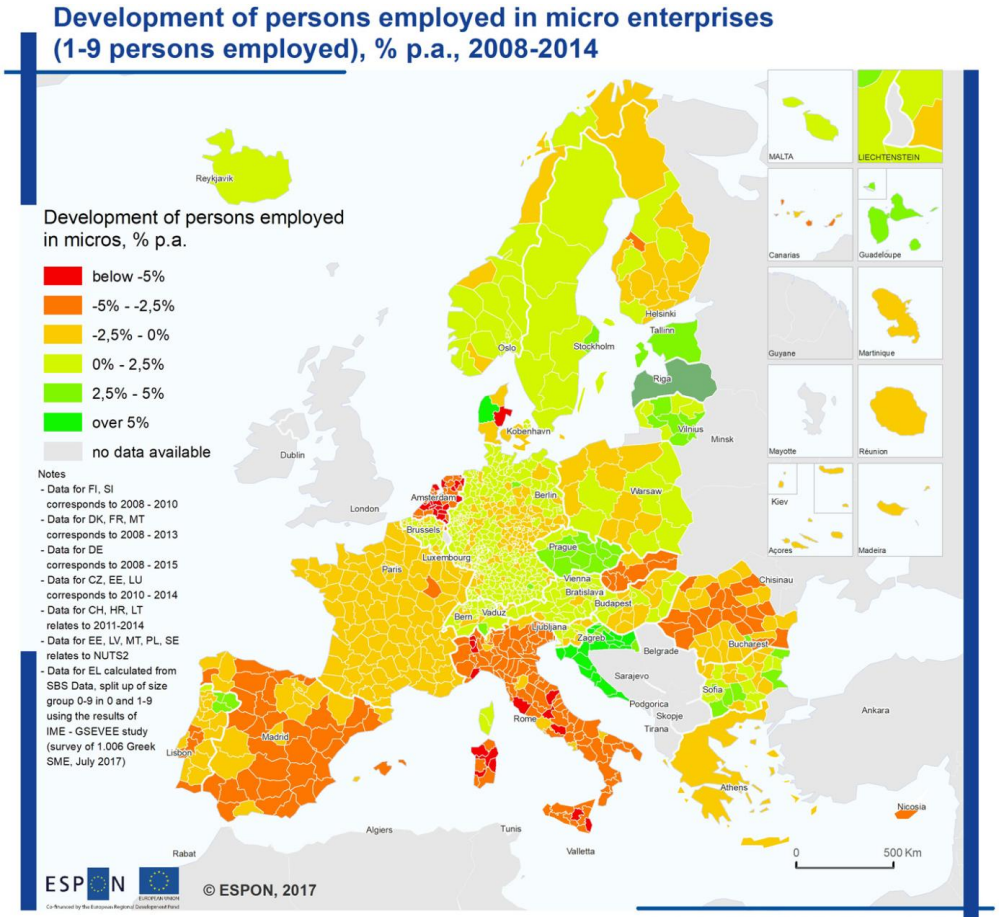
Map 3.13: Development of persons employed in microenterprises (1-9 persons employed), 2008-2014, in percent p.a.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017

Origin of data: Eurostat Business demography,Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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3.6 Share of persons employed in small and medium-sized enterprises (10-249 persons employed)

In some respect, the territorial distribution of employment in small and medium-sized enterprises (with 10 to 249 employees) shows the inverse picture of the maps on employment in microenterprises shown above.

Map 3.15 shows the share of persons employed in small and medium-sized enterprises. Particularly in Germany, Switzerland, and the northern and north-eastern countries, small and medium-sized enterprises are important employers – moreover if compared to the importance of microenterprises. This can clearly be seen by employment shares above 55% in Sweden, substantial parts of Germany (especially eastern Germany), the north of Poland, and Lithuania (with very high shares of about 70% except in the capital Vilnius).

In France, small and medium-sized enterprises are of higher importance in the northern regions than in the south; the same is true for Italy with even stronger differences between northern and southern regions.

In Romania, a high share of small and medium-sized enterprises can be observed especially in the regions neighbouring Bucharest with 45-48%, whereas in other capital regions like Prague, Warsaw, or Budapest, the picture is inverse.

3.7 Development of persons employed in small and medium-sized enterprises

The development from 2008 to 2014 (Map 3.14) illustrates that the increase in importance of employment in small and medium-sized enterprises was less pronounced than that of microenterprises or one-person enterprises. This has to be seen against the backdrop of a general high share of small and medium enterprises, i.e. small relative changes are linked to higher absolute developments.

As the map shows, the number of regions with slightly positive and slightly negative development is quite balanced. Small and medium-sized enterprises gained significant importance in Estonia, some regions in Piedmont in Italy, as well as Lozère in France and Livorno in Italy. Further positive development can be seen in almost all of Germany, in Sweden, Norway, the north-west and south of Poland, the region neighbouring Bucharest, and several Italian regions.

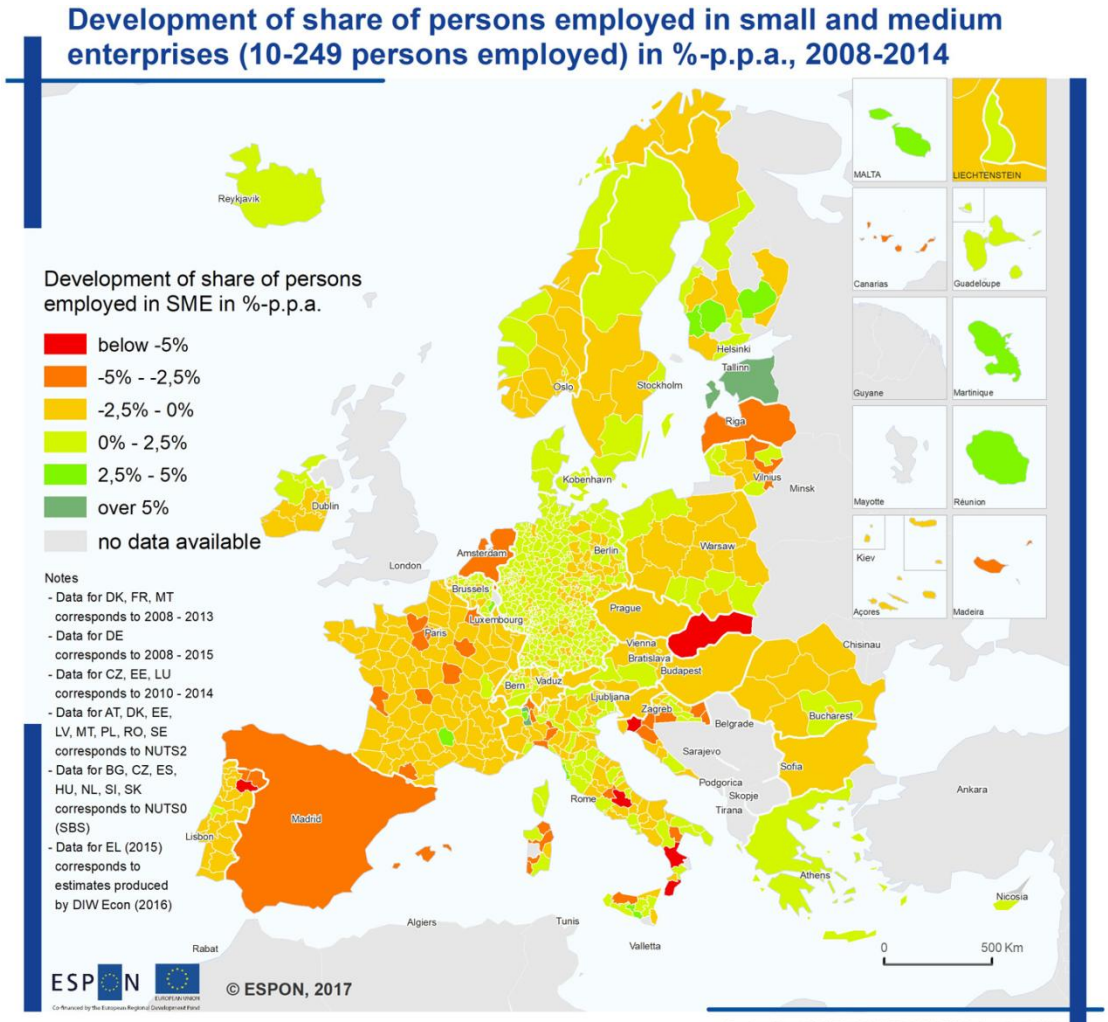
Outliers who exhibit a very strong decline of importance in small and medium-sized enterprises can be seen in Slovakia, the very north of Portugal, some regions in Italy (primarily in the south) and in one region in Croatia.

The development in the number of persons employed in small and medium-sized enterprises is shown in Map 3.16. Here again, the northern countries, Iceland, Norway, and Sweden

stand out with positive development as well as Germany, Poland, Austria, Switzerland, and the Bretagne region and the south of France.

Italy shows the most diverse development having regions with very strong declines, but also a strong increase of employment in small and medium-sized enterprises. The Netherlands, Portugal, Ireland, Croatia, Spain, Slovakia, and Romania on the contrary, show a decline.

Map 3.14: Development of the share of persons employed in S&M enterprises (10-249 persons employed), 2008-2014, in percent p.a.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016
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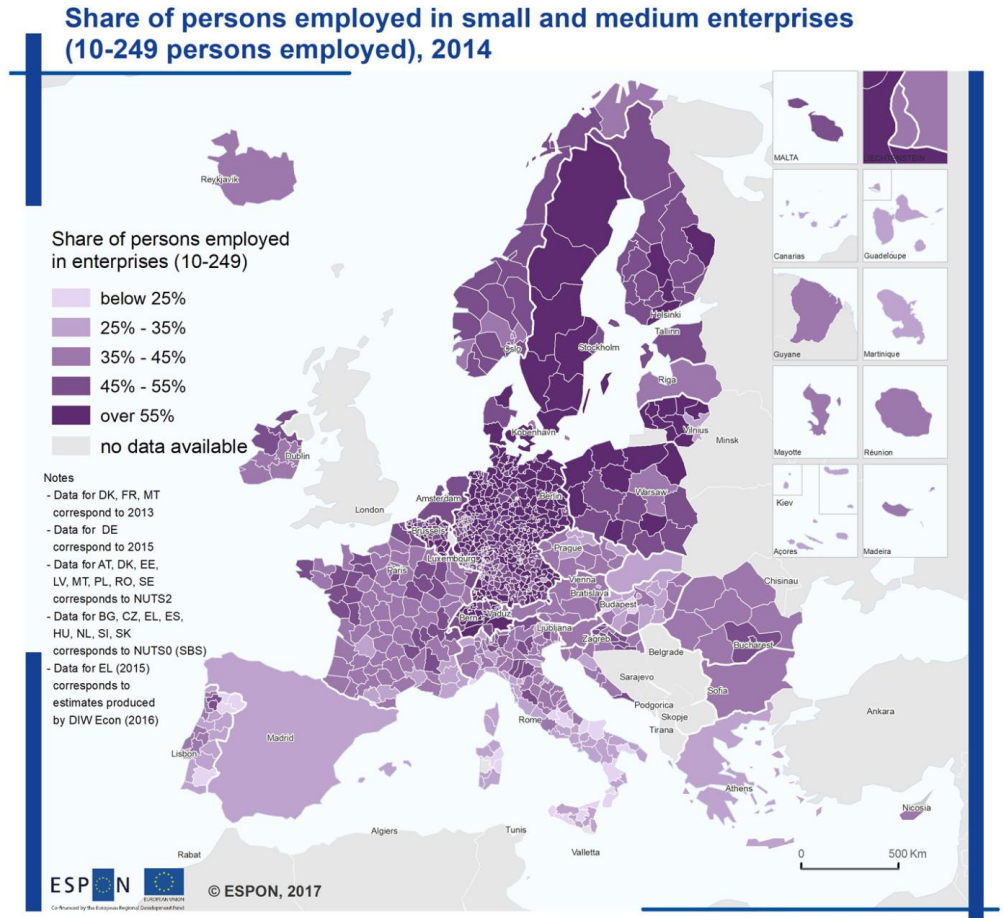
Map 3.15: Share of persons employed in S&M (10-249 persons employed) 2014.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017

Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016
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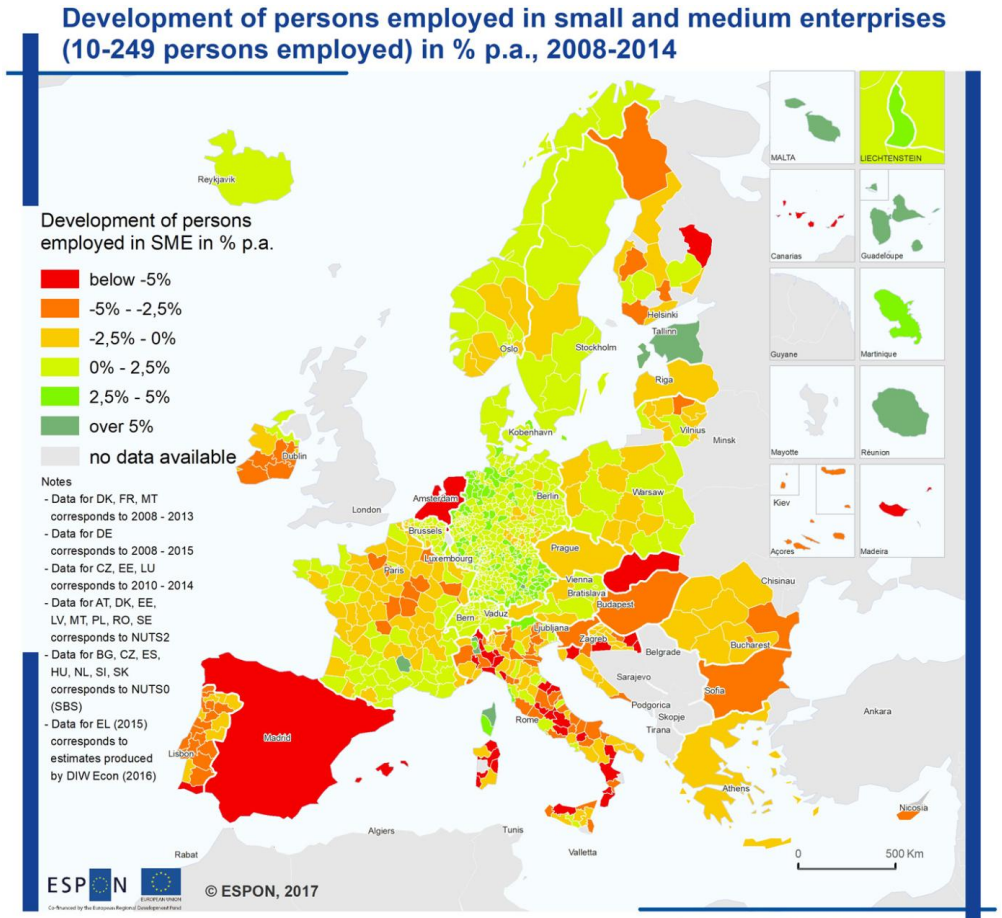
Map 3.16: Development of persons employed in S&M (10-249 persons employed), in percent p.a. 2008-2014



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017

Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016
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3.8 Share of persons employed in SMEs (1-249 persons employed)

The following maps assemble the individual sub-segments of small and medium-sized enterprises (1-9, 10-249) into one picture of employment in SMEs in Europe.

The overall total importance of SMEs is observed in Map 3.18, showing the share of persons employed in SMEs in 2014. At first glance, it appears that SMEs have greater importance for employment in the more remote regions of Europe than in its central regions, with the exception of the south of Italy.

Notably, Portugal, Iceland, Norway, and the north of Sweden show high shares of SME employment. Furthermore, high levels of SME employment can be found in the very north of Germany, Lithuania, substantial parts of Poland, south-eastern Romania, and the Mediterranean part of Croatia.

Most interestingly, the share of SME employment is significantly lower in nearly all capital regions than in the rest of the country.

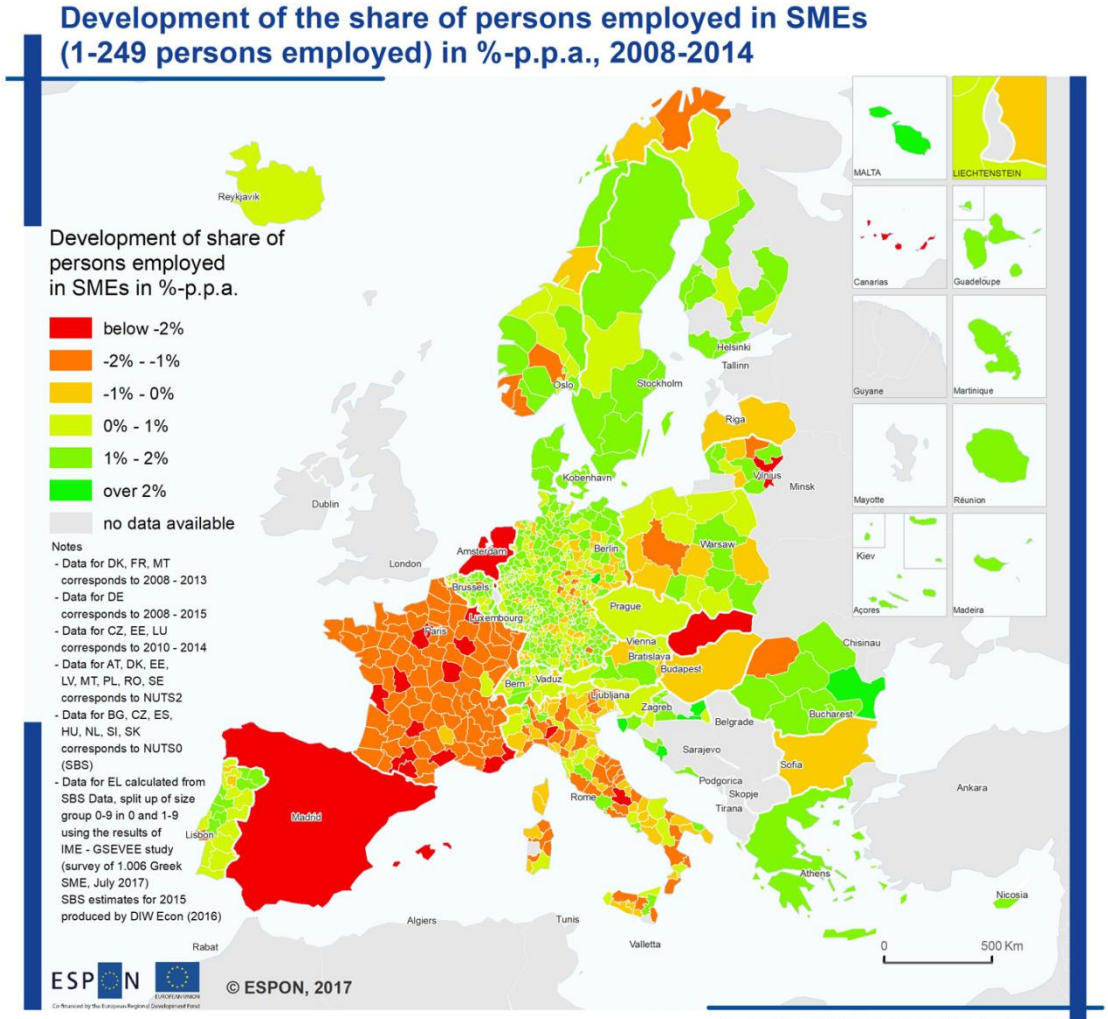
3.9 Development of persons employed in SMEs

Map *3.17* shows how the importance of SMEs developed after the crisis. The low values of annual change rates must not mislead the picture of the overall development, as e.g. changes of -2% p.a. go along with a change of -7 percent points from a share of 70% in 2008 to 64% in 2014. In general, the development is diverging at the sub-national level in all countries: in more peripheral regions SMEs slightly gained importance, while they show modest losses in more developed areas. The only exception is in France, with a rather strong decline across the country.

On the contrary, SMEs gained importance as employers in Croatia, Greece, Germany, western Romania, Finland, Sweden, and regions in Denmark and Norway. The development in Austria, the Czech Republic, Iceland, and Portugal was also slightly positive.

Looking at the overall development of persons employed in SMEs (1-249 persons employed) in Map 3.19 complements the picture. In the Netherlands, Italy, Spain, Slovenia, and Slovakia, SME employment declined. In Portugal, SME employment also declined in most regions, however SME employment is still of high importance as employment in large companies declined at least equally in absolute numbers. In Germany, both the importance of the SME sector as well as SME employment in absolute numbers grew in the same period. Same is true for the Nordic countries as well as some regions in Croatia, Latvia, Lithuania, and Poland.

Map 3.17: Development of the share of persons employed in SMEs (1-249 persons employed), 2008-2014, in percent p.a.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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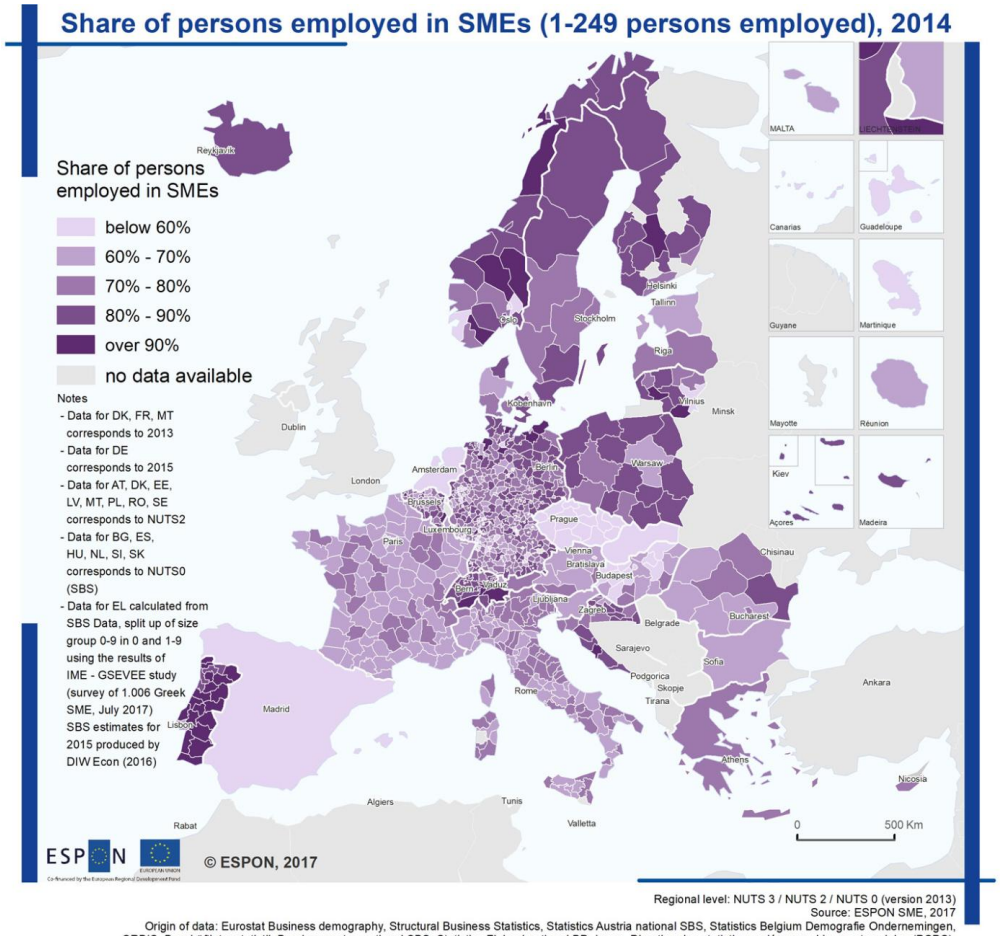
Map 3.18: Share of persons employed in SMEs (1-249 persons employed) 2014.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017

Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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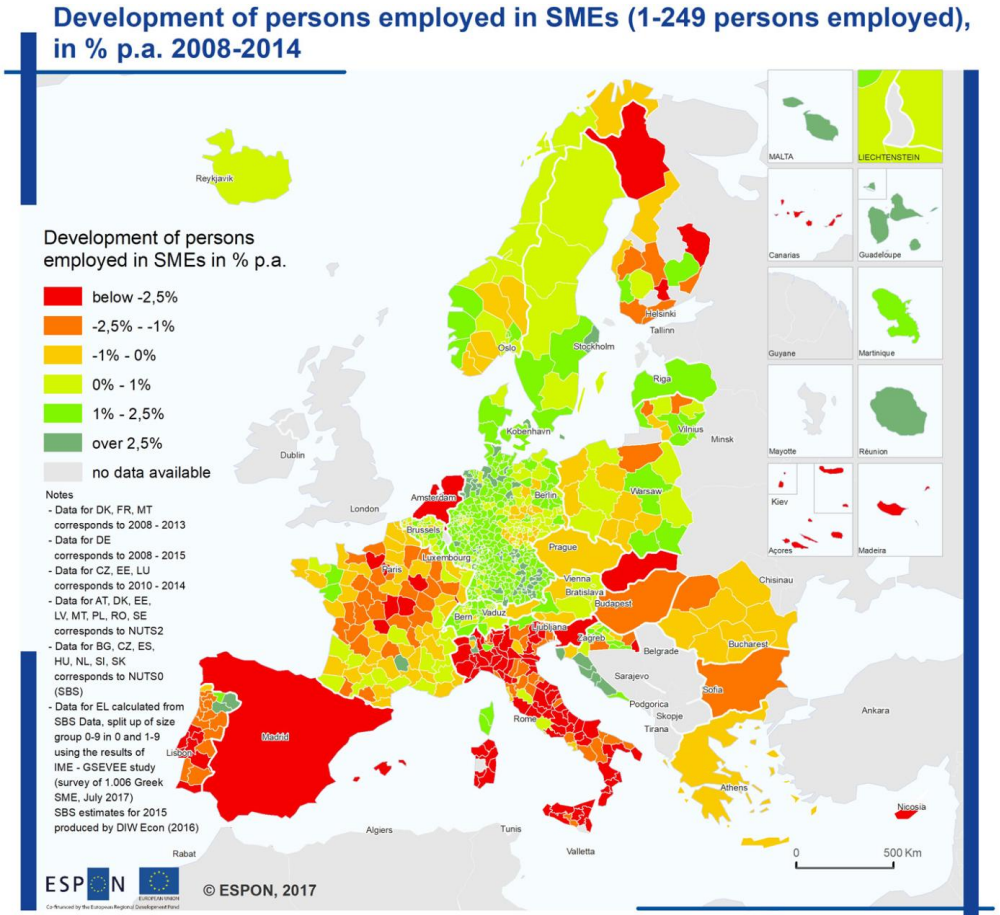
Map 3.19: Development of persons employed in SMEs (1-249 persons employed), in percent p. a. 2008-2014.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017

Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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3.10 Regional differences of different types of SME by regional typology

In the following, the importance of the different types of SMEs is analysed against the urban-rural typology and for metropolitan regions. Table 24 shows the average shares of employment in the different types of SMEs differentiated by the urban-rural typology.

The results show at first that SMEs make up the substantial part of employment in all types of regions. However, they are most important for regional employment in rural areas (75% of total employment). This is not surprising, as large enterprises are in general less attracted to rural areas than to urban and metropolitan areas.

Most interestingly, small and medium-sized enterprises are seen to be the strongest in intermediate regions, however the differences across the regions are modest. Microenterprises prevail in rural regions, while notably one-person enterprises have the highest shares of employment in urban areas.

To conclude, the whole spectrum of SMEs is important in all types of regions, regardless of their urbanity. Policy recommendations have thus to be designed according to the different structural strengths and weaknesses of these different regions rather than regarding a particular type of region.

Table 24: Average of share of employment by type of SME and regional typology, 2014

Urban-rural typology	One-person enterprises	Microenterprises (1-9 persons employed)	Small and medium-sized enterprises (10-249 persons employed)	SMEs (1-249 persons employed)
predominantly urban	0.16	0.22	0.48	0.69
intermediate	0.15	0.24	0.51	0.74
predominantly rural	0.14	0.26	0.49	0.75
metropolitan regions	0.15	0.22	0.51	0.72
non-metro. region	0.15	0.26	0.47	0.73

Source: Project team.

3.11 Development of SME employment and focus sector employment

A major drawback for this study is that statistical data is not available at the regional scale on enterprise size in combination with economic activity (NACE codes). However, in order to give an overview on the territorial dimension of the share of SME employment and employment in certain economic sectors, two-dimensional maps have been produced that cross information on both characteristics. More precisely, these maps show per region how the share of SME employment differs from the EU average (below average, average, above average) and whether the share of regional employment in a particular sector is above, below, or about the EU average. However, these maps depict neither causalities nor do they show whether the first component influences the second, or the other way round. The chapter allows only for

mapping regional differences of two components at the same time and can thus help to understand the results of the regression analysis and to select regions for the case studies.

SME employment and employment in the knowledge and creative economy

Map 3.20 shows the share of employment in SMEs in 2014 combined with the share of employment in the knowledge and creative economy in 2014. More precisely, it shows how the regions perform compared to the EU average in these two dimensions.

High shares in the knowledge and creative economy can be found in the south of Norway, Finland, and Sweden; the regions of Rhône-Alpes and Lorraine in France; southern and western Germany; the regions of Piedmont and Emilia Romagna in Italy, Styria in Austria, and Dolnoslaskie in southern Poland; the Czech Republic, the Netherlands, and the region around Bucharest (Sud-Muntenia).

Notably, a high share of the knowledge and creative economy is not necessarily connected with a high or at least average share of SME employment, as the examples of the Czech Republic, the Netherlands, and Styria show. However, when including the dynamic dimension of annual change in SME employment (see Map 3.21) it becomes obvious that a high share of employment in the knowledge and creative industries led to a rise in SME employment in the period of 2008-14. Only Italy and the west of Romania do not support this conclusion.

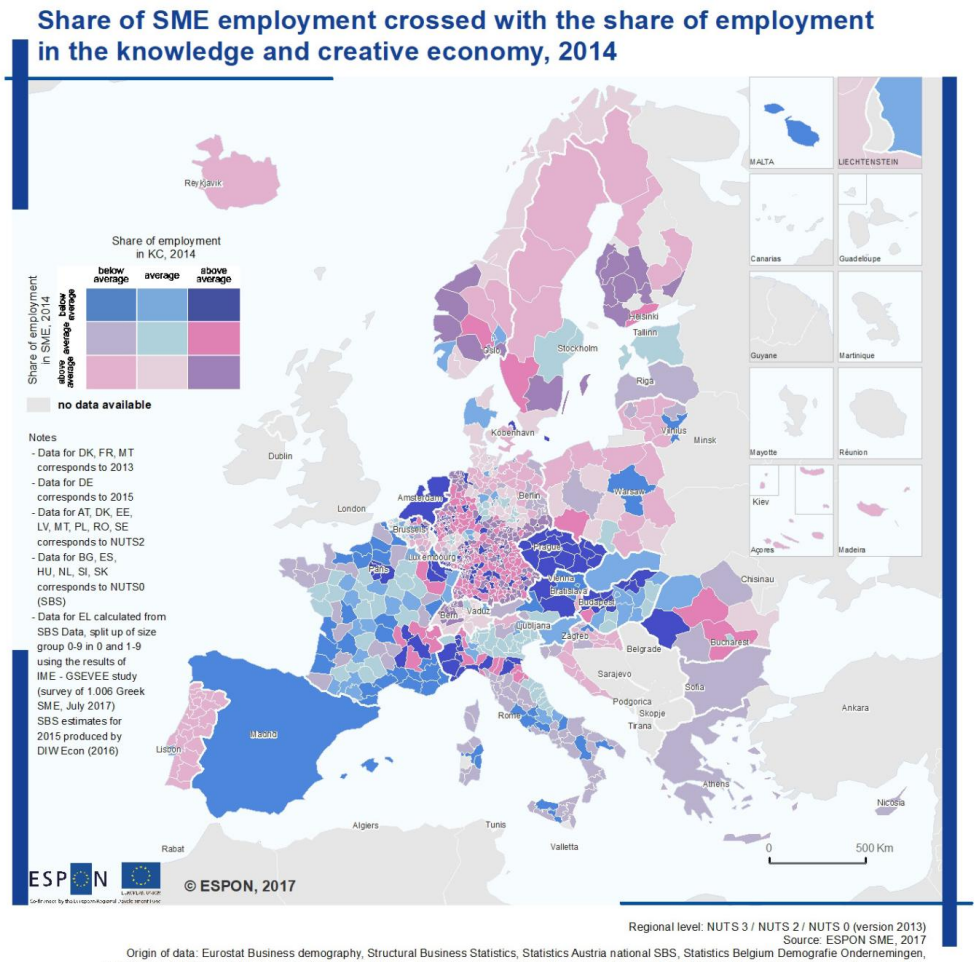
SME employment and employment in the ICT sector

Map 3.22 shows the share of employment in SME in the year 2014 and the share of employment in the ICT sector in 2014. More precisely, it shows how the regions perform compared to the EU average in these two dimensions.

The share of employment in ICT is high in the northern region of Sweden (Norrbotten) and Gothenburg, the metropolitan regions of Helsinki, Paris, Rome, Munich, Frankfurt and their neighbouring university regions, the Italian region of Piedmont, as well as in the central regions of the Czech Republic, the south-west of Poland, and a substantial part of Romania.

Focussing on the comparison of annual change rates in SME employment from 2008-2014 and share of ICT employment in 2014 (Map 3.23), one can see that a substantial number of the regions named above, which have high shares of employment in the ICT sector, performed at least average regarding SME growth, i.e. Bavaria, around Frankfurt/Main and the neighbouring university regions, as well as in Leipzig/Dresden, Paris, Bucharest, Gothenburg, Norrbotten, and Dolnoslanskie and Slaskie in Poland.

Map 3.20: Share of SME employment 2014 crossed with the share of employment in the knowledge and creative economy, 2014.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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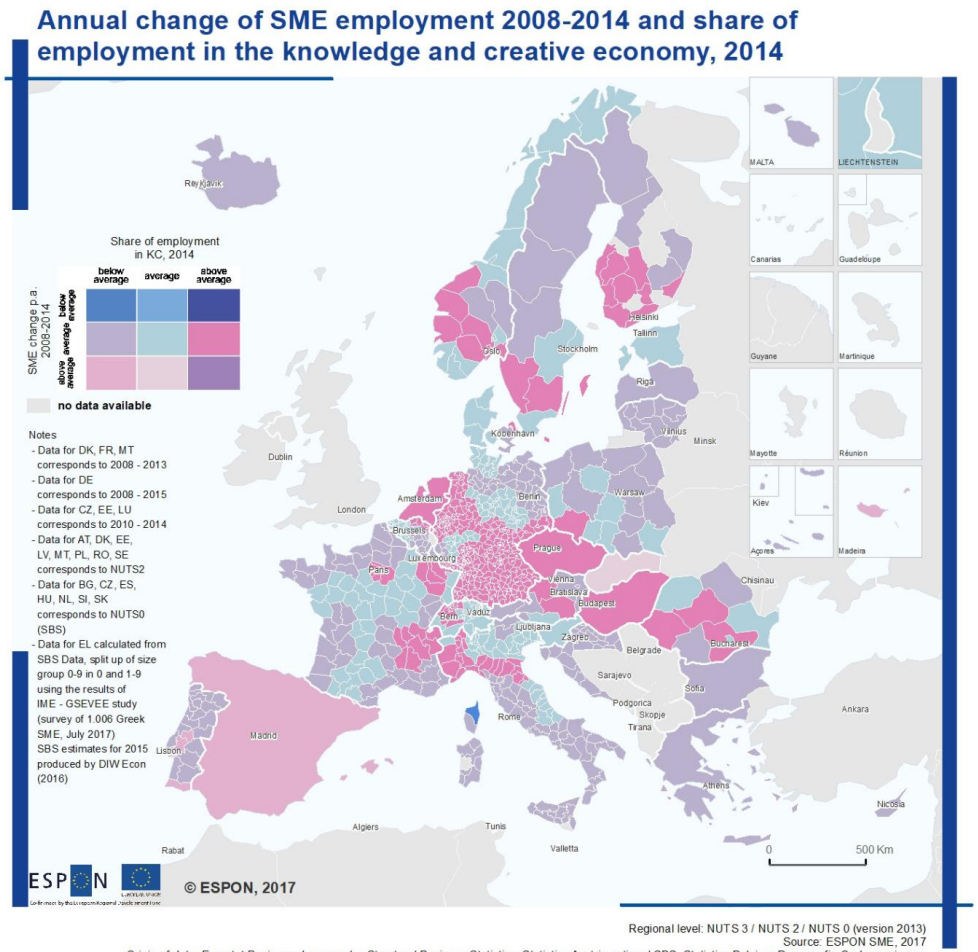
Map 3.21: Annual change of SME employment 2008-2014 crossed with the share of employment in the knowledge and creative economy, 2014.



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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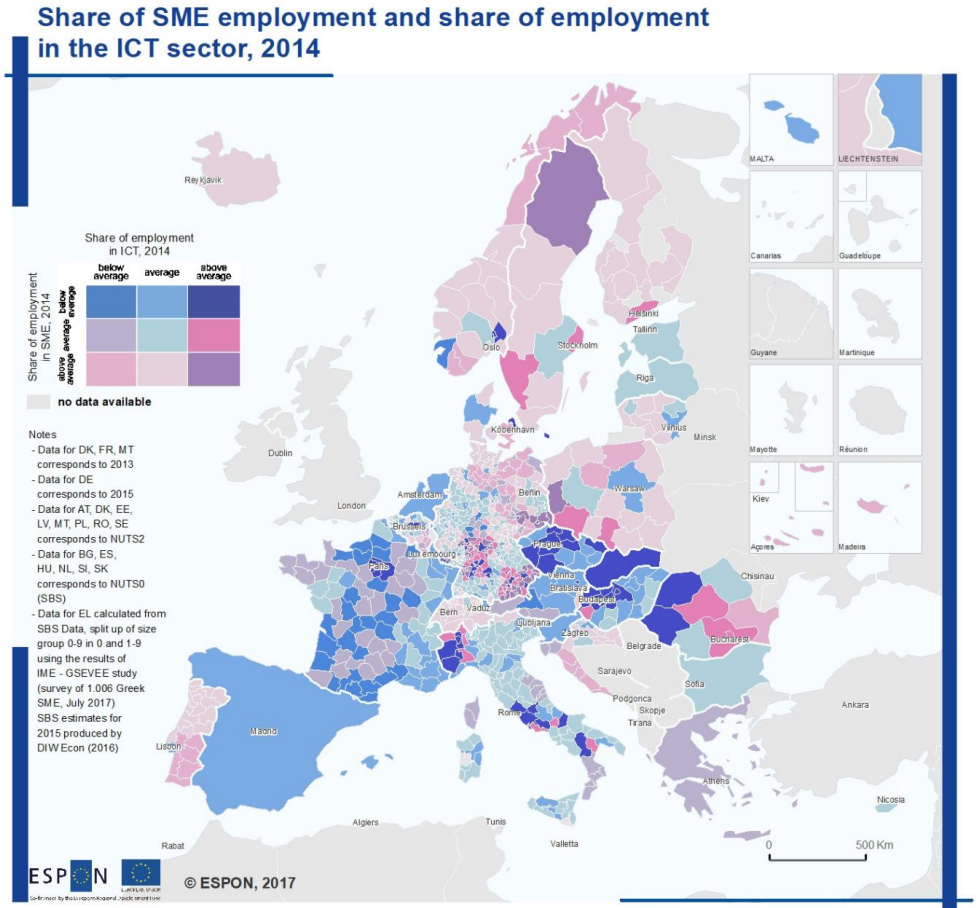
Map 3.22: Share of SME employment 2014 crossed with the share of employment in the ICT sector, 2014



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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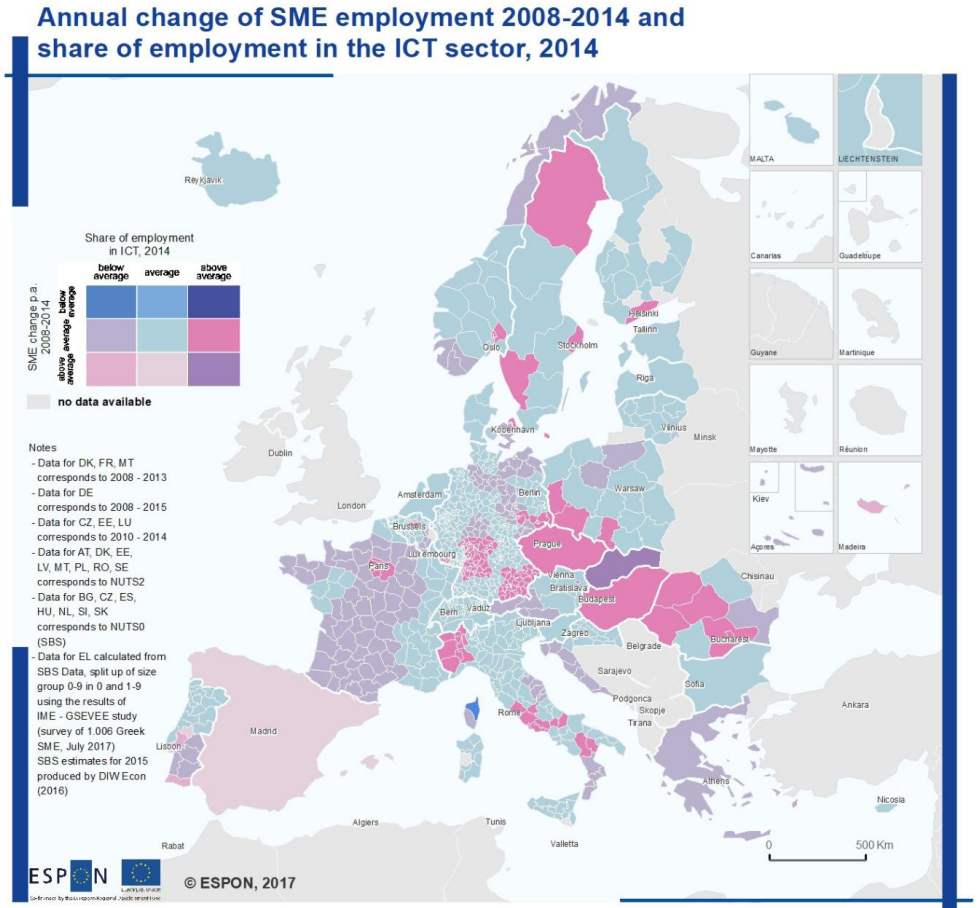
Map 3.23: Annual change of SME employment 2008-2014 crossed with the share of employment in the ICT sector, 2014



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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SME employment and employment in the carbon-intensive economy

Map 3.24 shows the share of employment in SMEs in 2014 and the share of employment in the carbon-intensive economy in 2014. More precisely it shows how the regions perform compared to the EU average in these two dimensions.

The share of both recent SME employment and employment in the carbon-intensive economy is high in the northern countries, Lithuania, large parts of Poland, Switzerland, and Croatia. Below average employment in SMEs but a high share in the carbon-intensive economy can be found a substantial number of French regions, the Czech Republic, Austria, Slovenia, Denmark, and the south of Italy. On the contrary, both factors are weak in Germany and several metropolitan areas. The map further illustrates that the importance of employment in the carbon-intensive industry prevails in Norway, Sweden, the Baltic Countries, Poland, the Czech Republic, Austria, Croatia, Romania, and France.

Looking at the annual change rates of SMEs and the shares of employment in the carbon-intensive industry (Map 3.25), most regions with an above average share of employment in the carbon-intensive industry show little increase in the share of employment in SMEs.

3.11.1 Annual change of SME employment crossed with the development of regional growth (GDP)

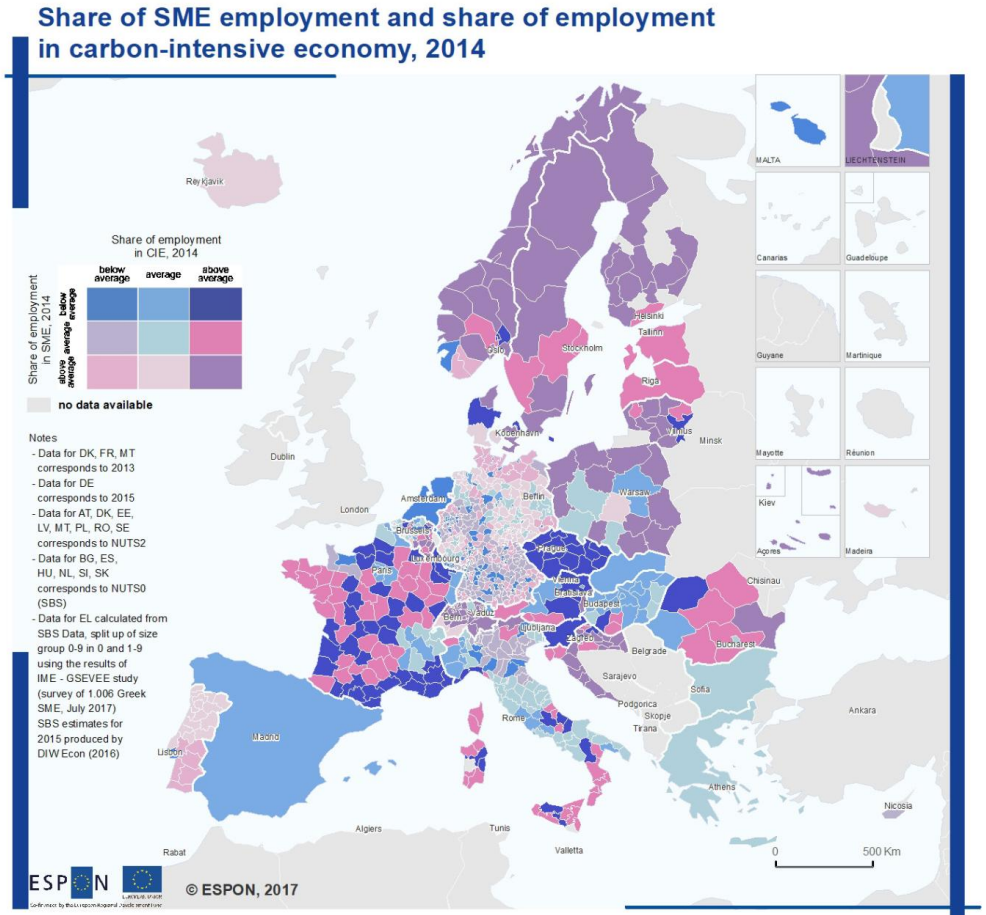
Map 3.26 combines information on the development of the share of SMEs in the period of 2008 to 2014 with the development of regional growth (GDP per capita) in the same period.

Above average development in employment shares of SMEs in the reference period did not coincide with a decrease in GDP nor with substantial increases, nor was it the other way round. In some regions with development of employment shares in SMEs around the EU average, GDP was on the rise, e.g. in the north of Portugal, the south of France, Germany, Salzburg and Styria in Austria, Bulgaria, Romania, Poland, Latvia, and Lithuania. However, at the same time in other regions with stable employment shares in SMEs, GDP was decreasing. Therefore, one should be cautious in concluding that GDP growth goes together with positive development of employment shares in SMEs, as other interfering factors exist.

3.11.2 Annual change of the share in SME employment crossed with the average annual patent applications per mn inhabitants 2008-2014

Map 3.23 shows information on the development of the share of SMEs in the period of 2008 to 2014 and the average annual patent applications per million inhabitants in the same period as one indicator of regional innovation. As already identified for regional development (GDP), no correlation patterns between number of patent applications and above-average share of SME employment can be observed.

Map 3.24: Share of SME employment 2014 crossed with the share of employment in carbon-intensive economy, 2014



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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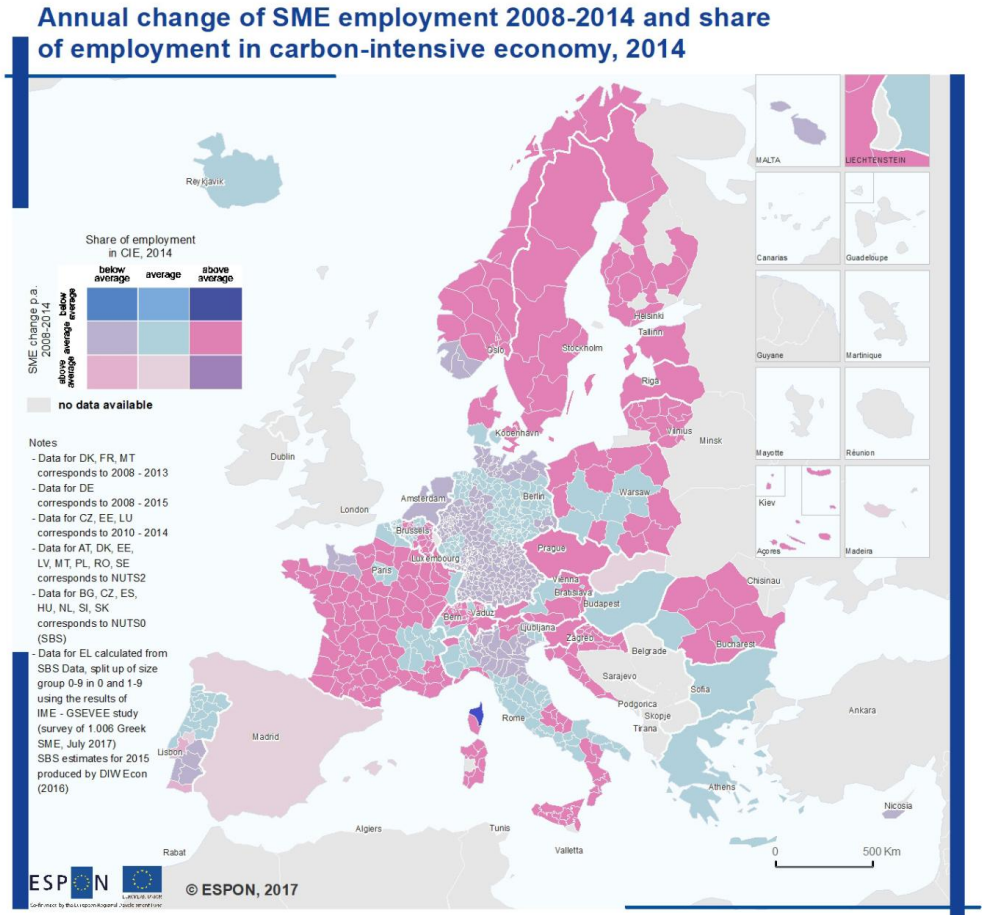
Map 3.25: Annual change of SME employment 2008-2014 crossed with the share of employment in carbon-intensive economy, 2014



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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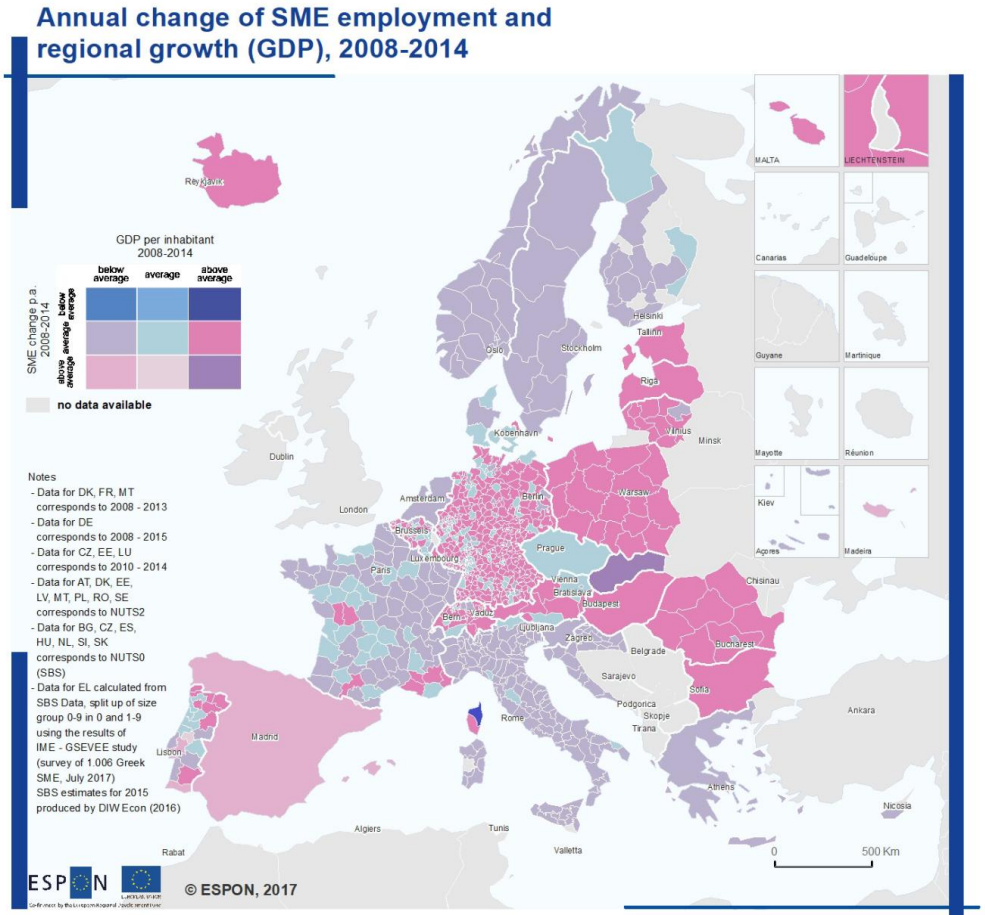
Map 3.26: Annual change of SME employment 2014 crossed with regional growth (GDP), 2008- 2014



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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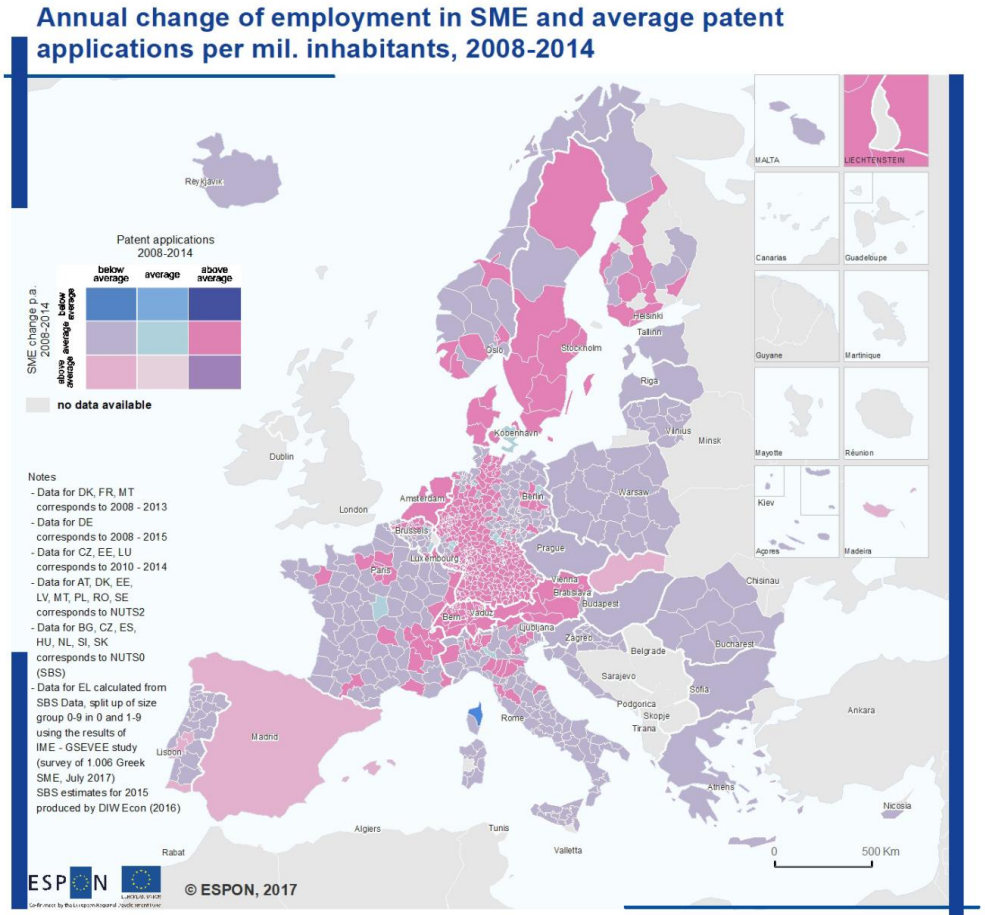
Map 3.27: Annual change of employment in SME crossed with average patent applications per mn inhabitants, 2008-2014



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
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4 Analysis of the development opportunities and obstacles of SMEs

This chapter focuses on investigating factors influencing the patterns and development of the SME sector at the regional level. The guiding question is: what are the factors that determine the development of a region's SME sector and act as key drivers or, conversely, obstacles to SME growth and performance at the regional level? First, based on a review of literature and relevant theories, possible factors that could explain different regional patterns of SMEs and, in particular, differences in SME performance between regions were identified. The identified factors were then translated – as far as possible – into empirically measurable indicators based on available data at the regional level. These reflect potential explanatory factors – and therefore potential drivers – for the different regional development of SMEs. Statistical analyses were then used to investigate the actual significance and effect of the potential explanatory variables (territorial factors) for regional SME development.

Furthermore, a typology of regions based on territorial factors was developed by using a cluster analysis, displaying different development conditions for SMEs. The typology was also used to select and allocate a set of regions as in-depth case studies to investigate in more detail the dynamics, conditions, and policies at work in different kinds of European regions.

4.1 Regional determinants of SME patterns and performance from the literature

4.1.1 Geographic/regional differences in SME patterns and performance

The SME sector looks and performs differently across countries and regions. Southern European and many central and eastern European countries are characterised by a comparably large segment of microenterprises. In countries such as the UK, Germany, Denmark, or Luxembourg medium-sized enterprises are relatively more prominent in terms of their shares in employment and value added. In some regions, for example in eastern European and Balkan countries, there is a lack of medium-sized firms. This means that *size structures* within the SME segment may vary geographically.

SME *performance* – measured by business numbers or SME employment growth – is also very different across countries, certainly reflecting the general economic situations in Member States in the context of the crisis. There is also high variation between countries as far as SME *survival rates* are concerned: while the four-year survival rate of new micros in Portugal is only at about 35%, it is around 70% in Sweden and Finland[99].

Geographic differences of the SME population become even more pronounced when looking at the regional (sub-national) level. This is because *sectoral specialisations* are more relevant

[99] European Commission (2015): Annual Report on European SME 2014/2015. SME start hiring again, p 64.

and stronger than at the national level and other location factors shape the regional or local SME sector more distinctly. This becomes apparent when looking, for example, at tourism – which is a SME-dominated sector with quite uneven regional distribution or considerable regional concentration[100]. Urban and metropolitan regions are, for instance, much more specialised in knowledge-intensive businesses, e.g. in the ICT industry[101]. Sectoral specialisations have an impact on overall size structures as the average firm size differs between industries.

However, it is the pure *incidence of SMEs* which may vary significantly between sub-national regions. For example, the regional density of SMEs in Poland strongly varies from 33 to 58 SMEs per 1,000 inhabitants[102].

A study on the relative *incidence of high-growth firms* in the regions of Belgium, Denmark, Germany, and the UK revealed significant differences ranging from approx. 2% in the 'weakest' regions to 13% in the 'strongest' regions which are usually cities[103]. Significant firm growth differentials have also been found for regions in Portugal[104]. SMEs in different regions also differ in terms of their *innovation performance* as a comparative study across six EU Member States has shown[105].

Regional *variation in new firm births* is also significant as many investigations have shown[106]. A study covering five EU countries[107] found that the most fertile regions have annual new firm birth rates that are two to four times higher than those of the least fertile regions.

The regional level also matters as far as SME *survival rates* are concerned. A study for Germany considering approx. 300 regions revealed five-year survival rates ranging from 40.5% to 55.1%[108].

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[100] OECD (2016), Regions at a Glance 2016, p 78.
[101] Enichlmair, C. & T. Oberholzner (2016), Salzburg 2025: Szenarien regionaler Wirtschaftsentwicklung und gesellschaftlicher Rahmenbedingungen, Kapitel Wirtschaftlicher Strukturwandel, pp 157-212.
[102] OECD (2010), Poland: Key Issues and Policies, OECD Publishing, p 48.
[103] Hart, M./Temouri, Y. (2013), High-Growth Firm Localities and Determinants: Evidence from OECD Countries.
[104] Barbosa, N. & V. Eiriz (2011), Regional Variation of Firm Size and Growth: The Portuguese Case. In: Growth and Change, Vol. 42 No. 2, pp 125-158.
[105] Copus, A. et al. (2008), Innovation and Peripherality: An Empirical Comparative Study of SME in Six European Union Menber Countries. In: Economic Geography, 84, pp 51-82.
[106] E.g. Fritsch, M. & Mueller, P. (2005), The Persistence of Regional New Business Formation-Activity over Time – Assessing the Potential of Policy Promotion Programs; Lee, S.Y. et al. (2004), Creativity and Entrepreneurship: A Regional Analysis of New Firm Formation. In: Regional Studies, 38:8, pp 879-891; Mason, C. (1991), Spatial variations in enterprise: the geography of new firm formation. In: Burrows, R., Deciphering the Enterprise Culture.
[107] Reynolds, P.D. et al. (1994), Cross-national Comparison of the Variation in New Firm Formation Rates. In: Regional Studies 28, 4, pp 443-56.
[108] Fritsch, M. et al. (2004), The Effect of Industry, Region and Time on New Business Survival – A Multi-Dimensional Analysis.

4.1.2 Determinants of regional SME patterns and performance – a literature review

In general, the performance of SMEs certainly depends heavily on the overall economic conditions. Aggregate demand – consumption (depending on income), investment, and exports – is a key driver for the development of SMEs. Consequently, lacking demand has affected SMEs during the crisis, however, since 2014 European SME have been recovering in terms of employment and value added growth[109].

When demand accelerates, other structural business constraints become more obvious. This includes in particular (i) skills shortages, (ii) regulation and administrative burdens, and (iii) access to finance, via both bank loans and equity finance[110]. Microenterprises in particular are usually very sensitive to all kinds of economic framework conditions, be it positive or negative.

However, the networks and linkages of most (traditional) SMEs are predominantly at the regional or local scale – e.g. clients, employees, peers, suppliers, support services, etc. So, to a large part, it is indeed the region that matters for SMEs[111].

Various theories contribute to understanding regional differences in dispersion, development and growth of SMEs or enterprises in general, e.g. economic location theories, growth (pole) theories, new economic geography theories, cluster theories, endogenous growth models, and theories of competitiveness[112].

Classical location theories mainly explain the locational patterns of the economy, enterprises, or certain sectors. They mostly highlight factors such as (i) transportation or contact costs in the widest meaning, pointing to the importance of accessibility – especially to markets, clients or consumers, and (ii) economies of agglomeration, or clustering of an intra-industry or inter-industry kind.

Various kinds of regional growth theories suggest a variety of explanatory factors for differences in regional economic dynamics including:

- the quality of human capital (education, skills, talent);
- investment activity;
- (public) infrastructure;
- technology levels and innovation;
- the density of linkages within value chains;
- the combined effect of interactions/linkages and innovation – innovation diffusion – is underlined in polarisation theories;
- features of the social system, e.g. equality, social capital;

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[109] European Commission (2015): Annual Report on European SME 2014/2015. SME start hiring again.
[110] SAFE Survey 2014
[111] OECD (2014), Job Creation and Local Economic Development, pp 123-138. Of course even very small enterprises may have supply linkages at the global scale, especially in high-tech and innovative industries.
[112] An overview of theories is given, for example, by: Terluin, I.J. (2003), Differences in economic development in rural regions of advanced countries: an overview and critical analysis of theories. In: Journal of Rural Studies 19, 327-344; Aroca, P. et al. (2011), Modelling Regional Endogenous Growth, NERUS International Workshop on Regional Modelling, Sao Paulo.

- sector structures may also influence growth, e.g. the degree of industrial specialisation or diversity, or the share of exportable goods and services;
- development pole theories highlight the importance of cluster formation and/or the existence of large lead companies – often multinationals – in a region;
- knowledge and knowledge spill-over from a 'knowledge sector' (e.g. R&D, higher education) are very significant in some new economic geography theories;
- theories on industrial districts, which actually focus very much on SME, emphasise the importance of inter-industrial relations and spatial agglomeration;
- creative milieus and related economies of localisation actually combine a number of the above mentioned factors.

Theories on competitiveness mostly entail similar factors as discussed above, but often especially stress the importance of innovation diffusion and absorption, and usually add the relevance of political or policy factors, such as various types of incentives and support provided to enterprises; institutions and governance, including regulation, in the fields of innovation, education, the labour market, etc.

According to the ESPON CAEE project[113] – 'The Case of Agglomeration Economies in Europe' – one of the main factors for increasing growth of and innovation in SMEs is agglomeration. The project focused on assessing which characteristics of city-regional/metropolitan governance enable and shape agglomeration economies and with what effect. The study identified a close correlation between metropolitan areas/city regions in Europe, which are characterised by intense concentration of employment and gross value added and the level of wealth creation in recent years.

The ESPON EDORA project[114] had a dedicated focus on SMEs in peripheral and rural areas and provided a number of interesting observations concerning the influence of territorial context (or 'assets') on SME performance. Shaping factors include:

- physical infrastructure;
- landscape (attractiveness);
- skills of the local workforce;
- entrepreneurial culture including innovativeness;
- quality of business networks (as a feature of social capital);
- quality of local governance and institutions.

Entrepreneurial culture is a factor in discussion of which goes back a long time[115]. Its important role in entrepreneurial activity has more recently been examined based on regionalized data from the Global Entrepreneurship Monitor GEM[116].

[113] See http://www.espon.eu/main/Menu_Projects/Menu_TargetedAnalyses/CAEE.html
[114] See http://www.espon.eu/main/Menu_Projects/Menu_AppliedResearch/edora.html
[115] including works such as Mason, C. (1991), Spatial variations in enterprise: the geography of new firm formation. In: Burrows, R., Deciphering the Enterprise Culture.
[116] Bosma, N. & V. Schutjens (2011), Understanding regional variation in entrepreneurial activity and entrepreneurial attitude in Europe. In: Ann Reg Sci, 47, pp 711-742

The impact of government quality at sub-national level – basically using data from the Quality of Government Institute – on economic performance has recently been confirmed in statistical terms, although the relationship does not seem to be straightforward.[117]

An OECD study points out two main features of localities supporting high SME growth: population density and high education levels. In addition that study also underlines the importance of well-developed networks among companies and to other institutions for SMEs to grow[118]. An analysis of differences in economic development in rural regions of Europe also found a lot of support for the role of internal and external networks and social capital in determining the performance of regions[119]. Studies of local entrepreneurship in Sweden[120] and Germany[121] are also underlining the importance of 'local entrepreneurial (social) capital'.

A study from the European Parliament[122] put together an overview of 'external' factors influencing SME development. Those factors which usually vary geographically include:

- density and accessibility of the location;
- labour market, meaning availability of workers and skills;
- infrastructure;
- access/availability of financing[123];
- consumer demand and purchasing power;
- Innovation and technology level;
- policies and regulation relevant for SMEs.

A study[124] on regional variations in small business births and deaths in the U.S. found that the following regional features had the most impact:

- economic diversity
- population growth
- personal wealth/income
- flexible employment relationships

A similar study for Germany, though, pointed out that it is rather innovation-related features of the regions which would influence firm births.[125]

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[117] Rodriguez-Pose, A./Garcilazo, E. (2015), Quality of Government and the Returns of Investment: Examining the Impact of Cohesion Expenditure in European Regions. In: Regional Studies, 49:8, 1274-1290.
[118] OECD (2014), Job Creation and Local Economic Development, pp 123-138.
[119] Terluin, I.J. (2003), Differences in economic development in rural regions of advanced countries: an overview and critical analysis of theories. In: Journal of Rural Studies 19, 327-344.
[120] Westlund, H. et al. (2011), Economic Entrepreneurship, Startups and Their Effects on Local Development: The Case of Sweden.
[121] Audretsch, D.B. & Keilbach, M. (2007), The Localization of Entrepreneurship Capital: Evidence from Germany.
[122] European Parliament (2011), Impact and Effectiveness of Structural Funds and EU Policies Aimed at SME in the Regions, pp 31-32.
[123] Spanish research, for example, has shown how access to finance of SME can vary across sub-national regions; see Palacin-Sanchez, J. & di Pietro, F. (2013), Are Regional Institutional Factors Determinants of the Capital Structure of SME?.
[124] Reynolds, P.D. et al. (1995), Explaining regional variation in business births and deaths: U.S. 1976-88. In: Small Business Economics, Vol. 7, Issue 5, pp 389-407.
[125] Fritsch, M. & Mueller, P. (2005), The Persistence of Regional New Business Formation-Activity over Time – Assessing the Potential of Policy Promotion Programs.

A study[126] of firm size and firm growth in Portuguese regions found three main determinants at the regional level:

- industrial specialisation/diversity
- entrepreneurial capabilities
- workforce quality (education/skills)

Finally, an analysis of explaining factors for regional growth in Australia identified the following ranking of determinants[127]:

- human capital endowment (at the beginning of the period observed)
- urbanisation
- inward migration flows

Summing up the literature, the following set of theoretical determinants for regional SME patterns and development appear to be relevant and might be considered, as far as empirically possible, in the empirical analysis. One should note that these determinants represent features or characteristics of the region rather than of individual firms. In the table below, 'X' entries for the three focus sectors indicate that a factor is particularly important for that sector, but the other factors might still be relevant as well.

Table 4.1: Relevant determinants/explanatory factors for regional SME performance

	For SMEs and all sectors in general	**For the knowledge and creative economy**	**For the ICT sector**	**For the low-carbon economy**
Regional income Regional purchasing power	X			
Investment and capital stock	X			
Accessibility of the region (international) by road and other means	X		X	
Regional (public) physical infrastructure Transportation ICT	X	X (ICT)	X (ICT)	
Landscape and natural endowment	X			X
Education and skills of the regional workforce Levels/quality Degree of matching Quantitative availability Education and training institutions in the region	X	X	X (digital skills)	X
Sectoral specialisation versus sectoral diversity of the region	X			
Knowledge and innovation production R&D expenditures and output R&D personnel Patents, scientific projects Firms' innovation activity Knowledge and research institutions (universities etc.) Creative milieus or capital Entrepreneurial culture/capital	X	X	X	X

[126] Barbosa, N. & V. Eiriz (2011), Regional Variation of Firm Size and Growth: The Portuguese Case. In: Growth and Change, Vol. 42 No. 2, pp 125-158.
[127] Aroca, P. et al. (2011), Modelling Regional Endogenous Growth, NEREUS International Workshop on Regional Modelling, Sao Paulo.

	For SMEs and all sectors in general	For the knowledge and creative economy	For the ICT sector	For the low-carbon economy
Availability of financing Loans Venture capital, business angels Crowd funding Public funding	X		X (esp. risk capital)	X
Regulation, e.g. For business start-up Labour regulations	X	X (IPR)	X (IPR)	X
Support services and institutions, and incentives for enterprises	X	X		X
Governance quality including e.g. development strategies in place	X			
Economies of agglomeration and related factors				
Population density and mass (urbanisation)	X		X	
Workforce density and mass	X			
Existence of large lead companies (including multinationals)	X			
Density of inter-firm linkages (within or across industries)	X	X	X	
Business clusters (formal or informal)	X			
Quality of business networks and associations	X		X	

Source: Consortium, 2016.

4.2 Drivers and dynamics identified

4.2.1 Step 1: indicators on possible determinants and drivers

The set of hypotheses on factors which possibly explain the different regional patterns of SMEs and, in particular, the differences in SME performance and growth between regions from relevant theories and empirical analyses in the literature were taken as a basis for the identification of relevant indicators for the statistical analysis. Regional data has been collected as part of the 'territorial context database' described in more detail in Chapter 2. To accomplish this, European databases have been searched complemented by additional data collection at the national level and imputations for missing data to safeguard the most complete territorial coverage possible for the subsequent statistical analyses. For each identified indicator, the value in the latest year available (usually 2014) and its development (between 2008-2014) have been calculated. The final selection of indicators is a compromise between relevance and adequacy of factors as described in the literature and data availability at NUTS 3 or NUTS 2 levels[128] for all European regions (operationalisation of the explanatory factors, see Table 4.2).

[128] In some cases only data at national (NUTS 0) level is available, e.g. in the field of governance quality or regulation

Table 4.2: Relevant determinants/explanatory factors for SME patterns and performance used for PCA and cluster analysis

Determinants/explanatory factors	Related available territorial context data	NUTS level
Accessibility of the region (international) by road and other means	Potential accessibility by road, rail and air: population in all destination regions and accessibility potential of the origin region weighted by travel time (index related to ESPON average)	NUTS 3
	Access time to high level transport infrastructure	NUTS 3
Availability of financing	Global Competitiveness Index – Ease of access to loans, 1-7 (best)	NUTS 0
Education and skills of the regional workforce	Share of population aged 30-34 by educational attainment level (ISCED 2011 levels 0-2, 3-4, 5-8)	NUTS 2
Governance quality including e.g. development strategies in place	Global Competitiveness Index – Burden of government regulation, 1-7 (best)	NUTS 0
	Worldwide Governance Indicators 2016 (WGI) – Government Effectiveness	NUTS 0
	Regional Competitiveness Index 2016: Corruption	NUTS 2
	Regional Competitiveness Index 2016: Quality and accountability of government services	NUTS 2
	Regional Competitiveness Index 2016: Impartiality of government services	NUTS 2
Investment and capital stock	Global Competitiveness Index – Effect of taxation on incentives to invest, 1-7 (best)	NUTS 0
Knowledge and innovation production	Patent applications to the EPO, international patent classification (IPC) sections and classes per million inhabitants	NUTS 3
	Regional Competitiveness Index 2016: Innovative SME collaborating	NUTS 2
Landscape and natural endowment	Urban-rural typology	NUTS 3
	Typology: Metropolitan regions	NUTS 3
Population density and mass (urbanisation)	Population density	NUTS 3
Regional income, regional purchasing power	Gross domestic product (GDP) at current market prices; Purchasing Power Standard per inhabitant	NUTS 3
	Disposable income, net (uses) per capita in PPS	NUTS 2
Regulation, e.g. for business start-up, labour regulations	Doing business indicators – Distance to frontier score: Starting a business	NUTS 0
Sectoral specialisation versus sectoral diversity of the region	Gross value added at basic prices	NUTS 3
Workforce density and mass	Share of self-employed persons	NUTS 2
	Unemployment rates by sex and age	NUTS 2
	Employed Persons	NUTS 3
	Regional Competitiveness Index 2016: Gender balance employment	NUTS 2
Existence of large lead companies (including multinationals)	Global Competitiveness Index – Extent of market dominance, 1-7 (best)	NUTS 0
Density of inter-firm linkages, business clusters, quality of business networks and associations	Global Competitiveness Index – State of cluster development, 1-7 (best)	NUTS 0

4.2.2 Step 2: principal component analysis (PCA)

In order to reduce the number of indicators for determinants (explanatory factors) a *principal component analysis (PCA)* was applied to the set of variables identified above. The PCA discovers which variables/indicators form coherent subsets (components) that are relatively independent of one another. First, the selected indicators/variables were grouped into sets of variables that are thematically linked – e.g. transport, governance, economy, labour market. A series of PCAs were then conducted with SPSS software to test if the grouped variables are consistent with each other and result in homogeneous components.

General methodological information on principal component analysis (PCA)

PCA is a statistical procedure that uses an orthogonal transformation to convert a set of observations of possibly correlated variables into a set of values of linearly uncorrelated variables called principal components. PCA uses the correlations among the variables to develop a small set of components that empirically summarizes the correlations among the variables.

Steps in PCA include selecting (and measuring) a set of indicators, preparing the correlation matrix, extracting a set of variables from the correlation matrix, determining the number of components based on the interpretation of the scree plot as well as the variance explained by the component, and interpreting the results. Although there are relevant statistical considerations to most of these steps, an important test of the analysis is its interpretability. A component is more easily interpreted when several observed variables correlate highly with it and those variables show only low correlation with other components.

The main problem with PCA is that there is no criterion variable (like group membership) against which to test the solution. The final choice among alternatives depends on the researcher's assessment of its interpretability and scientific utility. Thus, it is necessary to make the process transparent and to involve others in the judgement. We have done that by getting feedback from academic peers. Furthermore, the external validity of the components was tested against the different theoretical propositions which we identified in the literature.

After eliminating unfitting indicator variables, five PCAs were conducted using 19 'status' variables (i.e. indicator values for years 2014 or 2013 in case of missing values) from the pool of territorial context indicators. The process led to the extraction of a total of five components, each alone explaining over 70% of the variance of variables used. Variables with high factor loadings describe the characteristic of the common components; negative factor loadings indicate reverse correlation of the particular variable with the other variables loading on the component.

The interpretation of factor loadings reveals the following components composed of different positively (+) or negatively (-) correlating variables for status and development of context indicators:

- Component 1: urban vs. rural
- Component 2: level of accessibility

- Component 3: level of unemployment and self-employment
- Component 5: concentration of employment and population (density)
- Component 7: level of governance quality, access to finance, taxation, market dominance, and cluster development

Components 4 (regional income and GDP) and 6 (knowledge and innovation) were eliminated from the PCA due to missing data. For the further regression and cluster analysis, the variables GDP, share of population with tertiary education, gender balance in employment (RCI 2016), innovative SME collaborating (RCI 2016), and patent applications were included as single variables; regional income and GERD were excluded due to high amounts of missing data.

These components represent potential determinants or drivers – or, in statistical terms, possible explanatory factors – influencing regional SME performance.

Component 1: urban vs. rural

This component defines the degree of urbanisation of regions, differentiating between urban and metro regions and rural regions. High factor values represent rural regions, while low factor values represent urban or metro regions. The first component explains 64.6% of the variance of both input variables.

Table 4.3: Component 1: urban vs. rural

Total variance explained

Component	Initial Eigenvalues			Sums of squared factor loadings for extraction		
	Total	% of variance	Cumulated %	Total	% of variance	Cumulated %
1	1.294	64.675	64.675	1.294	64.675	64.675
2	.706	35.325	100.000			

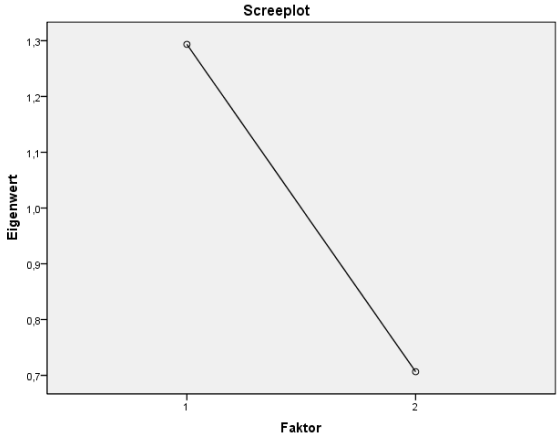
Extraction method: principal components analysis.

Component matrix[a]

	Component 1
Urbanruraltypo	.804
Metroregions	-.804

Extraction method: principal components analysis.
a. 1 Components extrahiert

Figure 4.1: Screeplot for Component 1: urban vs. rural



Component 2: level of accessibility

This component defines the level of accessibility of regions, differentiating between better and less accessible regions, based on four variables from the ESPON potential accessibility indicators (representing the modes road, rail, and air as well as access to high level transport infrastructure). High factor values represent highly accessible regions, while low factor values represent badly accessible regions. The first component explains 77.4% of the variance of the four input variables.

Table 4.4: Component 2: level of accessibility

Total variance explained

Component		Initial Eigenvalues			Sums of squared factor loadings for extraction		
		Total	% of variance	Cumulated %	Total	% of variance	Cumulated %
dimension 0	1	3.099	77.476	77.476	3.099	77.476	77.476
	2	.501	12.529	90.005			
	3	.363	9.086	99.091			
	4	.036	.909	100.000			

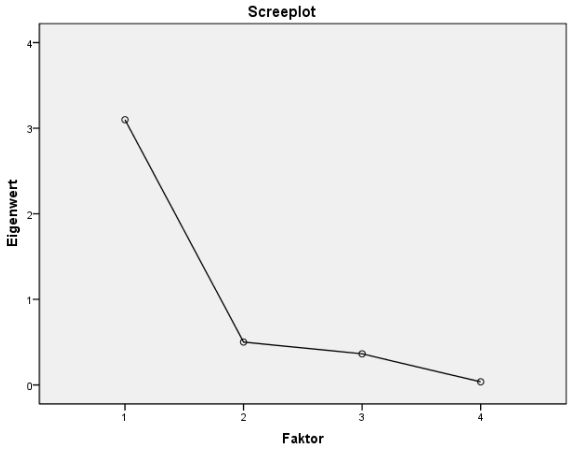
Extraction method: principal components analysis.

Component matrix[a]

	Component 1
Pot_acc_road	.926
Pot_acc_rail	.943
Pot_acc_air	.836
Acc_hl_transport	-.808

Extraction method: principal components analysis.
a. 1 Components extrahiert

Figure 4.2: Screeplot for Component 2: level of accessibility



Component 3: level of unemployment and self-employment

This component defines the level of share of unemployment and self-employment of regions, differentiating between regions with high or low self-employment and unemployment based on two variables. High factor values represent regions with high unemployment as well as high self-employment, while low factor values represent regions with low self-employment but also low unemployment figures. The first component explains 76.1% of the variance of the two input variables.

Table 4.5: Component 3: level of unemployment and self-employment

Total variance explained

Component		Initial Eigenvalues			Sums of squared factor loadings for extraction		
		Total	% of variance	Cumulated %	Total	% of variance	Cumulated %
dimension 0	1	1.522	76.102	76.102	1.522	76.102	76.102
	2	.478	23.898	100.000			

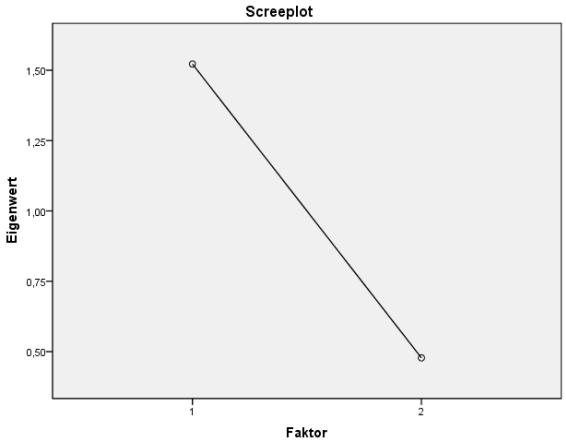
Extraction method: principal components analysis.

Component matrix[a]

	Component 1
Share_selfemployed_LFS_2014	.872
Unemployment_rate_LFS_2014	.872

Extraction method: principal components analysis.
a. 1 Components extrahiert

Figure 4.3: Screeplot for Component 3: level of unemployment and self-employment



Component 5: concentration of employment and population (density)

This component defines the level of employment as well as population density of regions, differentiating between regions with high or low density, based on two variables. High factor values represent regions with high employment as well as population density, while low factor values represent regions with low employment as well as population density. The first component explains 97.7% of the variance of the two input variables.

Table 4.6: Component 5: concentration of employment and population (density)

Total variance explained

Component		Initial Eigenvalues			Sums of squared factor loadings for extraction		
		Total	% of variance	Cumulated %	Total	% of variance	Cumulated %
dimension 0	1	1.955	97.757	97.757	1.955	97.757	97.757
	2	.045	2.243	100.000			

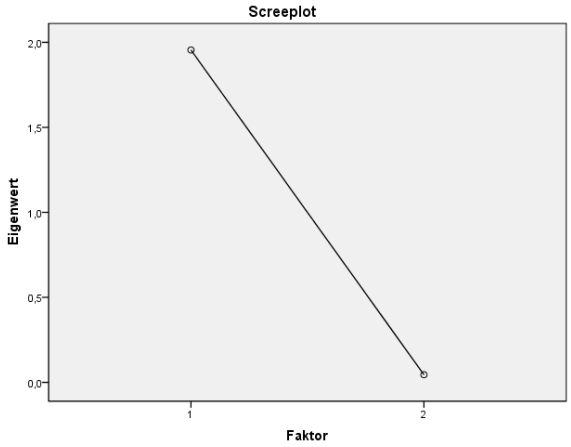
Extraction method: principal components analysis.

Component matrix[a]

	Component 1
Employed_total_ESA10_km2_2014	.989
pop_dens_14	.989

Extraction method: principal components analysis.
a. 1 Components extrahiert

Figure 4.4: Screeplot for Component 5: concentration of employment and population (density)



Component 7: level of governance quality, access to finance, taxation, market dominance, and cluster development

This component defines the level of governance quality of regions in relation to the support of SMEs, differentiating between regions with high or low governance quality, based on nine variables. The variables represented are: access to loans index, government regulatory burden index, government effectiveness index, investment incentives index, market dominance index, cluster development index, corruption index from RCI 2016, quality of government services index from RCI 2016 and impartiality of government services index from RCI 2016. High factor values represent regions with good governance quality and support for SMEs, while low factor values represent regions with low governance quality and support for SMEs. The first component explains 69.7% of the variance of the nine input variables.

Table 4.7: Component 7: level of governance quality, access to finance, taxation, market dominance, and cluster development

Total variance explained

Component		Initial Eigenvalues			Sums of squared factor loadings for extraction		
		Total	% of variance	Cumulated %	Total	% of variance	Cumulated %
dimension 0	1	6.282	69.797	69.797	6.282	69.797	69.797
	2	1.260	13.998	83.794	1.260	13.998	83.794
	3	.619	6.878	90.672			
	4	.470	5.226	95.898			
	5	.168	1.868	97.766			
	6	.086	.950	98.717			
	7	.057	.631	99.348			
	8	.047	.517	99.865			
	9	.012	.135	100.000			

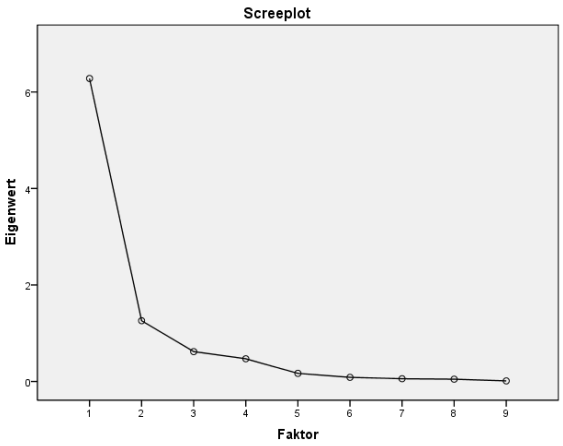
Extraction method: principal components analysis.

Component matrix[a]

	Component	
	1	2
Access_loans_index_2014	.689	-.358
Gov_regul_burden_index_2014	.792	-.459
Gov_effectiveness_index_2014	.937	.081
Investment_Incentives_index_2014	.827	-.312
Market_dominance_index_2014	.700	.644
Cluster_development_index_2014	.695	.628
RCI_2016_Corruption	.959	-.064
RCI_2016_Quality_gov_services	.906	.025
RCI_2016_Impartiality_gov_services	.952	-.058

Extraction method: principal components analysis.
a. 2 Components extrahiert

Figure 4.5: Screeplot for Component 7: level of governance quality, access to finance, taxation, market dominance and cluster development



4.2.3 Step 3: regression analyses

In the previous work steps, a set of variables has been defined for European regions which reflect *potential* explanatory factors – and therefore *potential* determinants or drivers – for regional SME performance. In the next step, it was statistically investigated whether, and to what extent, the identified factors (as independent variables) actually influence and determine different aspects of regional SME development and performance (as dependent variables). When looking at 'SME performance' it is useful to distinguish between different broad size categories and also look at different indicators of performance. This allows for a more detailed and qualified picture of the interrelations at work. To uncover and assess the determinants and drivers, we applied a series of (linear) regressions with step-wise inclusion of variables. As independent explanatory factors we use the five components obtained through the PCA as well as additional single indicators (such as the regional education level), which are not part of any of the components.

What determines the expansion of microenterprise employment?

The first aspect we looked at is employment growth in microenterprises (firms with fewer than 10 persons employed) by NUTS 3 regions, and more specifically the annual percentage growth in the period from 2008-2014 (the period observed deviates slightly in some countries/NUTS 3 regions depending on data availability). The regression model shown in Table 4.8 reveals that the influence of the regional characteristics is relatively small. The *education level* and the component *governance quality* have to some extent a (significant) positive effect and work as drivers for employment in microenterprises. Many other factors do not seem be very relevant (e.g. the components accessibility and urbanisation) in this respect.

In fact, *education* is the most important driver for the performance of microenterprises in all types of regions, i.e. in rural, intermediate, and urban regions.

Table 4.8: Regression model for annual percentage growth of employment in microenterprises

		Non-standardised coefficients		Standardised coefficients			
Model		Regression coefficient	Standard error	Beta	T	Sig.	R-squared
1	(Constant)	.983	.002		552.816	.000	
	Education level	.001	.000	.389	12.222	.000	.151
2	(Constant)	.983	.002		554.801	.000	
	Education level	.001	.000	.357	11.110	.000	
	GOVERNANCE QUALITY	.003	.001	.155	4.839	.000	.175
3	(Constant)	.987	.002		483.179	.000	
	Education level	.001	.000	.365	11.357	.000	
	GOVERNANCE QUALITY	.003	.001	.197	5.575	.000	
	GDP per capita	.000	.000	-.097	-2.769	.006	.182
4	(Constant)	.990	.002		449.469	.000	
	Education level	.001	.000	.358	11.153	.000	
	GOVERNANCE QUALITY	.004	.001	.219	6.087	.000	
	GDP per capita	.000	.000	-.157	-3.897	.000	
	POPULATION DENSITY	.002	.001	.108	2.992	.003	.191

Components of the PCA are given in capitals

What determines the expansion of small and medium-sized enterprises?

For small and medium-sized enterprises (10-249 persons employed) the situation is quite different. The development of that size category at the NUTS 3 level – measured in terms of employment growth mostly in the 2008-2014 period – is much more dependent on the regional factors investigated here. The regression model depicted in Table 4.9 informs that the component *governance quality* plays a major role for in growth of small and medium-sized enterprises. In addition, the component *urbanisation* (the opposite of rurality and highly correlated with *accessibility*) is also a driver for this category of enterprises.

Table 4.9: Regression model for annual percentage growth of employment in small and medium-sized enterprises

Model		Non-standardised coefficients		Standardised coefficients			
		Regression coefficient	Standard error	Beta	T	Sig.	R-squared
1	(Constant)	1.000	.001		1479.224	.000	
	GOVERNANCE QUALITY	.015	.001	.617	22.664	.000	.380
2	(Constant)	1.000	.001		1489.265	.000	
	GOVERNANCE QUALITY	.014	.001	.577	19.786	.000	
	RURALITY	-.003	.001	-.104	-3.575	.000	.390
3	(Constant)	.995	.002		421.889	.000	
	GOVERNANCE QUALITY	.014	.001	.558	18.515	.000	
	RURALITY	-.003	.001	-.118	-3.979	.000	
	Education level	.000	.000	.070	2.484	.013	.394

Components of the PCA are given in capitals

We must note, however, that a large part of the governance variables forming the governance component relate to the NUTS 0 level, therefore strongly reflecting country conditions rather than regional conditions. Furthermore, governance quality is strongly correlated with many other regional factors and thus potentially obscuring their role as drivers. We therefore present another regression model excluding the governance variable. This model reveals a positive impact of the component *accessibility* of the region[129] on employment growth in the small and medium-sized enterprise segment, and the positive effect of the *education level* also becomes a bit more prominent in this model.

Table 4.10: Regression model for annual percentage growth of employment in small and medium-sized enterprises – excluding governance quality

Model		Non-standardised coefficients		Standardised coefficients			
		Regression coefficient	Standard error	Beta	T	Sig.	R-squared
1	(Constant)	1.001	.001		1252.351	.000	
	ACCESSIBILITY	.010	.001	.367	11.430	.000	.135
2	(Constant)	.984	.003		364.544	.000	
	ACCESSIBILITY	.010	.001	.391	12.425	.000	
	Education level	.001	.000	.218	6.915	.000	.182

Components of the PCA are given in capitals

Small and medium-sized enterprises are usually former microenterprises which have experienced significant growth. Overall, the results therefore point to the regional conditions which need to be in place to allow and support firms to grow, in particular *good governance systems*, high *accessibility*, and a high *education level* of the population. While rural regions consequently seem to be at a disadvantage as far as the growth potential of small and medium-sized enterprises is concerned, it is basically still the same 'success factors' which are at work in these regions: governance quality, accessibility and education.

[129] Accessibility is highly correlated with urbanisation.

What determines enterprise birth rates?

High enterprise birth rates may be seen as an indicator or condition for a thriving SME sector. We examined which factors would impact on a regions birth rate in the latest available year (often 2014). As can be seen from the regression model in Table 4.11 it is mainly the components *accessibility* (urbanisation) and *governance quality* which drive enterprise birth rates. Interestingly, high unemployment rates hardly influence (or drive) birth rates.

Higher enterprise birth rates do indeed have a small but significant positive impact on employment growth in SMEs. However, this is to some extent sham correlation rather than causality as both birth rates and SME employment growth are prompted by the same regional factors.

Table 4.11: Regression model for enterprise birth rates

Model		Non-standardised coefficients		Standardised coefficients			
		Regression coefficient	Standard error	Beta	T	Sig.	R-squared
1	(Constant)	11.553	.099		116.173	.000	
	ACCESSIBILITY	2.064	.103	.491	20.028	.000	.241
2	(Constant)	11.483	.095		121.022	.000	
	ACCESSIBILITY	1.341	.117	.319	11.499	.000	
	GOVERNANCE QUALITY	1.349	.117	.318	11.481	.000	.312
3	(Constant)	14.310	.407		35.201	.000	
	ACCESSIBILITY	1.624	.121	.386	13.416	.000	
	GOVERNANCE QUALITY	2.076	.154	.490	13.502	.000	
	Disposable income	.000	.000	-.270	-7.144	.000	.339

Components of the PCA are given in capitals

What determines net birth rates (births minus closures)?

We find that there is not much relation between (gross) birth rates as discussed above and net birth rates (births minus closures). This means that high birth rates usually go hand in hand with high closure rates. The main determinants for high net birth rates are similar to the drivers of gross birth rates (components *accessibility* and *governance quality*); however the *educational level* of the regional population is a more important factor here as the regression analysis in Table 4.12 shows. This is especially true for rural and intermediate regions, where the impact of education on net birth rates is even greater than in urban regions.

However, high net birth rates in a region have only a very weak positive impact on employment expansion in the overall SME sector. The reason is that – at least in the short or medium term – employment growth primarily comes from the dynamics of the relatively few companies in the small and medium-sized enterprise segment.

Table 4.12: Regression model for enterprise net birth rates

Model		Non-standardised coefficients		Standardised coefficients			
		Regression coefficient	Standard error	Beta	T	Sig.	R-squared
1	(Constant)	.533	.108		4.925	.000	
	GOVERNANCE QUALITY	1.833	.113	.417	16.208	.000	.174
2	(Constant)	-3.958	.352		-11.236	.000	
	GOVERNANCE QUALITY	1.493	.109	.340	13.703	.000	
	Education level	.129	.010	.330	13.309	.000	.277
3	(Constant)	-4.270	.344		-12.409	.000	
	GOVERNANCE QUALITY	.853	.129	.194	6.604	.000	
	Education level	.137	.009	.350	14.469	.000	
	ACCESSIBILITY	1.077	.124	.248	8.661	.000	.318

Components of the PCA are given in capitals

What determines the prevalence of the knowledge and creative industries and of the ICT sector?

Lastly, we investigated which regional factors/characteristics influence the relative prevalence of the knowledge and creative industries and the ICT sector, measured by their shares in total regional employment. Sector employment here refers to all size categories, not only to SMEs. As Table 4.13 shows the main drivers for the knowledge and creative industries are the components *accessibility* and *governance quality,* and the single indicator *patent activity* (which may be an indicator for research and innovation activity, but could also understood as a result rather than an explanation). Interestingly, the education level has not been identified as a significant factor for these industries.

Table 4.13: Regression model for employment share of the Knowledge and Creative Industries

Model		Non-standardised coefficients		Standardised coefficients			
		Regression coefficient	Standard error	Beta	T	Sig.	R-squared
1	(Constant)	.139	.001		94.466	.000	
	ACCESSIBILITY	.036	.002	.586	23.007	.000	.343
2	(Constant)	.126	.002		68.943	.000	
	ACCESSIBILITY	.026	.002	.420	14.795	.000	
	Patent activity	.000	.000	.314	11.080	.000	.415
3	(Constant)	.127	.002		68.986	.000	
	ACCESSIBILITY	.023	.002	.371	11.975	.000	
	Patent activity	.000	.000	.285	9.733	.000	
	GOVERNANCE QUALITY	.007	.002	.112	3.729	.000	.422

Components of the PCA are given in capitals

Conversely, the *education level* of the local population – next to the component *accessibility* and *patent activity* – seems to constitute an important driver for the ICT sector. By contrast, governance quality seems to be a less crucial factor in the case of the ICT sector. Also in rural types of regions with low accessibility, it is still the education level and research and innovation activity which are conducive for a strong ICT sector.

Table 4.14: Regression model for employment share of the ICT sector

Model		Non-standardised coefficients		Standardised coefficients			
		Regression coefficient	Standard error	Beta	T	Sig.	R-squared
1	(Constant)	.008	.002		3.985	.000	
	Education level	.001	.000	.419	14.648	.000	.175
2	(Constant)	.008	.002		4.115	.000	
	Education level	.001	.000	.418	15.745	.000	
	ACCESSIBILITY	.007	.001	.338	12.734	.000	.290
3	(Constant)	.006	.002		3.136	.002	
	Education level	.001	.000	.408	15.603	.000	
	ACCESSIBILITY	.005	.001	.243	7.885	.000	
	Patent activity	2.180E-5	.000	.179	5.816	.000	.311

Components of the PCA are given in capitals

From the statistical analyses we can draw some preliminary *conclusions* related to regional policy strategies aiming to foster the development and job creation of SMEs. Firstly, in regions with significantly expanding overall SME employment, most of the growth can be attributed to the small and medium-sized segment and only a small part to a growing microenterprise segment. This would suggest – at least in the short to medium term – *supporting significant growth paths of existing SMEs* can result in a higher overall employment impact than strategies mainly focusing on an increase of the micro segment. This is also confirmed by the fact that even high net birth rates have only a relatively weak effect on overall SME employment growth in a region.

This is not meant to neglect *microenterprises* though. Microenterprises, because of their relative ubiquity, form a robust basis of a regional business population and are a seedbed for entities possibly developing into larger companies. Our analyses have shown that high accessibility of a region and urbanization does not necessarily constitute a precondition or decisive factor for the micro segment to develop positively. The expansion of the regional microenterprise sector (and its employment) can be driven and fostered, even in rural and peripheral territories, mainly by creating an ecosystem of *good education levels* and *good governance frameworks* (access to finance, incentives, etc.). However, our analyses show that it is not necessarily higher survival rates which lead to a growing SME sector in terms of employment.

Policies focusing on the expansion of the *small and medium-sized business* segment may have a stronger employment impact. However that enterprise segment seems to be more sensitive to framework conditions. Good *governance frameworks* are obviously an even more important locational factor for small and medium-sized enterprises than for microenterprises. Furthermore, small and medium-sized enterprises thrive better in more urbanized regions and require *good accessibility* conditions, which make policy strategies promoting a medium-sized segment more challenging for rural areas.

Particular sectors may require different framework conditions and ecosystems to flourish. For example, the knowledge and creative industries are obviously mainly driven by good regional accessibility and high regional research and innovation activity. For the ICT sector, the

regional education level is more important as a driver than accessibility or the regional research and innovation environment. This certainly means that regional policies need to be strategically adapted to the sector in question, and more importantly that policy should pick focus sectors whose requirements in terms of ecosystem match as far as possible the prevalent conditions of a region.

4.3 Setting up a draft regional typology

As a basis for the selection of case study regions a draft SME typology covering the ESPON space was created by clustering regions based on context indicators identified as relevant for displaying different development conditions for SME. The clusters of regions combined with information on status and development of SME, as well as the relevance of the three sectors ICT, knowledge and creative economy as well as low-carbon (carbon-intensive) economy formed the quantitative basis for the selection of 10 case study regions well as for the typology to be developed and interpreted backed by the hypotheses on dynamics/drivers.

A first draft regional typology was set up using a cluster analysis with the hierarchical ward algorithm and squared Euclidean distance to form groups of regions (clusters). In a first run for the draft interim report, a cluster analysis with a combination of territorial context indicators and SME performance indicators was conducted. The result was a clustering which was hard to interpret and which led to many regions being excluded due to adding up of data gaps in the different datasets. In a second run it was decided to only include variables of territorial context into the cluster analysis, due to two reasons:

- According to the ToR the to be developed regional typology shall deal with different types of regions, in particular urban vs. rural and core vs. peripheral regions and it shall be identified how SME development could best be supported in different types of regions/territories – this refers to the territorial context of regions.
- Secondly, the interpretability of clusters is improved and better data availability leads to a higher territorial coverage of possible case study regions.

First the set of input variables was determined by testing for correlations between components from PCA and additional variables.

After eliminating highly correlated variables, the following set of variables was used for the cluster analysis:

- Component1_Status_Landscape_Urban_rural_metro2
- Component2_Status_Accessibility2
- Component3_Status_Unemployment_Selfemployment2
- Component5_Status_Labour_Market_pop_density2
- Component7_Status_Gov_quality_finance_cluster_rci
- pop_tertiary_educ_pct_2014
- Total_patents_mioinhab_2012
- GDP_PPS_capita_2014
- RCI_2016_Gender_balance_employment
- RCI_2016_Innovative_SME_collaborating

Table 4.15: Testing of correlations (PEARSON) between the five components coming from PCA as well as the additional variables to be used in the cluster analysis

		Component1_Status_Landscape_Urban_rural_metro2	Component2_Status_Accessibility2	Component3_Status_Unemployment_Selfemployment2	Component5_Status_Labour_Market_pop_density2	Component7_Status_Gov_quality_finance_cluster_rci	pop_tertiary_educ_pct_2014	RCI_2016_Lifelong_learning	Total_patents_mioinhab_2012	GDP_PPS_capita_2014	dispos_income_euros_capita_2014	RCI_2016_Gender_balance_employment	RCI_2016_Innovative_SMEs_collaborating
Component1_Status_Landscape_Urban_rural_metro2	Korrelation nach Pearson	1	-,488	,206	-,396	-,256	-,183	-,131	-,257	-,344	-,200	,091	-,219
	Signifikanz (2-seitig)		,000	,000	,000	,000	,000	,000	,000	,000	,000	,001	,000
	N	1283	1215	1281	1262	1233	1277	1223	1279	1280	1251	1235	1210
Component2_Status_Accessibility2	Korrelation nach Pearson	-,488	1	-,534	,333	,600	-,014	,028	,519	,535	,589	-,173	,300
	Signifikanz (2-seitig)	,000		,000	,000	,000	,636	,347	,000	,000	,000	,000	,000
	N	1215	1215	1213	1215	1167	1211	1159	1214	1212	1185	1167	1144
Component3_Status_Unemployment_Selfemployment2	Korrelation nach Pearson	,206	-,534	1	-,069	-,732	-,197	-,254	-,429	-,287	-,521	,439	-,287
	Signifikanz (2-seitig)	,000	,000		,008	,000	,000	,000	,000	,000	,000	,000	,000
	N	1281	1213	1477	1448	1338	1472	1327	1464	1394	1357	1340	1315
Component5_Status_Labour_Market_pop_density2	Korrelation nach Pearson	-,396	,333	-,069	1	,130	,297	,145	,085	,475	,212	,020	,261
	Signifikanz (2-seitig)	,000	,000	,008		,000	,000	,000	,001	,000	,000	,465	,000
	N	1262	1215	1448	1451	1318	1443	1307	1444	1366	1337	1320	1295
Component7_Status_Gov_quality_finance_cluster_rci	Korrelation nach Pearson	-,256	,600	-,732	,130	1	,226	,513	,475	,390	,778	-,540	,554
	Signifikanz (2-seitig)	,000	,000	,000	,000		,000	,000	,000	,000	,000	,000	,000
	N	1233	1167	1338	1318	1339	1334	1326	1335	1339	1336	1339	1314
pop_tertiary_educ_pct_2014	Korrelation nach Pearson	-,183	-,014	-,197	,297	,226	1	,565	,125	,271	,249	-,336	,507
	Signifikanz (2-seitig)	,000	,636	,000	,000	,000		,000	,000	,000	,000	,000	,000
	N	1277	1211	1472	1443	1334	1472	1324	1461	1389	1352	1336	1311
RCI_2016_Lifelong_learning	Korrelation nach Pearson	-,131	,028	-,254	,145	,513	,565	1	,095	,209	,471	-,543	,592
	Signifikanz (2-seitig)	,000	,347	,000	,000	,000	,000		,001	,000	,000	,000	,000
	N	1223	1159	1327	1307	1326	1324	1328	1328	1328	1325	1328	1303
Total_patents_mioinhab_2012	Korrelation nach Pearson	-,257	,519	-,429	,085	,475	,125	,095	1	,383	,490	-,162	,079
	Signifikanz (2-seitig)	,000	,000	,000	,001	,000	,000	,001		,000	,000	,000	,004
	N	1279	1214	1464	1444	1335	1461	1328	1465	1382	1353	1337	1312
GDP_PPS_capita_2014	Korrelation nach Pearson	-,344	,535	-,287	,475	,390	,271	,209	,383	1	,547	-,107	,231
	Signifikanz (2-seitig)	,000	,000	,000	,000	,000	,000	,000	,000		,000	,000	,000
	N	1280	1212	1394	1366	1339	1389	1328	1382	1395	1358	1341	1316
dispos_income_euros_capita_2014	Korrelation nach Pearson	-,200	,589	-,521	,212	,778	,249	,471	,490	,547	1	-,379	,496
	Signifikanz (2-seitig)	,000	,000	,000	,000	,000	,000	,000	,000	,000		,000	,000
	N	1251	1185	1357	1337	1336	1352	1325	1353	1358	1358	1338	1316
RCI_2016_Gender_balance_employment	Korrelation nach Pearson	,091	-,173	,439	,020	-,540	-,336	-,543	-,162	-,107	-,379	1	-,394
	Signifikanz (2-seitig)	,001	,000	,000	,465	,000	,000	,000	,000	,000	,000		,000
	N	1235	1167	1340	1320	1339	1336	1328	1337	1341	1338	1341	1316
RCI_2016_Innovative_SMEs_collaborating	Korrelation nach Pearson	-,219	,300	-,287	,261	,554	,507	,592	,079	,231	,496	-,394	1
	Signifikanz (2-seitig)	,000	,000	,000	,000	,000	,000	,000	,004	,000	,000	,000	
	N	1210	1144	1315	1295	1314	1311	1303	1312	1316	1316	1316	1316

The task of a cluster analysis is to generate groups of cases that are relatively homogeneous within and heterogeneous in relation to other clusters. On the basis of five components and an additional five single variables defining the status of relevant context indicators in the most recent year across a geographical coverage of 32 + EU candidate and Western Balkan countries, five clusters and therefore types of regions were identified for further analysis. The decision for five groups was made after comparing with various other cluster solutions and being judged the best solution to allow plentiful scope for interpretation and allowing for the differentiation of regions (NUTS 3). Thanks to comprehensive data gathering exercise and following data imputations (described in chapter 2), out of 1492 NUTS 3 regions 1380 could be related to a cluster, which means that only 112 regions are missing due to data gaps in territorial context data (7.5%).

Table 4.16: Clusters of regions described by context indicators

	Cluster D	**Cluster C**	**Cluster B**	**Cluster A**	**Cluster E**
N	**411**	**507**	**152**	**62**	**243**
	1. Status landscape				
Share urban regions	22%	30%	43%	61%	5%
Share intermediate regions	38%	41%	43%	27%	30%
Share rural regions	40%	30%	14%	11%	65%
Share metro regions	37%	41%	58%	77%	15%
	2. Status accessibility				
Median potential accessibility by road	92	137	152	182	33
Median potential accessibility by rail	92	133	151	170	26

N	Cluster D 411	Cluster C 507	Cluster B 152	Cluster A 62	Cluster E 243
Median potential accessibility by air	82	100	115	142	57
Median access to high-level passenger transport infrastructure.	20	16	12	8	31
	3. Status unemployment self-employment				
Median share of self-employed persons (%)	13	12	12	10	17
Median unemployment rate (%)	9	6	5	4	11
	4. Status regional income, purchasing power				
Median GDP PPS per inhabitant, €	20,900	28,115	37,950	56,729	13,344
Median GVA, € 1,000/capita	20	27	37	54	7
Median disposable income, net – Euro per inhabitant	17,200	19,900	21,150	21,600	6,200
	5. Status labour market, population density				
Median employed persons/km²	46	80	254	1052	24
Median population density inhab/km²	117	181	479	1376	67
	6. Status knowledge and innovation				
Median patent applications	27	96	178	228	4
Median RCI_2016_Innovative_SME_collaborating	10.40	10.70	11.00	11.00	14.20
Median RCI_2016_Gender_balance_employment	0.36	0.38	0.44	0.36	0.14
	7. Status governance quality				
Median ease of access to loans, 1-7 (best)	2.7	3.3	3.3	3.3	2.6
Median burden of government regulation, 1-7 (best)	3.0	3.6	3.6	3.6	2.9
Median government effectiveness -2.5 (weak) to 2.5 (strong)	1.4	1.7	1.7	1.7	0.5
Median effect of taxation on incentives to invest, 1-7 (best)	3.3	4.1	4.1	4.1	2.9
Median extent of market dominance, 1-7 (best)	5.0	5.3	5.7	5.7	3.9
Median state of cluster development, 1-7 (best)	5.2	5.3	5.4	5.5	3.5
Median RCI_2016_Corruption	0.6	0.8	0.8	0.8	-1.1
Median RCI_2016_Quality_gov_services	0.3	0.8	0.8	0.9	-1.1
Median RCI_2016_Impartiality_gov_services	0.4	0.9	0.9	0.9	-1.2
	Education and lifelong learning				
Median pop tertiary educ 2014	34	37	39	37	30
Median RCI_2016_Lifelong_learning	9.50	8.30	8.90	8.05	3.20
	SME performance indicators				
Median empl share of SME recent	86%	79%	68%	58%	88%
Median empl share of micro recent	39%	21%	15%	12%	45%
Median empl share of small&medium recent	45%	52%	50%	45%	35%
Median empl share of SME first	87%	80%	69%	58%	87%
Median empl share of micro first	37%	23%	16%	13%	45%
Median empl share of small&medium first	47%	52%	50%	45%	36%
Median annual change SME 2008-14	101%	101%	101%	101%	99%
Median annual change micro 2008-14	100%	100%	101%	101%	101%
Median annual change small&medium 2008-14	100%	101%	101%	102%	98%
Median birth_rate_last	10.1	11.3	12.8	14.1	8.5
Median death_rate_last	9.6	9.9	11.4	12.5	9.0

N	Cluster D 411	Cluster C 507	Cluster B 152	Cluster A 62	Cluster E 243
Median net_rate_last	0.9	1.2	1.6	2.1	0.0
Median birth_rate_first	10.4	13.9	15.3	15.8	9.9
Median death_rate_first	9.8	11.4	12.2	13.3	9.9
Median net_rate_first	0.8	1.9	2.7	2.9	0.2
Median annual_birth_rate_change	-6%	-20%	-20%	-19%	-15%
Median annual_net_rate_change	1%	-16%	-17%	-14%	0%

Source: Project team

The five identified regional types can be differentiated and described on the basis of different manifestations of context and SME performance indicators (see Table 4.16). The characteristics of the clustered regions show a clear ranking of regional types regarding their socioeconomic and innovation performance, level of accessibility and territorial typology.

The following description of clusters follows the identified 'ranking', going from the highest performing type to the 'least performing'.

Cluster A

Cluster A (N=62) represents urban, best performing regions in terms of accessibility, GDP, employment, innovation, and governance quality. Regions of this cluster have the lowest share of employment in SMEs and microenterprises but the highest enterprise birth and death rates of all region types.

Cluster B

Cluster 3 (N=152) represents urban and intermediate still very well performing regions in terms of accessibility, GDP, employment, innovation and governance quality, and best education status. Regions of this cluster have the second lowest share of employment in SMEs and microenterprises and second highest birth and death rates of all region types.

Cluster C

Cluster 2 (N=507) is the biggest group of regions in the analysis. It equally entails all types of regions (rural-intermediate-urban) and shows average performance in all context indicators analysed. The highest share of employment in small and medium-sized enterprises (excluding micros) and medium birth and death rates can be found in this cluster.

Cluster D

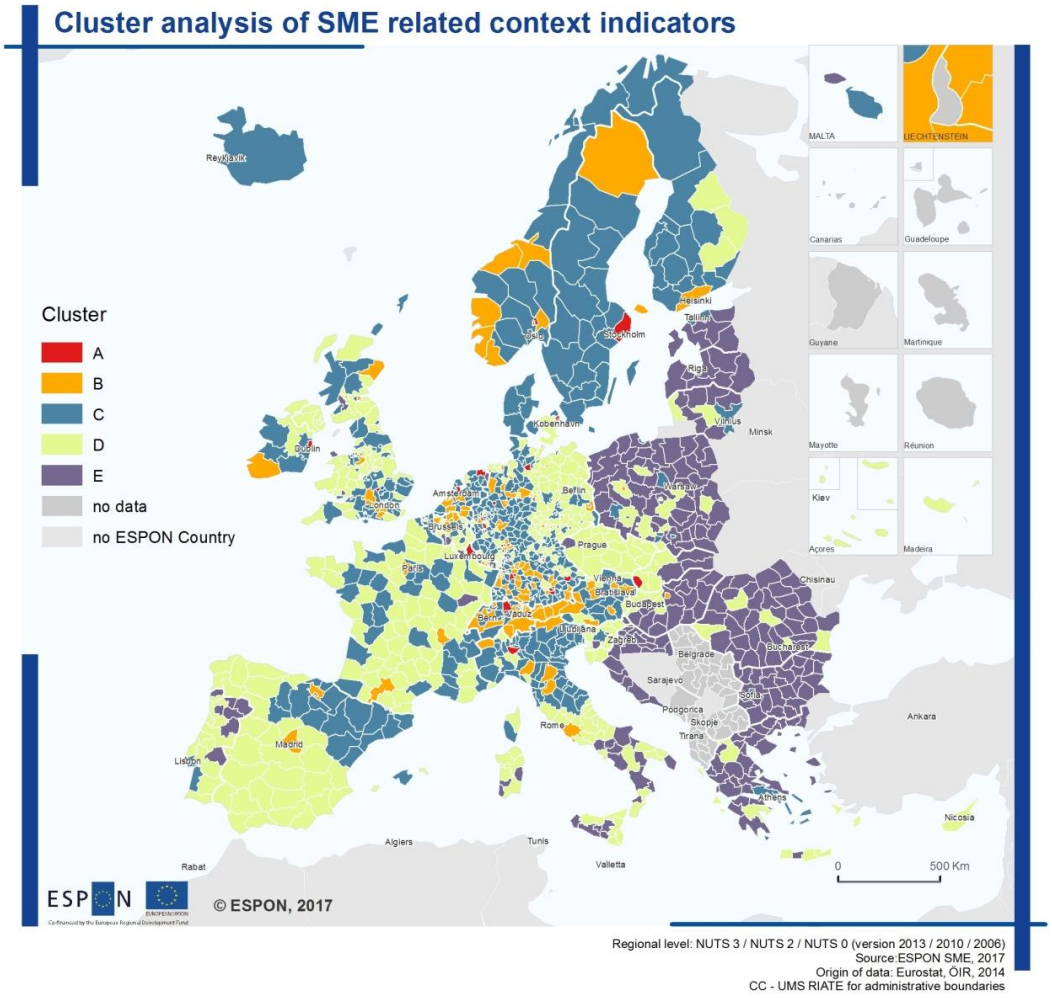
Cluster 1 (N=411) represents rather rural and intermediate regions with low performance in all context indicators analysed. This cluster shows a high share of SMEs and micros, but low enterprise birth and death rates.

Cluster E

Cluster 5 (N=243) to a high degree represents rural regions with the lowest performance in all context indicators analysed. They represent the weakest regions in terms of accessibility, economy, etc. and can therefore be labelled as regions with disadvantages. These regions

show the highest share of employment in SMEs and microenterprises, but the lowest enterprise birth and death rates.

Map 4.1: Draft regional typology based on cluster analysis of context indicators



4.4 Selection of case study regions

In our case, the unit of analysis was defined as a type of region according to similarities related to territorial context indicators which were defined in the statistical analyses. For each cluster, the relative 'best performing' regions were identified by assessing their features in terms of employment in SMEs, focus on the knowledge and creative economy (KC), ICT, or low-carbon (LC) sectors, and birth and survival rates of enterprises. The methodological approach taken was to generate a ranking of all elements (i.e. NUTS 3 regions) within each cluster, based on an overall score for 'SME performance' consisting of individual scores of SME performance indicators (see below).

Table 4.18 presents the selection criteria of regions for the case studies. For each cluster, two regions (R1, R2) have been selected based on SME performance, which is mainly seen if:

- the annual change rate of microenterprises or small and medium-sized enterprises is high, especially compared to the annual change rate of total employment;

- the sectors knowledge and creative economy (KC), ICT or low carbon (LC) have prominent shares within the region;
- a comparably high birth and annual net change (enterprise births – enterprise deaths) and a 'good' survival rate of new enterprises (if available) is evident.

However, there are some trade-offs to be considered, as not all regions have high shares for all indicators named above. Thus, apart from selecting two regions per cluster, for most regions, there is an alternative given (A1 as alternative to Region 1; A2a-d as alternative to Region 2). Only one region per country was selected as a case study region in order to safeguard comprehensive geographical coverage. Only two polish regions could be either selected as in Cluster 4 or in Cluster 5.

The dataset of SME performance indicators is quite fragmented for some important variables. Thus, we decided not to use a multi-criteria analysis as basis for case study selection which would have excluded several important countries, e.g. Spain, where only data on micros is available. Instead we used a method of factor weighting including the following SME performance factors (Table 4.17):

Table 4.17: Weighting of SME performance factors for case study selection

SME performance factor	**Weight (total = 100)**
Employment share of SMEs; most recent year	5
Employment share of micro; most recent year	5
Annual change micro employment 2008-14	20
Annual change small and medium employment 2008-14	20
Annual change employment total 2008-14	5
Annual_net_rate_change (enterprise births – deaths)	8
Survial_rate_t3_total	10
Share of KC employment, 2014	9
Share of ICT employment, 2014	9
Share of LC employment, 2014	9

Source: Project team

Table 4.18: Selection of NUTS 3 regions per cluster for the case studies, based on 'SME performance'

Cluster	Selection	MS	NUTS 3	SME performance indicators	empl share of SME recent	empl share of micro recent	annual change SME 2008-14	annual change micro 2008-14	annual change small&medium 2008-14	annual change empl total 2008-14	birth_rate_last	annual_net_rate_change	survial_rate_t3_total	Share of KC employment 2014	Share of ICT employment 2014	Share of LC employment 2014
Cluster D																
1	C1_R1	ES	ES620	Murcia	:	0.51	.	1.10	.	0.86	11.18	0.88	51.37	0.11	0.01	0.08
1	C1_A1	RO	RO424	Timiş	0.68	0.27	1.00	1.02	0.99	0.92	11.61	-3.34	47.93	0.24	0.06	0.09
1	C1_R2	LT	LT002	Kauno apskritis	0.80	0.20	1.01	1.03	1.01	0.98	9.90	-0.87	80.50	0.06	0.03	0.14
1	C1_A2	LT	LT003	Klaipėdos apskritis	0.83	0.23	1.02	1.02	1.01	1.00	8.91	-1.20	76.38	0.06	0.03	0.14
Cluster C																
2	C2_R1	FR	FR511	Loire-Atlantique	0.83	0.34	1.02	1.03	1.02	1.05	9.73	0.51	.	0.12	0.03	0.08
2	C2_R2	SE	SE232	Västra Götalands län	0.77	0.19	1.01	1.02	1.01	1.02	8.03	n.a.	.	0.18	0.05	0.12
2	C2_A2a	FR	FR106	Seine-Saint-Denis	0.72	0.24	1.04	1.04	1.04	1.04	12.40	0.80	.	0.18	0.09	0.08
2	C2_A2b	SE	SE231	Hallands län	0.77	0.19	1.01	1.02	1.01	1.05	7.98	n.a.	.	0.18	0.05	0.12
Cluster B																
3	C3_R1	DE	DE21J	Pfaffenhofen a. d. Ilm	0.74	0.19	1.03	1.02	1.04	1.16	17.76	0.06	.	0.20	0.08	0.08
3	C3_A1	DE	DEB3J	Mainz-Bingen	0.71	0.23	1.03	1.01	1.03	1.11	15.82	-0.64	.	0.24	0.03	0.11
3	C3_R1	AT	AT221	Graz	0.77	0.35	1.01	1.02	1.00	1.05	8.48	-0.33	63.47	0.15	0.04	0.11
3	C3_A2	DE	DE949	Emsland	0.72	0.15		1.01	1.03	1.11	15.63	-0.51	.	0.16	0.01	0.07
Cluster A																
4	C4_R1	IT	ITC4C	Milano	0.79	0.28	1.01	0.99	1.02	0.99	7.90	-0.18	55.03	0.14	0.05	0.07
4	C4_R2	SK	SK010	Bratislavský kraj	:	0.23	.	1.06	.	0.98	18.84	-0.08	52.82	0.12	0.08	0.10
4	C4_A2a	DK	DK011	Byen København	0.55	0.17	1.02	1.00	1.04	1.03	14.23	-0.44	52.60	0.16	0.10	0.13
4	C4_A2b	PL	PL127	Miasto Warszawa	0.65	0.24	1.01	1.02	1.01	1.00	9.03	0.48	.	0.10	0.05	0.15

Cluster	Selection	MS	NUTS 3	SME performance indicators	empl share of SME recent	empl share of micro recent	annual change SME 2008-14	annual change micro 2008-14	annual change small&medium 2008-14	annual change empl total 2008-14	birth_rate_last	annual_net_rate_change	survial_rate_t3_total	Share of KC employment 2014	Share of ICT employment 2014	Share of LC employment 2014
Cluster E																
5	C5_R1	PT	PT11D	Douro	0.97	0.76	1.03	1.05	0.97	0.92	12.73	n.a.	.	0.09	0.02	0.06
5	C5_R2	PL	PL12D	Ostrołęcki	0.65	0.24	1.01	1.02	1.01	0.97	8.94	1.25	.	0.10	0.05	0.15
5	C5_A2a	PL	PL12B	Ciechanowski	0.65	0.24	1.01	1.02	1.01	0.93	9.68	0.54	.	0.10	0.05	0.15
5	C5_A2b	HR	HR046	Međimurska županija	0.88	0.28	1.01	1.03	1.00	0.92	8.00	0.88	62.26	0.10	0.04	0.11
5	C5_A2c	HR	HR034	Šibensko-kninska županija	0.94	0.50	1.01	1.04	0.99	0.95	7.40	3.06	43.26	0.09	0.02	0.09
5	C5_A2d	HR	HR035	Splitsko-dalmatinska županija	0.85	0.42	1.01	1.03	1.00	0.86	7.15	0.83	51.20	0.09	0.02	0.09

The case study regions selected (see below) are relatively successful regions within a certain cluster. These where identified through indicators as defined by the literature review and somewhat compromised by their availability in databases. Concretely, the selection framework used the following criteria:

- balance between rural and urban areas;
- geographical division throughout the studied area;
- best performer according to the performance indicators;
- coverage of the focus sectors (knowledge and creative industry, ICT, low-carbon economy).

Within each of the five clusters, the top two NUTS 3 regions were selected, except in one case where ESPON had a special preference. One of the problems of the cluster analysis was that some indicators were only available on the NUTS 2 level, thus making the analysis on the NUTS 3 level somewhat less reliable.

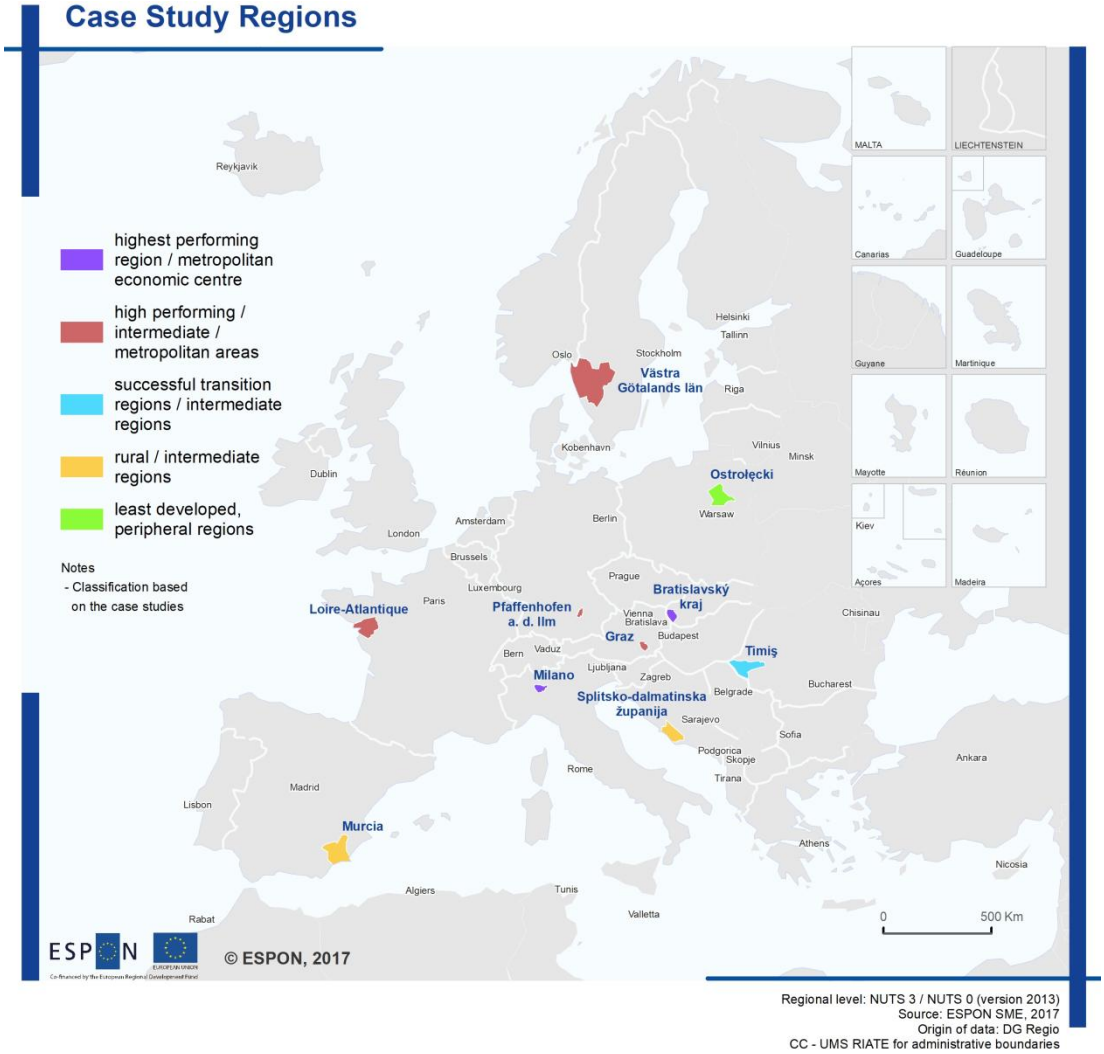
The final decision on the case study regions was agreed with ESPON EGTC as follows. Although a range of context indicators were included in the analysis, we can interpret the clusters running from city regions (Cluster A) all the way to rural regions (Cluster E). Thus, the economic and structural indicators were dominant in forming the clusters – also because other variables like governance etc. were only available on the NUTS 2 level.

Table 4.19: The selected case study regions

Type of region (cluster)	**Description of region type**	**Member State**	**Name of the 10 selected NUTS 3 regions**
Urban region (cluster A)	High density, highly accessible regions	IT	Milano
		SK	Bratislavský kraj
Intermediate region (cluster B)	Cities and agglomerations performing above average	AT	Graz
		DE	Pfaffenhofen a. d. Ilm
Urban region (Cluster C)	Economically successful cities and regions	SE	Västra Götaland
		FR	Loire-Atlantique
Urban region in Cluster D	Rural and intermediate regions with lower accessibility and economic performance	ES	Murcia
Intermediate region in Cluster D		RO	Timiş
Rural region (Cluster E)	Rural or peripheral regions with disadvantages regarding accessibility and economy	HR	Split-Dalmatia County
		PL	Ostrołęcki

Note: Please note that the slight variation of regions in cluster D (urban and intermediate region) was done intentionally in agreement with ESPON EGTC.

Map 4.2: Case study regions selected by territorial type



4.5 Setting up the final regional typology

After testing the quantitative results of PCA, regression analysis, and cluster analysis in the field by conducting case studies and two internal workshops, a final regional typology regarding SME context and performance was created. The preliminary findings in terms of SME development opportunities and obstacles have been comprehensively analysed to finally develop a typology of SME regions which combines factors of territorial context from the cluster analysis as well as SME status and development and sectoral focus.

The regional typology was created by using a pattern analysis combining the three elements SME performance, sectoral focus, and territorial type. Therefore, in the pattern analysis, the five clusters of regions based on territorial context were further broken down into similar regions in terms of SME performance and sectoral specialization. The assignment of a region to a certain type was based on the below average, average, or above average performance in terms of share of employment in SMEs, development of employment in SMEs, and share of employment in the different economic sectors.

This exercise led to the identification of 13 types listed below and with the NUTS 3 regions belonging to the types shown in Table 4.20:

- SME performance type (3 classes, descending in their SME performance):
- above-average share of employment in large enterprises (250+)
- above-average share of employment in S&M (10-249)
- above-average share of employment in microenterprises (1-9).

- Sectoral focus (5 classes):
- knowledge economy and ICT (industry, services)
- services/tourism
- industry
- agriculture
- regions with diverse sectoral foci.

- Territorial type (5 classes, descending in their territorial endowment):
- urban and metropolitan economic centers
- high performing intermediate and metropolitan areas
- avg. performing rural, intermediate and urban regions
- rural and intermediate regions with low performance
- least developed, peripheral regions.

Table 4.20: Final SME typology combining three elements

SME Performance type	Sectoral Focus	Territorial Type	NUTS 3 Regions
1. Above average share of employment in large enterprises (250+)	Knowledge economy and ICT (industry, services)	Urban/metropolitan economic centres	BE100 CH031 CZ010 DE111 DE112 DE125 DE126 DE211 DE212 DE22C DE231 DE232 DE243 DE252 DE262 DE600 DE711 DE712 DE912 DE913 DE942 DEA11 DEA22 DEA23 DEA33 DEB34 FR105 IE021 NO011 PL127
		Top performing intermediate/ metropolitan areas	BE211 BE212 BE213 BE221 BE234 BE235 BE236 BE241 BE242 BE310 BG411 CH021 CH023 CH024 CH032 CH033 DE113 DE114 DE115 DE116 DE118 DE119 DE11A DE11B DE11C DE11D DE123 DE124 DE127 DE128 DE129 DE12A DE12B DE12C DE131 DE132 DE133 DE134 DE135 DE136 DE137 DE138 DE139 DE13A DE141 DE142 DE143 DE145 DE146 DE147 DE148 DE149 DE213 DE214 DE215 DE216 DE218 DE219 DE21A DE21B DE21D DE21E DE21F DE21G DE21I DE21J DE21K DE21L DE21M DE21N DE223 DE224 DE226 DE227 DE235 DE236 DE237 DE239 DE23A DE244 DE249 DE24A DE24B DE24C DE24D DE253 DE255 DE256 DE257 DE259 DE25A DE25B DE25C DE264 DE265 DE266 DE267 DE268 DE269 DE26A DE271 DE272 DE276 DE277 DE278 DE279 DE27A DE27C DE27D DE27E DE300 DE501 DE502 DE713 DE715 DE716 DE717 DE718 DE719 DE71A DE71C DE71E DE731 DE732 DE733 DE734 DE735 DE736 DE737 DE943 DE944 DE945 DE946 DE948 DE949 DE94B DE94C DE94E DE94F DEA12 DEA13 DEA14 DEA15 DEA17 DEA18 DEA19 DEA1A DEA1B DEA1C DEA1D DEA1E DEA1F DEA24 DEA26 DEA27 DEA28 DEA2A DEA2C DEA2D DEA32 DEA34 DEA35 DEA36 DEA37 DEA38 DEA41 DEA42 DEA43 DEA44 DEA45 DEA46 DEA47 DEA51 DEA52 DEA53 DEA54 DEA56 DEA57 DEA58 DEA59 DEA5A DEA5B DEA5C DEB31 DEB32 DEB33 DEB36 DEB37 DEB38 DEB39 DEB3A DEB3E DEB3J DEC01 DEC02 DEC04 DEC05 DED21 DED2D DED41 DED45 DED51 DEG01 DEG02 DEG03 DEG04 DEG05 DEG0H DEG0K DEG0N ES243 ES300 FI1B1 FI1C5 FR103 FR106 FR718 ITH54 ITI43 NO012 PL22A PL22C PL514 PT170 RO321

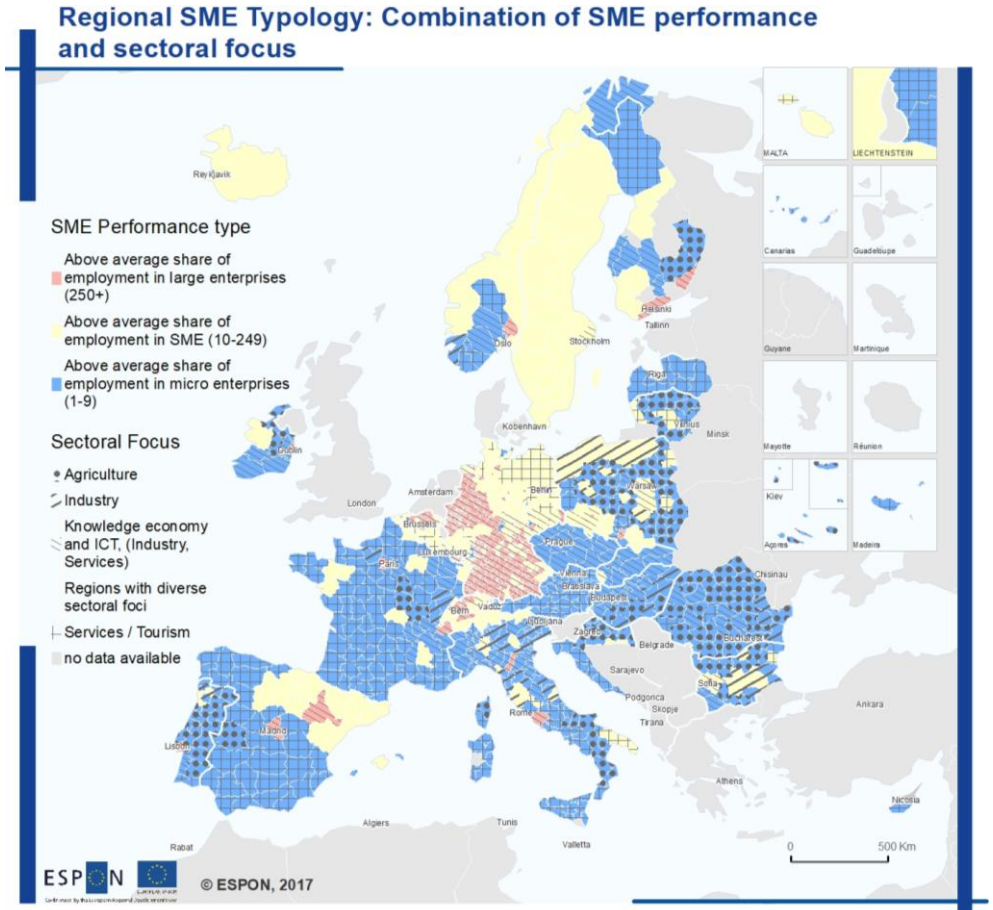
SME Performance type	Sectoral Focus	Territorial Type	NUTS 3 Regions
2. Above average share of employment in S&M (10-249)	Knowledge economy and ICT (industry, services)	Urban/metropolitan economic centres	CH013 CH040 CH066 DE117 DE121 DE122 DE144 DE21H DE221 DE222 DE233 DE241 DE242 DE251 DE254 DE261 DE263 DE273 DE274 DE714 DEA16 DEA55 DEB11 DEB35 FR101 ITC4C LU000 SE110 SK010
		Intermediate/ metropolitan areas with structural problems	BE222 BE223 BE231 BE232 BE233 BG412 DE217 DE21C DE225 DE22B DE234 DE238 DE245 DE246 DE247 DE248 DE258 DE26B DE26C DE275 DE71B DE71D DE941 DE947 DE94A DE94D DE94H DEA29 DEA2B DEA31 DEB3D DEB3F DEB3H DEB3I DEB3K DEC03 DED2C DED2E DED2F DED42 DED43 DED44 DED52 DED53 DEG06 DEG07 DEG09 DEG0A DEG0B DEG0C DEG0D DEG0E DEG0F DEG0G DEG0I DEG0J DEG0L PL128 PL129 PL12A PL515 PL517 PL518
	Services/tourism	Intermediate/ metropolitan areas with structural problems	BE252 BE321 BE322 BE323 BE325 BE326 BE331 BE334 BE341 BE342 BE344 BE345 BE351 BE353 BG331 DE405 DE407 DE408 DE409 DE40A DE40B DE40C DE40D DE40E DE40F DE40I DE80J DE80K DE80L DE80M DE80N DE80O DE928 DE932 DE933 DE934 DE935 DE936 DE93A DEB12 DEB13 DEB1A DEB25 DEF06 DEF08 DEF0C ITF43 ITF44 ITF45 ITF47 ITI22 LT002 LT003 MT002 PL314 PL343
	Regions with diverse sectoral foci	Top performing intermediate/ metropolitan areas	AT112 BE251 BE253 BE254 BE255 BE256 BE258 BE324 BE327 BE332 BE343 BE352 CH011 CH012 CH051 CH052 CH054 CH055 CH056 CH057 CH061 CH062 CH063 CH064 CH065 CH070 DE401 DE402 DE403 DE404 DE406 DE40G DE40H DE721 DE722 DE723 DE724 DE725 DE803 DE804 DE911 DE915 DE916 DE918 DE919 DE922 DE923 DE925 DE926 DE927 DE929 DE931 DE937 DE938 DE939 DE93B DEB14 DEB15 DEB16 DEB17 DEB18 DEB19 DEB1B DEB21 DEB22 DEB23 DEB24 DEC06 DEE02 DEE03 DEE05 DEE07 DEE0B DEF01 DEF02 DEF03 DEF04 DEF05 DEF09 DEF0B DEF0D DEF0E DEF0F ES212 ES213 ES511 ES512 FR213 FR301 FR421 FR511 FR513 FR523 ITC4D ITH10 ITH31 PL213 PL415
		Badly accessible rural/intermediate regions	CH022 CH025 DE228 DE229 DE22A DE27B DE914 DE917 DE91A DE91B DE94G DEE04 DEE08 DEE09 DEE0A DEE0C DEE0D DEE0E DEF07 ES211 ES220 ES230 ES241 ES242 ES412 ES414 ES417 ES418 ES513 ES514 ES522 ES532 ES708 FI196 FI197 FI1C1 FI1D6 FR713 FR721 HR04A IE013 IS002 ITI19 MT001 NO021 NO031 NO033 NO051 NO052 NO053 NO061 NO062 NO071 NO072 PL113 PL114 PL214 PL218 PL219 PL21A PL516 PL523 PL524 PL633 PT11A SE121 SE122 SE123 SE124 SE125 SE211 SE212 SE213 SE214 SE221 SE224 SE231 SE232 SE311 SE312 SE313 SE321 SE322 SE331 SE332
	Industry	Badly accessible rural/intermediate regions	BG322 BG323 BG342 BG343 BG344 BG421 DEE06 ITC48 ITI11 ITI1A ITI34 ITI35 PL331 PL418 PL424 PL426 PL427 PL428 PL613 PL621 PL622 PL623 PL634 PL636 PL637 PL638 PT119
3. Above average share of employment in microenterprises (1-9)	Knowledge economy and ICT (industry, services)	Well performing intermediate/ metropolitan areas	AT130 AT311 AT312 AT314 AT315 FI193 FI194 FI195 FI1C3 FR102 FR104 FR107 FR108 FR411 FR714 FR716 FR717 HU101 NO032 NO034
		Badly accessible rural/intermediate regions	AT313 BG413 BG414 BG415 CZ020 CZ031 CZ032 CZ041 CZ042 CZ051 CZ052 CZ053 CZ063 CZ064 CZ071 CZ072 CZ080 DEB3B DEB3C DEB3G FR412 FR413 FR414 FR711 FR712 FR715 HU102 HU211 HU212 HU213 HU221 HU222 HU223 HU311 HU312 HU313 RO111 RO113 RO122 RO311 RO316 RO322 RO423 SK021 SK022 SK023 SK031 SK032 SK041 SK042
		Intermediate/ metropolitan areas with structural problems	BE257 IE022 IE023 IE024 IE025 ITC11 ITC12 ITC13 ITC15 ITC16 ITC18 ITC20 ITC32 ITC33 ITC34 ITH20 ITH51 ITH52 ITH53 ITH55 ITH56 ITH57 ITH58 ITH59 ITI21 NO073 PL12C PT181
	Services/tourism	Well performing intermediate/	AT121 AT122 AT123 AT124 AT126 AT127 AT211 AT213 AT221 AT222 AT223 AT224 AT225 AT226

SME Performance type	Sectoral Focus	Territorial Type	NUTS 3 Regions
		metropolitan areas	AT321 AT322 AT323 AT331 AT332 AT333 AT334 AT335 AT341 AT342 CH053 FI1D7 FR212 FR232 FR244 FR246 FR251 FR261 FR514 FR531 FR533 FR534 FR612 FR615 FR623 FR724 FR813 FR823 FR824 FR826 FR831 IS001 ITI15 LT00A LV006 NO022 NO041 NO042
		Badly accessible rural/intermediate regions	DEF0A ES120 ES130 ES521 ES523 ES531 ES533 ES611 ES612 ES613 ES614 ES615 ES616 ES617 ES618 ES703 ES704 ES705 ES706 ES707 ES709 FR221 FR222 FR223 FR302 FR521 FR522 FR524 FR611 FR613 FR614 FR621 FR622 FR624 FR625 FR626 FR627 FR628 FR631 FR632 FR633 FR811 FR812 FR814 FR815 FR821 FR822 FR825
		Badly accessible rural/intermediate regions with high unemployment	AT113 AT125 AT212 BG332 ES111 ES112 ES113 ES114 ES411 ES413 ES415 ES416 ES419 ES421 ES422 ES423 ES424 ES425 ES431 ES620 FR211 FR214 FR241 FR242 FR243 FR245 FR252 FR253 FR422 FR512 FR515 FR532 FR722 FR723 HR031 HR032 HR033 HR034 HR035 HR036 HR037 ITF48 LV003 LV005 LV007 LV008 LV009
		Rural/intermediate regions with structural problems	CY000 DEG0M DEG0P ITC14 ITC17 ITC31 ITF11 ITF12 ITF13 ITF14 ITF31 ITF32 ITF33 ITF34 ITF35 ITF65 ITG11 ITG12 ITG13 ITG14 ITG15 ITG16 ITG17 ITG19 ITG25 ITG26 ITG27 ITG29 ITG2A ITG2B ITG2C ITI41 ITI42 ITI44 ITI45 PL224 PL225 PL227 PL228 PL229 PL22B PL431 PL432 PT150 PT300 RO126 RO424
	Industry	Badly accessible rural/intermediate regions	BG341 BG422 FR231 FR431 FR432 FR433 FR434 HR042 HU231 HU321 HU322 HU323 HU333 PT112 PT11B PT11C RO221 RO223 RO224
		Intermediate/metropolitan areas with structural problems	HR041 ITC41 ITC42 ITC43 ITC44 ITC46 ITC47 ITC49 ITC4A ITC4B ITH32 ITH33 ITH34 ITH35 ITH36 ITH37 ITH41 ITH42 ITH43 ITH44 ITI12 ITI13 ITI14 ITI16 ITI17 ITI18 ITI31 ITI32 ITI33 NO043
	Agriculture	Badly accessible rural/intermediate regions with high unemployment	AT111 BG325 ES432 FI1D1 FI1D3 FR262 FR263 FR264 FR832 HR043 HR045 HR046 HR047 HR048 HR049 HR04B HR04C HR04D HR04E HU232 HU233 HU331 HU332 IE011 IE012 PT111 PT11D PT11E PT16G PT16J RO112 RO114 RO115 RO116 RO121 RO123 RO124 RO125 RO211 RO212 RO213 RO214 RO215 RO216 RO222 RO225 RO226 RO312 RO313 RO314 RO315 RO317 RO411 RO412 RO413 RO414 RO415 RO421 RO422
		Rural regions with structural problems	BG311 BG312 BG313 BG314 BG315 BG321 BG324 BG333 BG334 BG423 BG424 BG425 HR044 ITF21 ITF22 ITF46 ITF51 ITF52 ITF61 ITF62 ITF63 ITF64 LT001 LT004 LT005 LT006 LT007 LT008 LT009 PL115 PL116 PL117 PL12B PL12D PL12E PL217 PL311 PL312 PL315 PL323 PL324 PL325 PL326 PL332 PL344 PL345 PL411 PL414 PL416 PL417 PL616 PL617 PL618 PL619 PT16B PT16D PT16E PT16F PT16H PT16I PT184 PT185 PT186 PT187 PT200

Terminology: micro = 1-9 employees; small and medium (S&M) enterprises = 10-249 employees, SME = 1-249 employees, large enterprises (L) = 250+ employees; Case study regions are marked yellow.

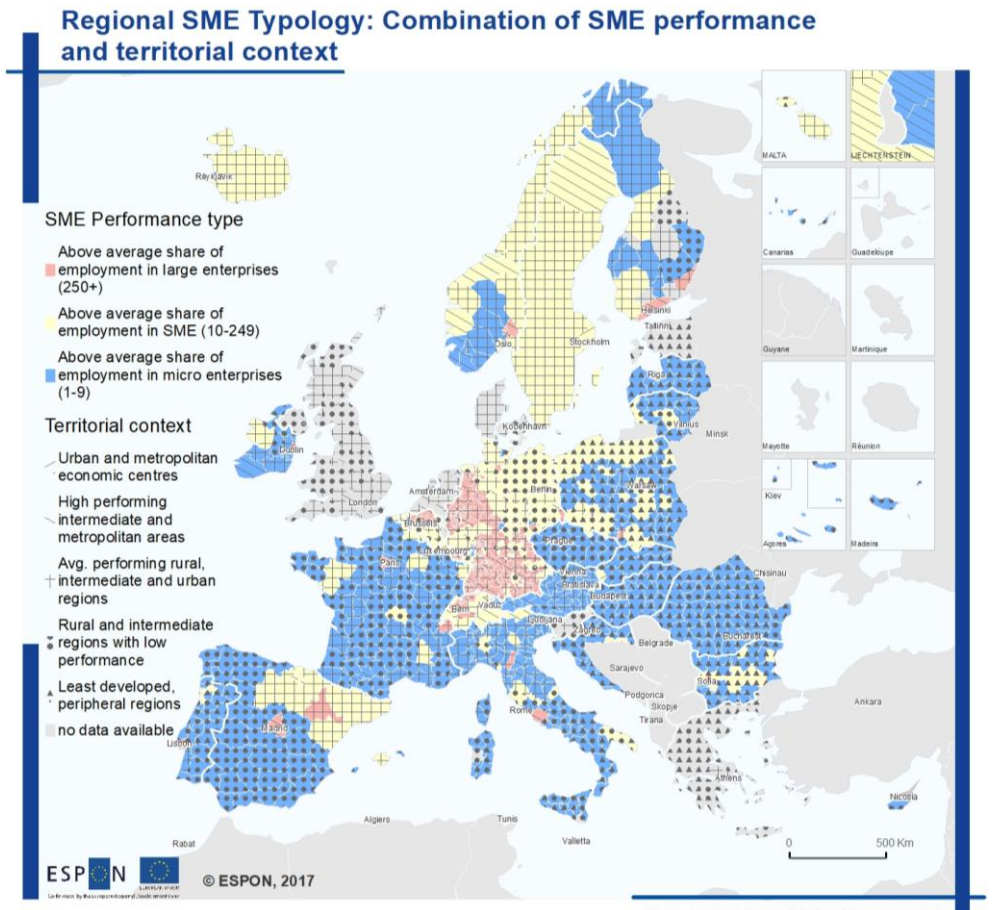
4.6 Final regional typology

Map 4.3: Final regional SME typology: SME performance and sectoral focus



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz
CC - UMS RIATE for administrative boundaries

Map 4.4: Final regional SME typology: SME performance and territorial context



Regional level: NUTS 3 / NUTS 2 / NUTS 0 (version 2013)
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee. Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz
CC - UMS RIATE for administrative boundaries

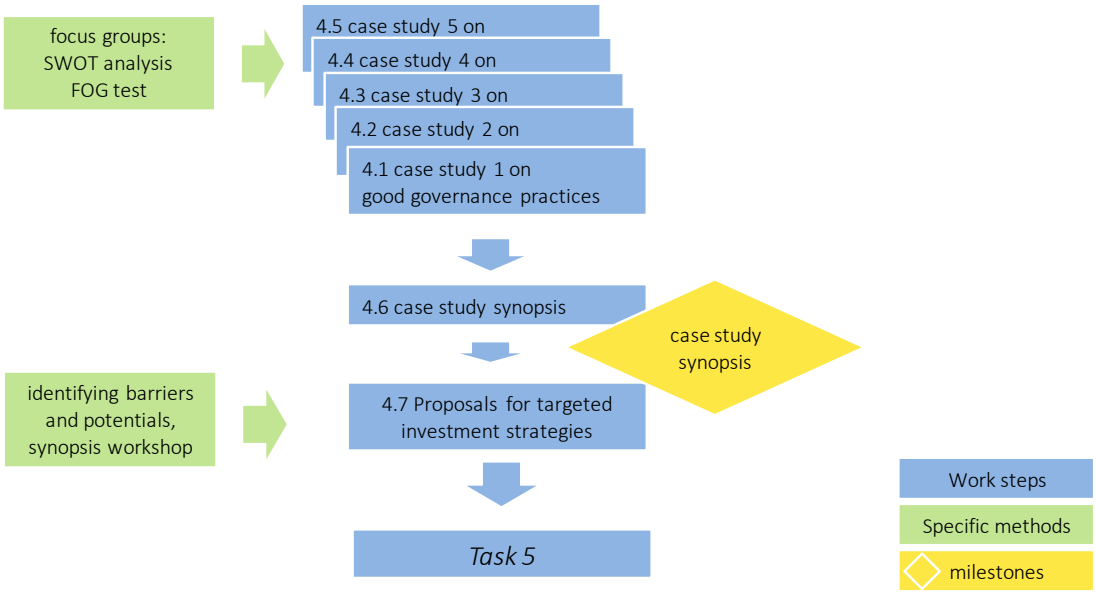
5 Synthesis of the case study analysis

This task builds on the analyses of the previous sections by using a case study approach to investigate in detail the status quo of the existing SME support structures having an impact on different types of regions. Hereby, the two main general foci of the case studies are:

- What are the development opportunities, drivers and the obstacles for SME in the case study region?
- What are the good governance practices for SME (at different levels) and proposals for targeted investment strategies (policies), drawing on the lessons from these regions?

The following work steps and methodologies were implemented to follow up on the objectives.

Figure 5.1: Work steps and related methodologies in Task 4



Source: Consortium, 2016.

5.1 Short summaries of case studies

This part presents short summaries of the case studies. For the detailed case study reports please refer to the individual case study reports (separate documents).

5.1.1 Milano Region (Italy)

The Metropolitan City of Milan (MCM) is located at the heart of northern Italy, within the wealthiest region of Italy, the Lombardy region. The area has a population of 3.2 million. The authority replaced the Province of Milan and includes the city of Milan (its capital) and other 133 municipalities. The MCM is at the centre of a bigger urban agglomeration home to seven million inhabitants. The area is the driver of the regional economy and one of the main economic hubs in Europe. The Metropolitan city's strong economic sectors include financial, commercial, and juridical services, marketing, manufacturing of machineries, and bio-tech. Furthermore, Milan is famous for its fashion and design businesses which are strongly linked to the textile and furniture clusters in the municipalities in the northwest and northern part of the region, outside the boundaries of the metropolitan city. The MCM is home to 36% of all

the active firms in Lombardy and to 52% of all the people employed in the region. It had recovered from the crisis already by 2011 (measures by value added) and has developed well over the last years.

Italian regions are highly autonomous and have strong competencies on spatial planning, transport planning, health, and education. The new MCM takes upon the same competences of the Provincia di Milan, plus the need to create and adopt a three-year territorial plan; territorial planning in general; coordinating the management of public services; mobility; promotion and coordination of socio-economic development; and promotion and coordination of IT and digital networks. The competences have been taken and partially overlap with the municipal level. Apart from Milan, the municipalities are small in size and large in numbers, which creates a patchwork of relatively autonomous areas. The recently established MCM, with the aim to improve coordination, has little competences to enforce cooperation between the municipalities. Although the Lombardy region has defined an overarching spatial strategy which is guidance for the lower tiers of government, it does not have the competences to implement this strategy. Furthermore, the coordinating role of the MCM is heavily undermined due to the dominance of the city of Milan and limited competences. At the moment, regionally coordinating efforts are pursued by more informal means of municipal cooperation. The introduction of the new MCM goes in the right direction to improve coordination, but at the moment lacks the means and the weight to do so. Following this, there are measures to support incubators and accelerators, a guarantee fund to ease access to finance for SMEs, etc., however other important initiatives (national support of innovative SMEs and of Industry 4.0) have not yet been implemented.

Of the three focus sectors, the knowledge and creative economy is by far the largest sector with 33.5% of all firms and 37% of the total number of employees, and is very much driven by the private sector. The low-carbon economy includes 16.3% of all firms and 11% of employed persons. The ICT sector accounts to 3.5% of all active firms in the MCM area and to 5.5% of its employees.

5.1.2 Bratislavský kraj (Slovakia)

The Bratislava region is the smallest region in Slovakia with around two thousand square kilometres and ranks sixth within eight NUTS 3 regions in Slovakia with 641,892 inhabitants in 2016. The region is the most developed in the country with constantly growing economic indicators, during the economic crisis mostly also due to the strong developments in the tertiary sector. The success of the Bratislava region is determined by the capital city of Slovakia – Bratislava – because of its geographical location, concentration of the majority of national institutions, universities, and higher education institutions, and foreign direct investments (in 2014 the share of FDI in the Bratislava region represented more than 65% of total FDI in Slovakia), as well as enterprises (share of SMEs in the Bratislava region in 2015 was more than 25% of total number of SMEs in Slovakia, the rest are divided among seven other regions). Almost 64% of all SMEs are self-employed entrepreneurs. SMEs provided jobs for close to

74% of the active labour force and contributed by 52.8% to the creation of added value. SMEs show growth in almost all relevant indicators – employment, added value, profits, and exports of goods.

The current SME support system is relatively complicated and fragmented; it includes a number of actors who deal with related support issues and are characterized by complex links. Even though the operational programmes 2007-13 were not directly aimed at supporting businesses, their focus helped to stimulate the internal resources of the regions by the development of downstream entrepreneurial activities (SMEs) while at the same time increasing the attractiveness of regions for foreign investment. The programming period 2014 -2020 is more focused on direct help to SMEs. Alongside the European Union's operational programs during the last two programming periods, there have been various initiatives for regional and SME development made over time. Some of them are national with spatial impact for the Bratislava region; some of them are linked with the activities of the regional authority.

The number of enterprises in the ICT sector has been constantly on the rise during the last eight years, and both the interview partners and the focus group within this case study see the highest potential for the ICT sector, also for the future. The advantage of the Bratislava region in comparison with the rest of the country is the presence of a relatively high number of medium-sized and also large transnational ICT companies. The ICT sector is closely interconnected with the creative economy. It is considered the base for the creative economy sector and thus makes it difficult to draw a clear division line between them. The creative milieu is considered to be strong in the Bratislava region although the public support for SME development is relatively fragmented. Here the presence of education and training institutions specialising on ICT skills and large lead companies helps significantly.

The low-carbon economy has not developed much over the last 8-10 years according to the statistics. According to the interview partners it has some potential in the Bratislava region, although local actors are cautious. The transition to a low-carbon economy is one of the priority areas of the region aiming at energy efficiency, use of renewable energy, and development of smart distribution systems, although, local actors emphasise the need for a cost-benefit rationality when thinking about options. The low-carbon economy as well as the primary and secondary sectors struggle with a lack of a qualified workforce. The vocational secondary schools are blamed for not being able to reflect the labour market needs; they are not preparing students to enter the labour market or to start their own business. Existing businesses do not innovate, mainly because the stimuli from the public or the private sector are not there and/or financial constraints.

5.1.3 Graz Region (Austria)

The NUTS 3 region Graz comprises two political districts, the City of Graz and Graz Umgebung ('Graz hinterland') and is located at the centre of Styria (NUTS 2). The City of Graz is the regional capital, economic, cultural, academic, and administrative centre of Styria as well as the second largest city in Austria, with several universities that are actually quite large in

relation to the size of the city. The area has a population of approx. 430,000, accounting for 34.8% of Styria's population. Neighbouring agglomerations at close range (within a radius of 200 km) are Vienna and Klagenfurt (Austria), Maribor and Ljubljana (Slovenia), and Zagreb (Croatia). Historically, the region has been characterized by a partial concentration of the Styrian industrial production and complementary industry-related services. The larger part of manufacturing was concentrated in automotive engineering and machinery. Since 2000, the industrial structure of the region has diversified noticeably towards technology and knowledge-intensive activities. Thereby, the diversification intensified within the tertiary sector, leading to a region-specific specialisation in complex and industry-related services (engineering services, research and development). Consequently, the regional R&D quota underwent a dynamic development and currently ads up to 4.87%. R&D activities are thereby largely concentrated in Graz, which has become one of the most innovative regions in Europe, whereby the local university has played a pivotal role.

Regional stakeholders are closely interlinked via structured processes. Linked to the strengths of the region, smart regional specialisation is at the core of the Economic Strategy for Styria 2025. Local strategies are also being developed in close coordination with the Styrian economic strategy, because aspired advancement is supposed to take place interdependently. Consensus strategy planning is expressed, for example, in the reinforcement of the regional strengths addressed (mobility, green tech, and health tech as well as creative industries). Furthermore, synergetic effects ought to be internalised by involving relevant stakeholders, special interest groups, enterprises, or research facilities. This close cooperation has also resulted in a rather differentiated start-up ecosystem.

The diversification of industries and the growth of the service sector were notably driven by the creative industries, ICT, and low-carbon industries and have been institutionalised in sector-specific clusters and networks. Thus, the dynamics and potential capability of these sectors are considered in the Styrian smart regional specialisation and therefore the strategical economic alignment of the region. Mobility, green tech, and health tech are the guiding themes and interlink traditional (automotive, machinery, electronics) and young industries (green energy and resources, digital technologies). Potential for further development and future growth is evident along global trends like smart production, digitalisation, and renewable energies. Local highly advanced enterprises with state-of-the-art structures do not only adapt these topics, but are actively involved in their development or provide enabling technologies. The creative industries thereby act as a complementary innovation supporter.

5.1.4 Pfaffenhofen a. d. Ilm (Germany)

The district of 'Pfaffenhofen an der Ilm' is located in the middle of the Free State of Bavaria with around 122,000 inhabitants (2015). This implies a population density of 158 inh/km^2. Despite its rather rural character, the district is strategically well located between the metropolitan areas of Munich and Nuremberg and shows high values with regard to potential accessibility by road, rail, and air.

The region has a strong focus on innovative activities. Total intramural R&D expenditures both per inhabitant and in relation to GDP exceed by far average values for Bavaria and Germany. Also with regard to unemployment, GDP growth, value added, and disposable net income per inhabitant, the district is performing very well.

One main reason for the region's economic viability is the strong SME sector. In 2013, 99.6% of all enterprises were enterprises with 1-249 employees. Around 91% were microenterprises and 8.6% had 10-249 employees. These shares remained stable during the crisis. The share of enterprises with 10-49 employees even increased from 7.6% in 2008 to 8.6% in 2013. Although large enterprises only account for a small share of 0.4% of all enterprises, they employ about one third of all employees in the region. These large enterprises also show the highest relative increase in employees between 2008 and 2013 (+37%). Yet, still three out of four workers are employed by an SME with 1-249 employees.

Other important indicators to understand the dynamics of SME development in the region are birth and closure rates. Each year, around 1,400 new enterprises are created in the district which corresponds to an annual birth rate of 16-18%. The closure rate, on the other side, is below this value. Per year, between 14-16% of all enterprises close. Over the past years, this value was decreasing, yet sometimes swinging.

The ESPON SME project focuses on three specific sectors: knowledge and creative economy, ICT, and the low-carbon economy. Although no specific values are available for the district at NUTS 3 level, it can be concluded from the available figures at NUTS 2 level that the three sectors play an important role. Around 46% of all employees in Upper Bavaria work in these three sectors with the knowledge and creative economy being most important (19.6%), followed by the low-carbon economy (14.5%) and the ICT sector (11.7%).

The district of Pfaffenhofen an der Ilm benefits from its good accessibility, sectoral diversity, and a smart way of attracting new enterprises that create synergies with existing enterprises and, at the same time, providing support services for existing enterprises, e.g. to diversify their portfolio. A main challenge of the district refers to a lack of a skilled labour force which entails problems with regard to business succession. Other important issues are the limited availability of land for business development and high living costs, especially for housing. Furthermore, administrative processes take a lot of time and broadband access is partly perceived as insufficient.

5.1.5 Västra Götaland (Sweden)

Västra Götaland is a coastal region located in the south-west of Sweden. The region has 49 municipalities and a total of 1.6 million inhabitants. The city of Gothenburg is the regional capital and also the second largest city in Sweden. The urban environment of Gothenburg and the region's attractive geographical location between Oslo and the rest of Norway to the north and the Öresund region of Sweden to the south attracts both people and business to Västra Götaland. Traditionally, the business structure of Västra Götaland has been character-

ised by the manufacturing industries. The vehicle and transport industry is the largest sector in Västra Götaland and has historically been an important driver for economic and business growth. The economy is highly trade and export dependent, which is also characteristic for Sweden as a whole. Overall, Västra Götaland has had positive economic development over the last years and differences between the region's municipalities continue to decrease. During the spring of 2017, its already elevated business activity has even been strengthened, and the economic index is at its highest level since 2005. Small and medium-sized enterprises stand for most of the employment growth in Västra Götaland. Unemployment level is at low 2.8% (below the national average). The service sector, which stands for almost three quarters of all employed, has still a dynamic development and is expected to continue to stay strong.

The region is strong on infrastructure for innovation and knowledge sharing. There is a well-developed cooperation and interaction between universities, research institutes and regional development centres, science parks, and business incubators. The entrepreneurship culture is being developed, starting by offering entrepreneurial courses at the school level, publicly monitoring the entrepreneurial friendliness of local politicians, etc.

Västra Götaland municipalities are covered by four associations of local authorities. The task of each association is to promote co-operation over municipal borders and provide a forum for the exchange of ideas and experience within the region and assist municipalities in their interaction with other regional institutions. All in all, there is a very nuanced and balanced interaction of local and regional stakeholders. The policy strategies build on a common vision for the region as a whole, and are broken down to the sub-regional level. The four Regional Associations of Local Authorities each have their own strategy documents dictating each district's action plan regarding overall regional development and specific business development strategies. The Region Västra Götaland (VGR) has a policy strategy for SME development alongside others like a climate strategy (goal: reaching a fossil free energy system in 2030). The SME action plan is very customized to the needs of SMEs and is very inclusive (principle of equality) to create a diverse pool of enterprises. The new action plan (2017-2020) for entrepreneurship and start-up companies emphasises young people in rural areas, integration through enterprising and female enterprising, and isolation of young people on the labour market. Recently, regional export centres were also established across the country to support SMEs with their internationalisation strategies. A new public procurement framework aims to give authorities more flexibility in public procurement process and increase the focus on innovation in SMEs. The region has had a smart specialisation strategy for a long time, well before the EC started with the initiative.

The ICT sector is the third largest business sector in the region. There is a high demand for ICT services, which to some part can be explained by the digitalisation process of the public sector that has been going on over the last years. During the economic setback of 2008-2009, ICT enterprises managed very well and have continued to stay strong. A lack of worker supply and difficulties in finding workers with the right skills and competences is considered a

major threat and hinders further business expansion. Problems of finding and recruiting the right competences are not just an issue within the ICT sector, but rather a problem for most sectors in the region. The low-carbon economy is a fast growing sector in Västra Götaland and numbers of employed within green-tech enterprises have increased with almost 20% over the last decade. Exports from green-tech enterprises have also increased significantly. Västra Götaland has a large production of biogas and is at the forefront from both a national and international perspective. The cultural and creative sector stands for nearly 12% of all enterprises in the region, and the share of workers within cultural and creative enterprises is about 7%. Regional support instruments for SMEs and business development target all three focus sectors. The support ecosystem is built on cooperation among public authorities, private businesses, and academia. Although support instruments are found to work well, support programmes need to be better customised towards the needs of SMEs, such as easier application processes and shorter programme periods.

5.1.6 Loire-Atlantique (France)

Loire-Atlantique is one of the five departments of the western region of Pays de la Loire. The department, one of the 10 most dynamic departments in France, is characterised by its attractiveness in terms of quality of life and economic opportunities. Two main cities, Nantes and Saint-Nazaire form together the Nantes Saint-Nazaire Metropolis, which is the main driver for dynamism, growth, and prosperity. The two cities, singularly opposed by their respective territorial dynamics and notably, economic specialisation, have turned their differences into opportunities, thereby creating synergies between sectors having strong development perspectives as well as prospects for the creation of employment in the long term. The exposure of the metropolis is marked by the economic and technological intelligence of cultural and creative industries, joining force with a myriad of local actors to carry out nationally and increasingly globally-renowned projects. Such endeavours have metamorphosed the department from an historical industrial centre to a vital, forward-looking territory nurturing the development of locally-anchored, well-connected, and innovative economic actors.

Along those lines, four main factors can be identified that demonstrate the resilience and dynamism of Loire-Atlantique: economic diversification, collaboration, an innovation-oriented approach, and local anchoring. Loire-Atlantique preserved its vibrant industrial sector, particularly in the more ‘traditional’ agri-food sector, shipyard industries, leather industries, and automotive industries, which are propelled by smart technologies and innovation. Alongside advanced manufacturing, which, since the mid-2000s, has gained significant momentum throughout the region, especially in and around the Nantes Saint-Nazaire area, and contributed to strengthening the aforementioned sectors by upgrading their productive systems. Following a cross-sectoral approach, the pharmaceutical, plastic, and building material industries, and industries in aerospace, marine, rail, transport, and renewable energies are applying cutting-edge knowledge as well as non-technological innovation leading to the improvement of existing products, processes, and business models. Numerous clusters supported by specialised universities and research centres likewise help position Loire-Atlantique at the

forefront of the innovation scene. Last but certainly not least, the shift affecting the industrial sectors also resulted in a real springboard for the development of creative industries, notably but inter alias, in architecture, design, fashion, video games, performing arts, and digital media creation.

Such development relies on a highly intertwined network of actors cultivating team spirit as a quintessential component of the territory's economy. Dovetailing the diversity of the department's economic fabric, the types of enterprises are very heterogeneous. Nonetheless, medium-sized enterprises hold a key position, to a large extent driving innovation, being an indispensable pool of expertise for the larger groups. This collaboration, also shaped by local public authorities and semi-public entities, is a keystone element of the department's strategy for achieving successful scale-ups. Start-ups are also well supported, local authorities as well as development agencies providing entrepreneurs with 'welcome packages' along a wide range of services/infrastructures (co-working spaces, incubators, business centres, and flexible renting spaces). Despite the economic recovery, access to conventional sources of financing for SMEs remains a thorny issue. Nevertheless, the numerous regional and national schemes, to some extent, counterbalanced the situation by providing direct financing (e.g. subsidy for hiring employees for SMEs only) or indirect financing (i.e. a set of provisions covering reductions of financial charges: tax allowances, tax credits, reduction of scouting costs for export purposes, facilitated access to incubators, guarantees to ease access to credit). However, the financing situation is improving thanks to the presence of cooperative banks having a strong territorial culture as well as alternative support mechanisms tailored to address the needs of SMEs at different stages of their development.

Exploring new opportunities in cooperation with other regional and European actors to increase the department's outreach initiatives may be a good strategy to overcome the department's structural weakness in R&D spending.

5.1.7 Murcia (Spain)

The region of Murcia is an autonomous community that consists of only one province, located in the southeast of the Iberian Peninsula. Its capital is the city of Murcia where the headquarters of the regional institutional bodies are located. The region's logistical hub is a harbour, which is the fifth in Spain in terms of freight traffic. The region of Murcia is one of the agricultural power houses of Spain (13% of employment), with a very high export rate. The sector's employment share is even bigger than the industry sector share. The service sector takes up more than two thirds of all employment, which is still well below the national average. Murcia experienced a very positive development up to the economic crises but was then hit considerably, even more than Spain as a whole. The weaknesses of the previous growth model and the severity of the subsequent crisis are related to structural deficiencies for the adaptation of the regional economy to the new global circumstances. The crisis resulted in a somewhat changing structure of the economy. There is a clear tendency towards the service sector strengthening, but the relative weight of agriculture has also grown because industry and

construction have decreased so much due to the crisis. In Murcia, the weight of agriculture in employment has increased by around 30% (way above Spain's average), but on the other hand, construction has been reduced by around 23%. Moreover, the already low R&D intensity of the economy has further decreased; the relatively low productivity in Murcia's economy and the levels of qualification and labour demand have become even more unbalanced. Overall, the case study uncovered an insufficient coordination of the regional system of research, technology, and innovation, as there is not a clear, ambitious, and updated strategy to align all the resources the region has on the subject. The recently elaborated smart specialisation strategy for Murcia has been an important step to rectify this situation.

The ICT sector is the smallest one in comparison to other Spanish regions, but it has experienced an increase of 33% in the number of enterprises from 2008 to 2016. The number of active businesses in the knowledge and creative economy has increased as well in the same period, though somewhat variably because the businesses related to service sectors increased, while services close to the construction industry decreased (e.g. architectural services). The low-carbon sector experienced a considerable decrease overall because the ailing construction industry is included in these statistics. Subsectors dealing with water and energy supply have actually increased all the way through the economic crisis. Some aspects of the low-carbon industry the region have huge potential (solar energy, biomass, energy efficiency (construction sector, etc.), waste collection and treatment, carbon sequestration), although at the same time it faces numerous challenges (mainly an updated policy framework to create demand for the mentioned services, also to tackle dependency on fossil fuels, erosion, desertification, biodiversity loss, etc.).

5.1.8 Timiș Region (Romania)

Timiș County is located in western Romania on the border with Hungary and Serbia, and is part of The Danube–Criș–Mureș–Tisa Euroregion. The west region in Romania (NUTS 2 level) has experienced rapid economic growth in the last 20 years and significant entrepreneurial activity, and has the highest concentration of enterprises and exporters in Romania. Out of the total population of around 450,000, 61% lived in urban areas in 2016. Timiș is also the county with the largest surface and agricultural production in Romania. The industry focuses mainly on high tech, machine building, chemical, and light industry and services. Nonetheless, almost all industrial segments including ICT, automotive, wood processing, textiles, pharmaceutical, etc. are covered, making the region highly attractive for various investors. The economic evolution of Timiș County is directly linked to the evolution of the national economy. From 2003 onwards, the national economy has undergone two separate phases of development: (i) economic growth between 2003 and 2008 and (ii) slow economic recovery after the economic crisis of 2008. Although quite severely affected by the economic crisis, the west region slowly reconsolidated its economic position and, as of 2017, is the second most performing region in Romania (after Bucharest).

The main programme at national level is the Operational Programme for SMEs from the Ministry of Regional Development and Public Administration. In addition, the Ministry for Business environment also develops programmes for SME support at the national level. As emphasised by the stakeholders, there are no specific programmes tailored at the regional level. There is no relation between the region's specificity and the financing provided. Generally, public administration has only an administrative function, as they do not devise programmes for the entrepreneurial environment in Timiș County. Strategies are rarely implemented or coordinated between them. Implementation and coordination usually occurs at national level, which creates a discrepancy with the local needs.

The ICT sector represents one of the few successful knowledge-intensive sectors in the west region of Romania due to high presence of a qualified workforce generated by the major universities in the area, as well as the ease to initiate a business in this sector, compared to the knowledge and creative economy or low-carbon economy. There is a tendency among IT students in the region to remain and enter the workforce in Timiș. Nonetheless, the region remains a marginal player compared to the north-west region of Romania, where the ICT sector represents a third of the overall exports. It is more difficult to initiate a business in sectors such as the low-carbon economy or knowledge and creative economy. The transfer from the business idea stage to actual implementation is much more difficult to achieve in the low-carbon economy sector or some areas of the knowledge and creative sector, where financial and other needs are higher in the entry stage. For example, there is a need for materials and technicians, thus a consistent need for capital at an early stage. Local actors were so far unable to develop the low-carbon sector. Stakeholders stated that they have tried to incentivise the construction sector to promote low-carbon practices, but they did not succeed. The same is true with the Regional Operational Programme which finances energy efficiency but it does not lead to the emergence of a low-carbon sector, but rather a more efficient resource use. For example, the low level of recyclability in Timiș County represents a current weakness, but also an opportunity for SMEs to further develop and innovate in this area.

5.1.9 Split-Dalmatia County (Croatia)

Split-Dalmatia County, the largest county by area in Croatia, is geographically located in the central part of the Adriatic Coast which includes three different areas: islands, coastal area, and the Dalmatian Hinterland. The geographical location, natural beauty, and favourable Mediterranean climate are the main strengths of Split-Dalmatia County. There are relatively good transport links within and outside the county (roads, ports, railways, an airport). Tourism complemented by related trade represents the most important economic activity. Manufacturing, construction, and shipbuilding are the most significant industrial activities, which were hit considerably by the recent economic crisis. Outdated and uncompetitive manufacturing processes and equipment as well as slow adaptation to market needs and trends in industrial production have been identified as the biggest weaknesses of the secondary sector. The primary sector is constituted by a highly heterogeneous agricultural structure with favourable natural conditions, however people rarely decide to engage in it because it is unfavourable

compared to alternative opportunities for income generation (esp. tourism). The University of Split is the second largest university in the Republic of Croatia, and with its scientific infrastructure (scientific and research institutions), research and teaching staff, and large number of students, it represents an important source for the labour market. However, the case study indicates there is a structural mismatch between the educational programmes offered and the needs of the economy to a certain extent. The business support infrastructure made efforts to launch entrepreneurial zones and incubators in the county area, but these are mostly related to a freezing of public funds in uncompleted and unused business zones. This mismatch between supply and demand of forms of support institutions contributes to an uneven development of certain parts of the county. Population in rural areas often lack knowledge and skills to engage in entrepreneurship. Unfavourable conditions for financing the economy and entrepreneurial ventures have been identified as one of the biggest weaknesses.

It is expected that the ICT sector will develop further in the future by building on a good base due to a good milieu between the university and the start-up scene (including FDI in the past). The ICT community enjoys the support of local and regional authorities, and thanks to the climate and natural conditions, Split-Dalmatia County provides good living conditions in a situation where business does not depend on the local market and environment. The weaknesses include the available university studies which are lagging behind in relevant and needed knowledge for the labour market so that graduates do not have all the necessary skills, mobility of ICT professionals and their departure to other EU countries where they can earn a higher income, and the existence of numerous administrative barriers at the national level, which generally limits entrepreneurial activity.

The knowledge and creative economy is still hampered by a lack of support by the governing authorities: no significant joint efforts have yet been made by the national, county, and local authorities to develop it. The key potential of development of the knowledge and creative economy is in its complementarity with tourism and the synergistic effect that can be achieved by combining these two sectors in order to create new enriched tourism products.

The main strengths for the development of entrepreneurial initiative in the low-carbon economy are the natural resources in Split-Dalmatia County that favour its implementation. The greatest weaknesses are the over-regulation of this field, lack of transparency in previous cases of granting concessions for the use of alternative energy sources, a low level of co-financing and promotion at the national level, unclear long-term strategy in the application of this technology that would stimulate users to invest in adaptation to new energy sources, and entrepreneurs' poor awareness of the benefits and possibilities of using alternative energy sources in business.

5.1.10 Ostroleka (Poland)

The Ostroleka sub region is part of the biggest, most populated and fastest developing Polish NUTS 2 region – Mazowieckie (north-east) of which Warsaw is the main hub. Yet, the sub region itself faces serious developmental challenges which are strictly related to its geo-

graphical (inner periphery) and socio-economic peripherally. In comparison with the more advanced sub regions, Ostroleka has limited road and train connections as well as low accessibility from the capital Warsaw and other parts of the region. The business sector in the case study region has been relatively weak since 2008. Although the number of entities increased by 6.7% in the 2007-2016 period, this growth was definitely much lower than the one observed in the region as a whole. Low levels of entrepreneurship and untapped human capital potential in the region remain the main problems hampering SME development.

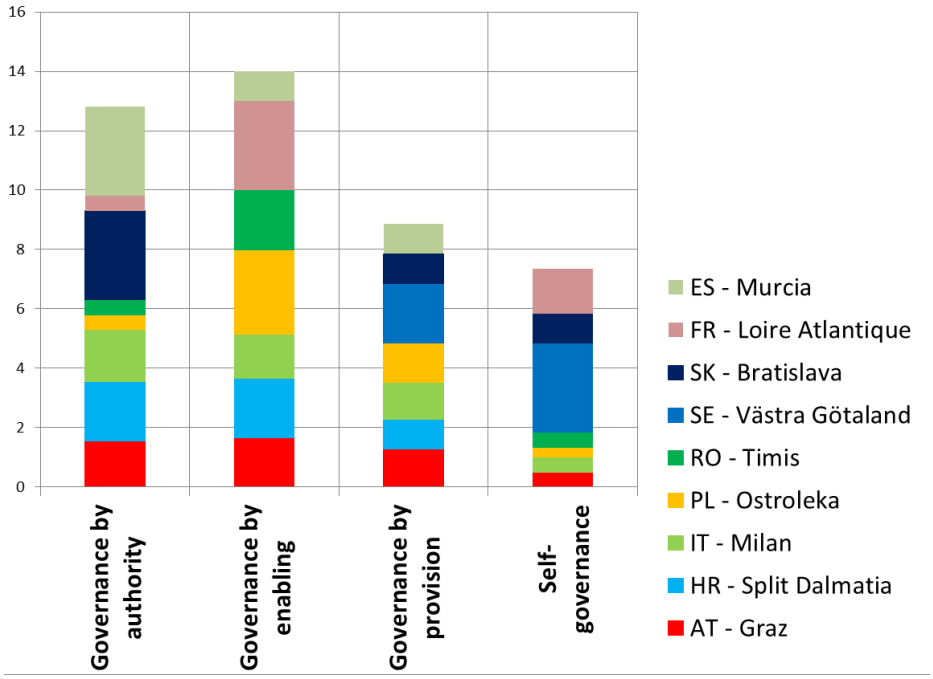
The sectoral structure of the case study region is quite stable. The primary sector dominates with 37% of enterprises operating within agriculture. A distinct specialisation can be pointed out in some specific parts of the region, for instance, agro-food processing in the field of dairying and wood processing. Due to the dominance of the agricultural character of the region, economic activity in the creative economy, ICT, and low-carbon enterprises are close to negligible. The educational sector struggles with high competitiveness pressure from other educational centres located in close distance and general negative demographic trends. The ICT sector consists of dispersed small-scale enterprises dealing with services related to ICT infrastructure only. The sector also suffers from a lack of internal demand. In official strategies (RIS3) the regional government declares that there are no evidence-based reasons to support the creative sector development outside of Warsaw. The low-carbon sector has not been developed yet, although it possesses potential (e.g. biomass), which is actually true for the whole of Poland. On a more general level, the case study points towards available EU funding being used in the NUTS 3 sub-region without clear alignment to a strategic vision and objectives. More advanced support targets mainly the Warsaw business sector and already well-performing SMEs have easier access to various support instruments.

Local Authority Units must elaborate 22 obligatory documents and local communes must elaborate 15 documents, none of which focuses on entrepreneurship development. Analyses of sub-regional strategies demonstrate difficulties of local authorities with formulating accurate diagnoses and creating adequate solutions, in particular more complex, non-financial, but rather organizational solutions (e.g. how to use non-investment tools to strengthen entrepreneurship, how to increase the networking and collaboration among local entrepreneurs, or large companies' potential for spurring the SME sector). Experts agreed that some of the tools used to support entrepreneurship are not effective and their value is minimal, e.g. small subsides for the unemployed to start entrepreneurship activity. The tool was popular among unemployed citizens of the Ostroleka sub region, but there is an agreement that it did not contribute to SME development in the region as the majority of established companies were by no means innovative. All in all, the region suffers from the common drawbacks of disadvantaged regions on the periphery including low levels of governance, although it is not too distant from the capital. It probably came out at the top in the cluster of least successful regions in Europe, because some context indicators were only available at NUTS 2 level, which favours a region which includes a capital.

5.2 FOG test: investigating governance structures

The FOG test (forms of governance) is basically a heuristic test, i.e. a type of support construct for observations in the context of governance with no falsifiable theory. A number of questions have to be answered by the focus group in order to identify the type of governance. Behind the FOG test lies the theory that regional governance systems are determined by different cultural layers: individual goals, tradition, social ties, leadership, plans and programs, competitiveness, solidarity, global nets, and shared responsibility[130]. The regional authorities and stakeholders have been consulted to judge on their prevalent forms of governance with respect to SME support. The questionnaire is designed in order to assess whether one of four types of governance are dominant in the respective region.

Figure 5.2: FOG test results of the present situation over all dimensions



The FOG test allowed for identification of behaviour patterns that are relevant in each case study region. It brought insights which would not have been possible to attain either through direct questioning or literature analysis. The results are transparent and not hidden in aggregated interview results. The questionnaire was designed in five blocks of questions which inquired about the present situation and how the situation should be concerning powers within

[130] Underlying this heuristic approach there are a number of scientific theories stemming from psychological development – see e.g. Abraham Maslow and his pyramid of needs (Maslow A., 1970): Motivation and personality; 2. ed. New York, NY [u.a.], Harper & Row) or Claire W. Graves level-theory of the development of personalities (see http://www.graves-systeme.de). The application of models, which are oriented upon this heuristic in the field of (business or policy) consulting is known under the term 'spiral dynamics" and is described by Beck et al. (200740). Originally it is the tool's objective to identify the interrelationship of partnerships, needs, and the socio-cultural environment at the local level (see Katona-Kovacs et al. 2011: 227).

the regions, motivation, skills, opportunities, and connectedness with regard to SME support and development.

According to the first results (Fig. 5.2)[131], the dominant forms of governance appear to be governance by enabling and governance by authority.

Governance by enabling is a form of multi-level governance which moves down the hierarchical ladder to a 'flatter' organisational concept where a more participative, agency-driven, and collaborative mode of governance is of interest. The role of different stakeholders is much more dominant, and their engagement is recommended at all stages of the policy cycle. Exchanges, interactions, and multi-sided conversations are held on a frequent basis. Likewise, consensuses along with compromises are the preferred communication and decision-making practices. Governance through enabling fosters constructive forms of collaboration and aims at developing stakeholders' sense of ownership. Correspondingly, this mode of governance features bottom-up practices to some extent (e.g. participatory decision-making through representatives of the enterprises, e.g. the chamber of commerce).

Governance by authority is the form with the strictest hierarchical order and can be derived from the most traditional understandings of authority, i.e. following a top-down approach. Accordingly, the decision-making process mainly lies in the upper spheres of power. To some extent, such a mode of governance may also imply that policy goals are efficiently set and consistent, as they are based on decisions taken by a minimum number of actors (Elezi, 2013)[132]. Regulations and directives or other compulsory means are considered to be direct methods for policy implementation. Likewise, national governments can be seen as directly interfering in regional and local affairs. All in all, the mode of governance by authority steers and controls stakeholders in a very unilateral way.

It comes as a surprise is that the historical modes of governance in the respective MS do not seem to dominate the present, as governance by authority (which would be expected in the 'newer' eastern European MS) seems to not only be more prominent in Bratislava, but also in Milan, Graz, and Murcia. On the other hand, governance by enabling – a more 'modern' governance approach – seems well established in Romania and Poland. What becomes apparent as well is the fact that the loosest form of governance – i.e. self-governance – is the least established form and most prominently applied in Sweden.

Self-governance is on the opposite spectrum from the mode of governance by authority, and may occur if mandatory national legislation is limited or non-existent (Bulkeley & Kristine, 2006). Such a governance mode concerns for instance, a local government governing its own activities. It is characterised by self-motivated action and may take place in cities and regions. Local self-governance is exerted directly by citizens or via local authorities, providing them the

[131] The results for the FOG test in the case study of Pfaffenhofen a.d. Ilm were not conclusive.
[132] However not necessrarily covering all interests of the stakeholders.

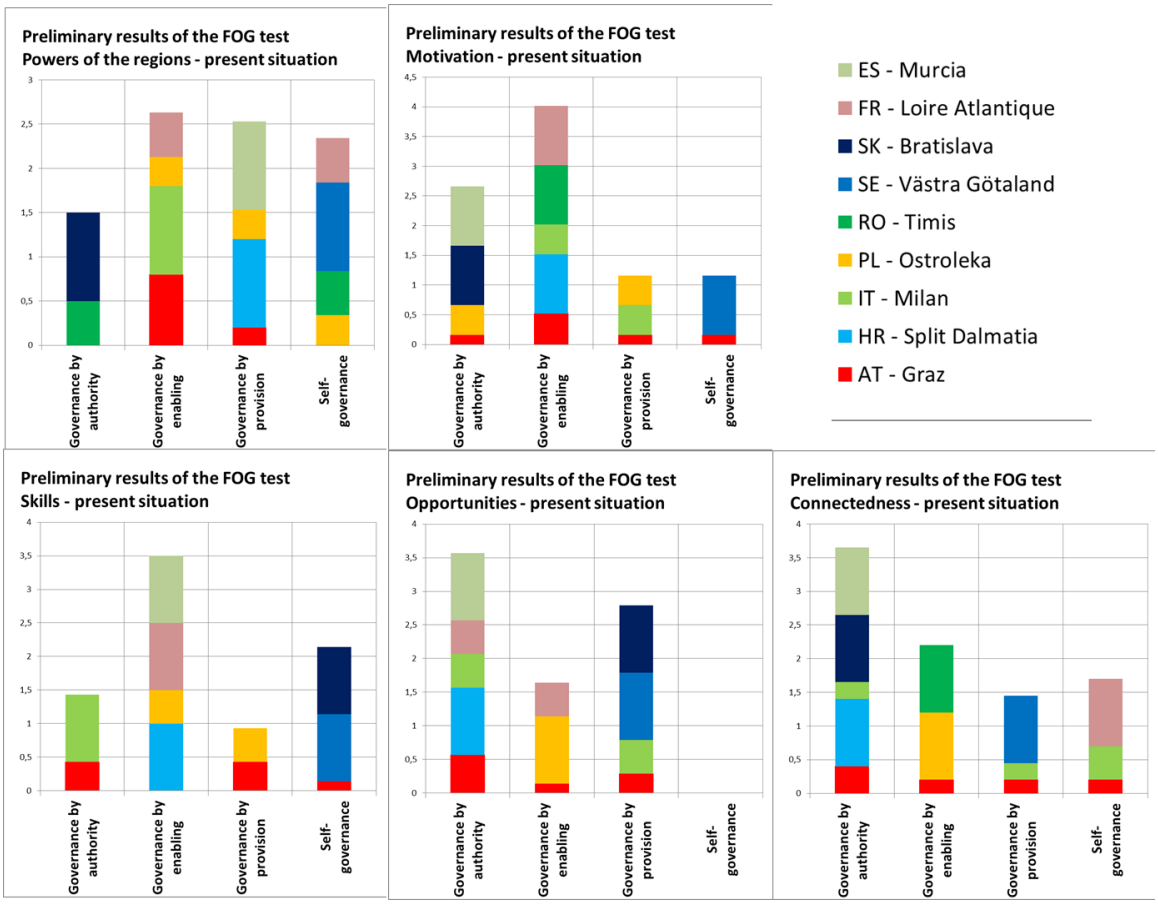
right to independently solve local issues within the boundaries of the law (Council of Europe, 1985).

Finally, *Governance by provision* means that in the light of key actors' roles and competences in shaping governance structures and mechanisms for SME and entrepreneurship policies, interactions are of utmost importance, especially when considering exchanges of resources and services. For instance, funding flows are integral, essential, and substantial elements to support good and efficient governance. Such a mode of governance by provision is therefore more practically inclined, performance or result oriented and based on a service or resource exchange against the achievement of specified objectives. Similarly, greater political ownership is encouraged, together with a deeper consideration of factors influencing efficiency, effective policy integration, and transparency in the delivery of provisions.

In reality, this form of governance is less prevalent overall, however it plays an equally important role in all case study regions thus underlining that its 'spirit' is an essential part of SME support on the regional scale.

When separating the overall results of the FOG test into its various dimensions, the following picture emerges:

Figure 5.3: FOG test results of the present situation along the different dimensions



As for the dimension of the (decision) power of the regions: regional authority regarding policies in SME development are made top-down in Bratislava and Timis; collaborative decision making is prevalent in Graz, Milan, and to some extent in Loire-Atlantique and Ostroleka; governance by provision is strongest in Split and Murcia, while self-governance prevails in Västra Götaland. Overall, the empowerment of the regions with respect to SME development seems to be equally split between the more supportive forms of governance (enabling, providing, and even self-governance) thus emphasising the importance of shared responsibility, solidarity, and social ties in SME support, rather than a top-down authoritative steering of this policy.

In terms of SME motivation throughout the regions, the following observations may be seen: top-down approaches in Bratislava and Murcia; governance by enabling prevails in Split, Timis, and Loire-Atlantique, and can be observed in Milan and Graz; monitoring (and financing) by the regional authorities is strong in Milan and Ostroleka, and strong partnerships are to be found in Västra Götaland.

With respect to skills, business start-up support structures are directly initiated by regional authorities in Milan and Graz. The inclusion of stakeholders into the creation of business start-ups is strong in Split Dalmatia, Ostroleka, and Murcia as well as in Loire-Atlantique. Again, the dimension of governance by enabling is overall the dominant form of governance within this aspect. This means that, apparently in the present situation, motivation and skill provision are seen to be best supported by governance by enabling, thus emphasising the partnership character of these aspects of SME support. Money and other resources to develop support structures are important in Graz and Ostroleka. Networks are developed hand in hand with citizens and entrepreneurs in Västra Götaland and Bratislava.

The dimension of opportunity creation through governance shows that strategies to enhance business opportunities are developed by regional authorities in Split, Graz, Milan, Loire-Atlantique and Murcia. It seems remarkable that this aspect is dominated by governance by authority, which implies that the regions see the creation of opportunities for SMEs rather as a top-down job with only limited influence on shared responsibilities or even self-governance. Regional authorities use networks to enable and facilitate financial bodies and participative financing schemes (mostly in Ostroleka). The provision of financing support is conditional on the achievement of a set of objectives in Bratislava, Västra Götaland, Milan, and Graz. Self-governance is not an option for the actual creation of opportunities.

Last but not least, the dimension of connectedness shows that the connection of the region's business ecosystem with other regions is in the hands of the regional authorities in Split Dalmatia, Bratislava, and Murcia, and partly in Graz and Milan. Similar to the creation of opportunities, connectedness is mainly seen to be best governed through authority – i.e. in less of a cooperative way. The integration of the regional authorities into a multi-governance system actively collaborating with other regions is seen in Ostroleka and Timis. Co-funded projects are the drivers of collaborations with other regions in Västra Götaland. Developing contacts

and partnerships is done by regional authorities and key actors to make up for potentially limited public intervention in Milan, Loire-Atlantique, and partly in Graz.

Territorial characteristics with respect to SME performance:

- In all CS regions, we see an above average of medium-sized enterprises as well as large enterprises.
- In all CS regions, the share of persons employed in SMEs (10-249 employees) has been shrinking although not to the extreme (+/- 5%). However, a slight increase in the urban CS (Graz, Milan) as well as in Croatia may be observed.
- However, when including micro- and very small enterprises (1-249 employees) the picture is more heterogeneous: Murcia, Loire-Atlantique, and Bratislava show declining figures (sometimes even strongly declining), while the rest show increasing shares of persons employed during 2008-2014.

With respect to clustering the regions, the highest performing regions with favourable conditions for SMEs are Milan, Bratislava, Graz, Västra Götaland, and Loire-Atlantique. Timis is still 'catching up', and the three remaining regions are less developed/peripheral and predominantly rural.

When comparing these facts, it becomes clear that no clear correlation between favourable SME conditions and actual SME performance may be established. It is therefore also not possible to clearly identify the "successful" SME regions among them or in due course mirror any governance practice which may stringently support SME growth as derived through the FOG test.

Nevertheless, overall it seems that a mix between governance by enabling and governance by authority is deemed to be most successful with a strong emphasis on motivation and skills, while top-down, authoritarian governance seems to prevail for creation of opportunities as well as connectedness. This implies that, while motivation in the sense of establishing an entrepreneurial culture as well as the acquisition of skills is deemed to be best developed in a cooperative way while maintaining a strong influence from the public sector, the creation of opportunities and the establishment of links is deemed to best be governed in a top-down way with the main responsibility on the policy side (EU, national, regional, and local authorities). This contradicts to some extent the Schumpeterian idea of entrepreneurship with its attitude of self-responsibility and creativity to determine opportunities and connection entirely by market signals, which will best be handled by the economic actors themselves.

Such an approach would best be represented by self-governance or governance by provision. All in all, the EU policy tradition of playing a strong formative role in literally all fields of life seems also to strongly penetrate SME policy. However, there is no clear best practice as to which style of governance and policy intervention will lead to unambiguously positive results with respect to SME creation and survival.

Moreover, these details confirm the overall findings that no clear connotation of territorial specificities, SME performance, or specific forms of governance seem to be identifiable. It appears that in the different dimensions of regional governance, the regional authorities pick

different styles from the different dimensions – thus creating the image that aspects such as motivation, skills, opportunities, and connectedness are to be tackled in different ways to support SMEs.

If we compare these findings of how the situation is perceived in the regions in practice with the perception of how it should be, the following findings emerge:

Figure 5.4: FOG test results of the situation as it should be over all dimensions

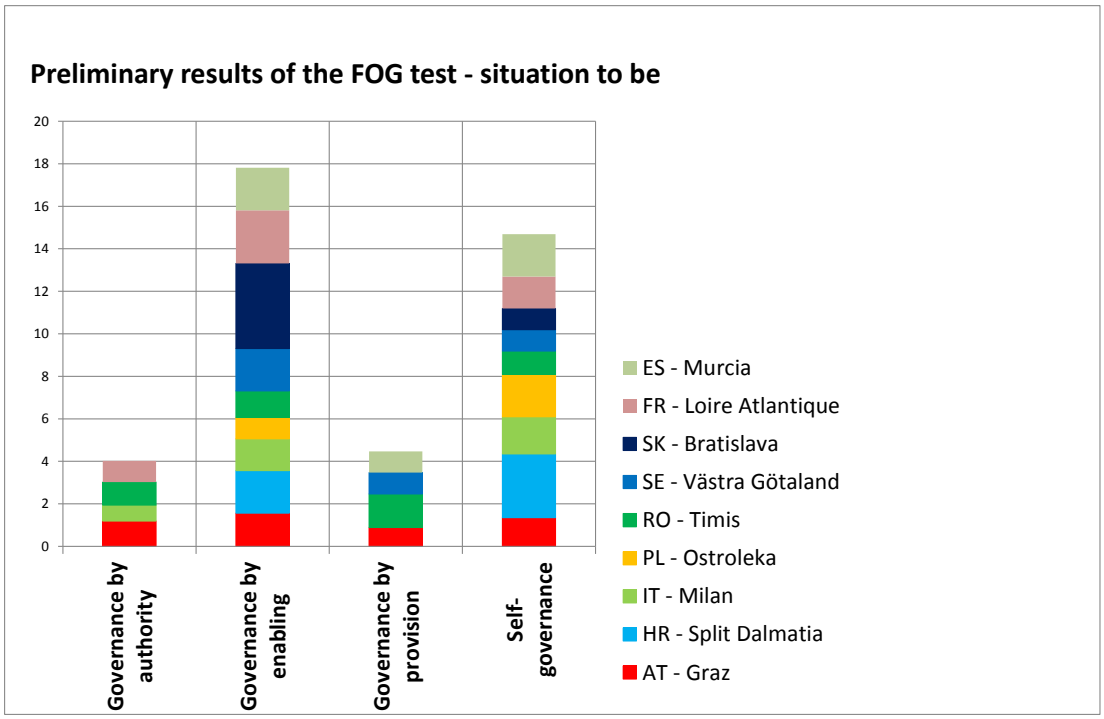


Figure 5.4 shows the results of the classifications by all stakeholders how the governance style supporting SMEs should look like over all dimensions.

The most obvious and striking result is the clear substitution of the importance of governance by authority with self-governance. All regions, to almost the same extent (only in Dalmatia this share is above average), consider self-governance as a good example for SME support. The second striking finding is the dominance of governance by enabling as the highest ranked governance style with respect to SME support. This means that it builds a perfect match to the dominant style as it is practiced in reality.

What is also remarkable is that Bratislava, Ostroleka, and Split Dalmatia deem both governance by authority and governance by provision to not be an appropriate way to support SME development in any dimension. This means that, unlike in the real-world application, there seems to be a dislike of both the more authoritarian and the 'night watchman' state in the new Member States.

In other words, what becomes apparent is the "governance expander" of SME support policies show a potential shift from governance by authority to self-governance as it is seen as an

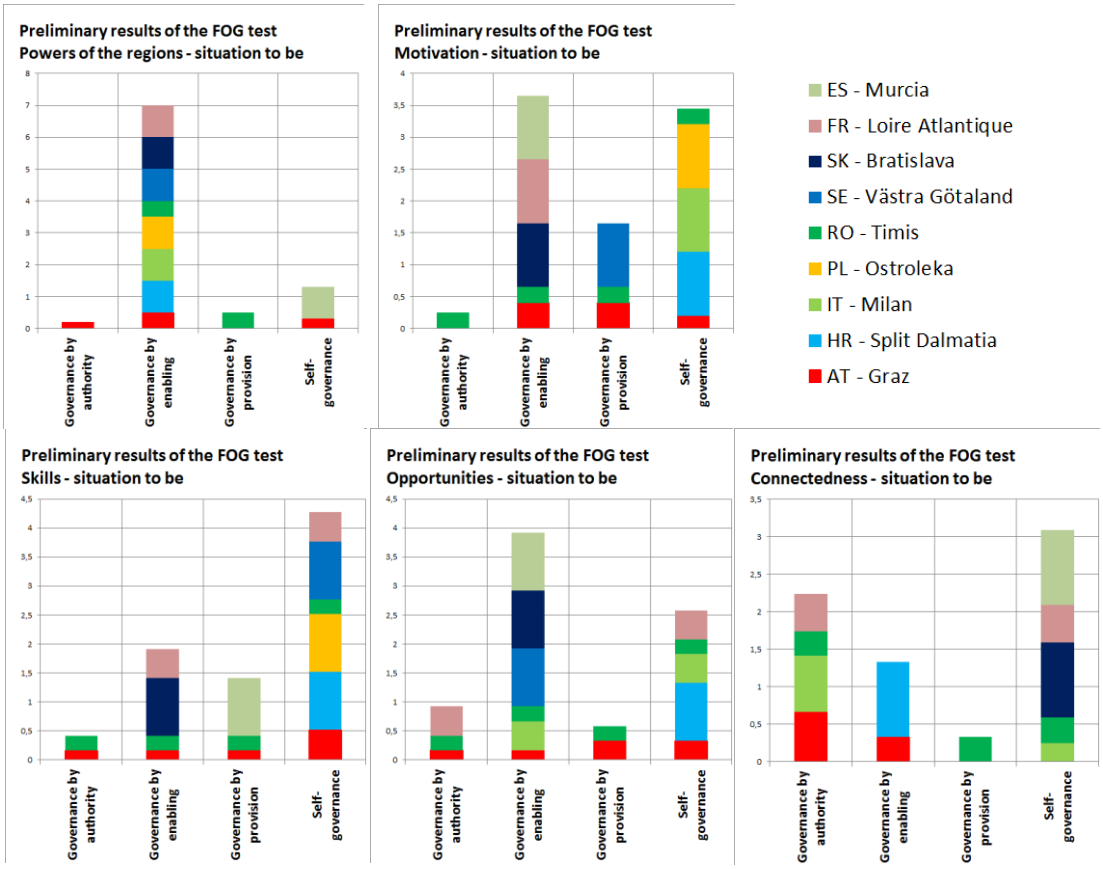
“ideal” form. It still maintains a strong influence from authorities (EU, national, regional, and local) through governance by enabling, however with a clear bottom-up component.

Apparently, the self-perception of regions with respect to “good governance” differs from the more desirable “ideal”.

The following section will again look into the single dimensions of how the stakeholders have judged the ideal situation with respect to SME-supporting governance:

The following graph provides the overview of all dimensions.

Figure 5.5: FOG test results of the situation as it should be for the single dimensions



The results for the dimension of decision power, which comprises the distribution of power between the various actors in the region and beyond and determines the dominance of the public sector, show a clear dominance of governance by enabling as the ideal form of governance with respect to SME support. Almost all regions (except for Murcia) judge this form of governance as best to support SMEs, It is striking that all other three forms of governance only play a marginal role, and it can be ascertained that the dominance of the public sector for designing and setting up SME support is a prevalent wish. Strangely enough, this clearly contradicts the regional situation with a broad distribution of all forms of governance. When comparing this situation with the ideal, then only Loire-Atlantique, Ostroleka, Milan, and Graz seem to already apply this form of governance for the dimension of distribution of power – thus pointing at the fact that (apart from Ostroleka) three highly developed and strong regions,

with respect to SME performance and enabling factors, are already adopting the best identified governance approach.

As for the dimension of motivation, the situation is ambiguous between governance by enabling and self-governance as "ideal" forms to support SMEs. For this dimension, for the first time it becomes apparent that motivation – in the sense of intrinsically boosting the founding and survival of SMEs (with respect to entrepreneurial spirit) – is seen as (at least partly) something which is strongly steered by bottom-up processes and highly dependent on the self-control and creativity of the economic actors themselves. Especially Ostroleka, Milan, and Split Dalmatia seem to think so. On the other hand, a majority of regions still opt for governance by enabling as best suited to foster motivation. Murcia, Loire-Atlantique, and Bratislava strongly support this notion. When comparing the situation as it is with how it should be, it is striking that in Västra Götaland, where self-governance is already the dominant governance form for motivation, the stakeholders judge governance by provision as better suited. What may be deduced from this is the notion that even though motivation is stemming from the entrepreneurs themselves, it cannot evolve to its full potential without basic provisions from the authorities and the public sector. As for the other regions, those who are practicing governance by authority seem to deem governance by enabling as the ideal governance form (Murcia, Bratislava). Only Ostroleka leapfrogged in its aspiration for the best mode of governance to be self-governance.

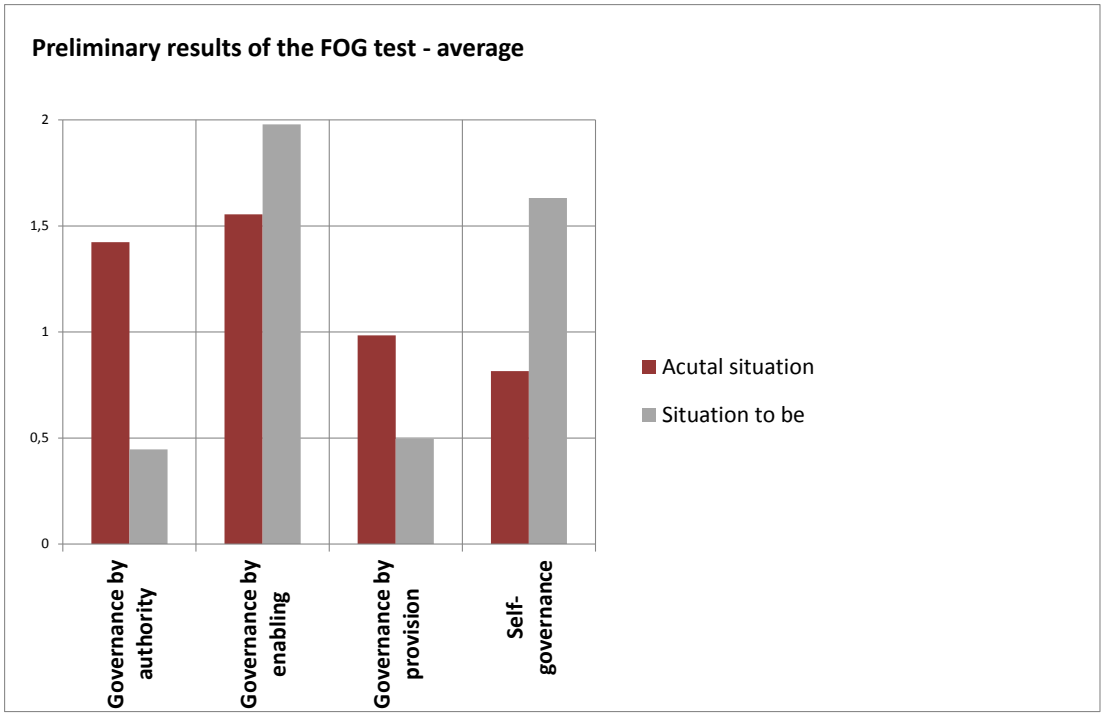
Looking at the dimension of skills, there is a clear vote for self-governance as the best situation for SME support. Almost all regions (except for Murcia) put at least significant weight on this form of governance. This implies that the regional stakeholders perceive the economic actors themselves as the main drivers and actors in acquiring skills and setting the path toward an entrepreneurial know-how environment. When comparing the current situation with the perception of how it should be, Västra Götaland, which already exhibits self-governance, also deems this type of governance as the ideal one. Quite strikingly, Bratislava, which applies self-governance at the present, would consider governance by enabling as better form. The reason may be that the stakeholders have realised that self-governance needs a certain maturity and basic structure (e.g. security) of society to maintain this from of governance. On the other hand, Split Dalmatia seems to consider self-governance as a better form as compared to governance by enabling which is currently practiced. Both "mature" economic regions (Graz and Milan) do not find that there is one ideal form of governance for this dimension, as both regions spread their preference very equally. However, Milan is changing this attitude from the present situation, where it practices governance by authority. This may be interpreted as undermining the ideal form in this dimension, or that all forms provide elements which should be applied. However, this same attitude holds true for other regions as well, e.g. Timis. Murcia on the other hand seemed to shift from its present form of governance (i.e. governance by enabling) to the more passive form of governance by provision as the ideal form.

The dimension of opportunity – like the one of motivation – sees the two forms of governance by enabling and self-governance as the overall ideal forms. This time, the enabling component seems to be more prominently judged upon establishing the assumption that market structures and security in the market economy are still tasks which have to be governed by the public hand. Nevertheless, the primarily authoritative approach of governance by authority, which is currently predominant, seems to be "softened" up by more bottom-up components and the participatory elements of economic actors. Mostly Murcia and Milan seemed to follow this logic by shifting their preference from the status quo of governance by authority to governance by enabling. Västra Götaland and Bratislava have shifted from the more passive attitude of governance by provision to governance by enabling as well – representing the other approach towards this form of governance. In this case, it does not seem sufficient to just provide the bare market environment, but to do more from the public side to safeguard the opportunities for SMEs (e.g. more protective interventions vis-à-vis other market members). Split Dalmatia showed the most drastic misperception between the situation as it is and the one as it should be – leaping from governance by authority to self-governance. Yet again, regions like Graz and Ostroleka did not show any clear preference for an ideal governance form, claiming that all four forms show elements which should be adopted simultaneously.

As for the last dimension of "connectedness" there seems to be a strong vote for self-governance as the ideal situation with respect to supporting SME development in the regions. Murcia and Bratislava in particular seem to have reconsidered their ideal as compared to the status quo, where both show governance by authority in this dimension. This means that there seems to be the perception that the opening of markets and creation of market opportunities abroad will most likely be established by the market forces themselves and should not be steered top-down by public intervention and support. In principle, the very same tendency is shown in Timis, which shifted its preference from the situation as it is (governance by enabling) to governance by provision and self-governance. In other words, the new Member states and weaker economic regions seem to consider a governance shift towards a more self-sustained and controlled form, having learned from the experiences of overly authoritative governance forms for the establishment of market connectedness. Nevertheless, the opposite can still be observed in the more developed regions like Loire-Atlantique and Västra Götaland, which show a shift in terms of the situation as it is (governance by provision in Sweden and self-governance in France) towards a more publicly controlled governance form as it should be (governance by enabling in Sweden and even governance by authority in France). The reasoning might be that without public support, SMEs may be too weak to grasp the market opportunities which would be open to them in other markets, as well as the need to balance market inequalities through public support (e.g. vis-à-vis large market players). This seems to be an interesting lesson to be learned from this dimension, in that striking the right balance between the forms of governance under the different market and society contexts seems to work in pendulum movements swinging from one general orientation with respect to public intervention to the other.

The following graph shows an overview of the main overall differences between the situation as it is in all regions compared to the situation as it should be:

Figure 5.6: FOG test results of all regions: comparison actual situation and situation as it should be



As pointed out above, there seems to be a clear discrepancy between the current situation in the regions and the form of governance which is deemed as more appropriate; we could describe this gap as SME governance expander. Apparently, there is a tendency to regard more self-governance at the expense of governance by authority as a better option for SME policy support. This tendency holds true for all dimensions, but especially for motivation, skills, and connectedness. A second overall observation is the fact that governance by enabling is still the dominant form of governance and emphasises what was said above, that in terms of extremes the 'night watchman' state is not deemed as an appropriate means to support SME development. All in all, the regional perspective is that a balance has to be found between bottom-up approaches actively involving SMEs and their own responsibility to navigate market forces, and the steering and supporting interference of the public sector in establishing fair and secure market conditions and supporting structures (education, dispute settlement, intellectual property rights, etc.).

6 Policy considerations and proposals for targeted investment strategies for SME in European regions and cities

6.1 General EU SME policy

This chapter refers to chapter 6.2.1 from the main report. This overview on the existing framework from the European Union and especially on the cohesion policy provided the basis for the research team to give the recommendations elaborated in the Main Report of the ESPON SME Study.

The overarching framework for the EU policy on SMEs is the *Small Business Act (SBA),* launched in 2008. It sets out ten principles for SME policy making, addressing issues such as improving the business environment, appropriate regulation and public administration, facilitating access to finance, promoting skills and innovation in SMEs, promoting internationalisation of SMEs, and dealing with environmental opportunities and challenges. Specific measures in these fields are being implemented by the MS and progress and compliance with the SBA is regularly monitored through the SME Performance Review.

Next to the SBA, the *Entrepreneurship 2020 Action Plan* is a major guideline for SME policy making in the EU. It calls for actions, by the Commission and by Member States, in the areas of entrepreneurial education at all levels, access to finance (in particular micro-finance), digital/web business, business transfer, second chance, reducing regulatory and administrative burden, migrant entrepreneurs, and so on.

Horizon 2020 supports SMEs, inter alia, through a new, dedicated *SME Instrument* specially designed for highly innovative SMEs that want to develop, grow, and internationalise. The integrated approach, together with simplification efforts, is anticipated to lead to a minimum of € 8.65 billion flowing to SME. Furthermore, at least one-third of the € 2.84 billion budget of the debt and equity facilities of the 'Access to Risk Finance' part of Horizon 2020 is expected to be absorbed by SMEs. The SME Instrument aims to achieve this target, as at least € 3 billion will be channelled through it. The instrument is supposed to provide easy access for small firms, with simple rules and procedures, and is designed to encourage individual SMEs to put forward their most innovative ideas.

SMEs also play a key role in several of the 7 flagship initiatives of the EU's Europe 2020 Strategy. Those 7 initiatives are:

Smart growth	Sustainable growth	Inclusive growth
Digital agenda for Europe	Resource efficient Europe	An agenda for new skills and jobs
Innovation Union	**An industrial policy for the globalisation era**	European platform against poverty
Youth on the move		

- The *Innovation Union* initiative calls for improving the framework conditions for SMEs to innovate in various ways (IPR, demand side policies, access to capital and funding aided by the EIB and EIF and by developing an efficient venture capital market, incentives, etc.).
- The initiative *'An industrial policy for the globalisation era'* aims at improving the business environment, notably for SMEs. This refers e.g. to access costs to the Single Market or simplification of regulations (smart regulation). The initiative also calls for promoting internationalisation of SMEs.

Even though a large part of the specific instruments and measures of SME policy are designed, implemented and funded at Member State and regional levels, there is a large variety of support actions and instruments at EU level:

COSME, the EU programme for the Competitiveness of Enterprises and SMEs, running from 2014 to 2020 with a budget of € 2.3 billion, financially backs many of the above SME policy aims. Through loan guarantee and equity facilities, the programme enhances access to finance. COSME also funds various support networks, helpdesks, and portals, such as the Enterprise Europe Network or the SME Internationalisation Portal, providing information and advice to SME on doing business, finding partners, finding finance, legal issues, and on foreign markets and going international. COSME also financially supports exchanges, pilot projects in entrepreneurship education, mentoring initiatives, etc. Moreover, the programme also assists the formation and development of clusters.

The *Executive Agency for SMEs (EASME)*[133] was set up by the EC to manage several EU programmes on behalf of the EC, such as COSME, parts of Horizon 2020, parts of LIFE and EMFF.

Further financial support to SMEs in different forms (equity, guarantees, microfinance) is provided by the European Investment Fund (EIF) *EIF/EIB* through own or third party resources.

In cooperation with the EIB and European Investment Fund, the Commission has launched the *SME Initiative*. The joint initiative offers a partial risk cover for SME loan portfolios of originating financial institutions and as such aims at increasing the volume of lending to SMEs. Currently the SME Initiative is operational in Bulgaria, Finland, Malta, Romania, and Spain. However, in the future it can cover other EU MS.

The *Investment Plan for Europe*, also well known as the '*Juncker Plan*', aims on supporting and consequently increasing investments in the Eurozone. The *'European Fund for Strategic Investments'* (EFSI) is a joint initiative of the EC and the EIB, giving guarantees. Support for smaller businesses is one of its strategic investment targets.

Another example, where SMEs are supported to access finance capital, is the *SME Supporting Factor (SF)*[134]*,* which was introduced by the European Banking Authority (EBA) as a tem-

[133] EASME has replaced the EACI (Executive Agency for Competitiveness and Innovation) that managed Enterprise Europe Network, Intelligent Energy – Europe, Eco-innovation and Marco Polo.
[134] See: Article 501/1 CRR (Capital Requirements Regulation) by the European Banking Authority (EBA)

porary measure to multiply the capital requirements for credit risk on exposures to SMEs by the factor 0.7619.

Regional clusters are an important pillar of the Commission's SME policy. The EC provides the European Cluster Observatory, providing information, mapping tools, and analysis of EU clusters and cluster policy, incl. support to cluster internationalisation. The Cluster Excellence provides benchmarking and training tools for cluster organisations.

Support for SME is numerous and diverse: there are a multitude of initiatives and events such as: SME Assembly, European SME Week, SME Envoys, European Enterprise Promotion Awards, EU Access to Finance Days, Entrepreneurship 2020 Action Plan, and Erasmus for Young Entrepreneurs. Various networks and information sources are created. These include the European Small Business Portal, Access to Finance, Your Europe Business, SME Internationalisation Portal, and Enterprise Europe Network.

However, the cohesion policy remains the most important framework to support SMEs in Europe.

6.2 SMEs in cohesion policy

Following the intervention logic for the period 2014-2020, the Common Provisions Regulation (CPR) 1303/2013[135]set out eleven thematic objectives which are then specified into priority axes with a common set of investment priorities[136] and specific objectives, triggering the national and regional challenges, needs, and potentials.

The significance of SME support within European cohesion policy is exemplified as support of SME is a thematic objective by itself: *'enhancing the competitiveness of small and medium-sized enterprises'* (TO3). TO3 is not only subject to ERDF funding, but SMEs can also be supported by the EAFRD, the ESF, and the fisheries and aquaculture sector (EMFF). € 57 billion or around 20% of funding from the European Regional Development Fund (ERDF) will be dedicated explicitly to SMEs[137]. These investments help SMEs to:

- access finance through grants, loans, loan guarantees, venture capital, etc.;
- benefit from targeted business support, e.g. know-how and advice, information and networking opportunities, cross-border partnerships;

[135] The Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006.
[136] See: European Regional Development Fund Regulation No 1301/2013.
[137] The Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006.

- improve their access to global markets and international value chains;
- exploit new sources of growth such as the green economy, sustainable tourism, health and social services including the 'silver economy', and cultural and creative industries;
- invest in human capital and in organisations providing practice-oriented vocational education and training;
- forge valuable links with research centres and universities to promote innovation.

Among EU policies, the CP constitutes the largest source of funding for SMEs[138]. New *simplified and common rules*, CPR mentioned above, and measures shall make it easier for SMEs to access CP Funds in the programming period 2014-2020 for which many new measures aimed at reducing administrative burden connected to SME support have been introduced.

Apart from TO3, investments in SME can also be made under most of the other thematic objectives, particularly research and innovation (TO1), low-carbon economy (TO4), and information and communication technologies (TO2). Furthermore, also actions supporting industrial transition towards a resource-efficient economy (TO6), development of business incubators and investment support for self-employment and business creation (TO8) as well as support for social enterprises (TO9) can trigger assistance to SMEs.

Table 6.1: Thematic objectives and investment priorities supporting SMEs in the 2014-2020 period ERFD, ESF and EAFRD

Related Regulation	
CPR No 1303/2013, Article 9	**ERDF Regulation No 1301/2013, Article 5**
Thematic objectives	**Investment priorities**
TO3: Enhancing the competitiveness of SMEs	3a Promoting entrepreneurship, in particular by facilitating the economic exploitation of new ideas and fostering the creation of new firms, including through business incubators;
	3b Developing and implementing new business models for SME, in particular with regard to internationalisation;
	3c Supporting the creation and the extension of advanced capacities for product and service development;
	3d Supporting the capacity of SMEs to grow in regional, national, and international markets and to engage in innovation processes;
TO1: Strengthening research, technological development, and innovation	1a Enhancing research and innovation (R&I) infrastructure and capacities to develop R&I excellence, and promoting centres of competence, in particular those of European interest;
	1b Promoting business investment in R&I, developing links and synergies between enterprises, research and development centres, and the higher education sector
TO2: Enhancing access to, and use and quality of, ICT	2a Extending broadband deployment and the roll-out of high-speed networks and supporting the adoption of emerging technologies and networks for the digital economy;
	2b Developing ICT products and services, e-commerce, and enhancing demand for ICT;
	2c Strengthening ICT applications for e-government, e- learning, e-inclusion, e-culture, and e-health;
TO4: Supporting the shift towards a low-carbon economy in all sectors	4b Promoting energy efficiency and renewable energy use in enterprises
TO6: Preserving and protecting the environment and promoting re-	6g Supporting industrial transition towards a resource-efficient economy, promoting green growth, eco-innovation, and environ-

[138] McCann, P. & Ortega-Argiles, R. (2016), Smart specialisation, entrepreneurship and SME: issues and challenges for a results-oriented EU regional policy. In: Small Business Economics 46:537-552.

Related Regulation	
CPR No 1303/2013, Article 9	**ERDF Regulation No 1301/2013, Article 5**
source efficiency	mental performance management in the public and private sectors
TO8: Promoting sustainable and quality employment and supporting labour mobility	8a Development of business incubators and investment support for self-employment and business creation
TO9: Promoting social inclusion, combating poverty and any discrimination	9c Support for social enterprises
European Social Fund Regulation No 1304/2013	
Article 3(1)	(a) (iii) Self-employment, entrepreneurship and business creation; (v) Adaptation of workers, enterprises, and entrepreneurs to change;
	(b) (v) Promoting the social economy and social enterprises;
Article 3(2)	(d) – Scope of support: contribution to TO3
EAFRD Regulation No 1305/2013	
Union priorities for rural development Article 5	6a Facilitating diversification, creation of new small enterprises, and job creation
EAFRD Measures, Article 14	14 Knowledge transfer and information actions
EAFRD Measures, Article 15	15 Advisory services, farm management, and farm relief services

Source: ÖIR based on DG REGIO (2014): Draft Thematic guidance fiche for desk officers. Competitiveness of small and medium-sized enterprises (SME). Version 2-13/03/2014

Table 6.1 gives an overview of the investment priorities comprising SME support by the ERDF and the measures related to TO3 supported by ESF and EAFRD. This overview identifies the potential areas of intervention to support SMEs in the 2014-2020 period of European cohesion policy.)

Within these investment priorities, the following *investment* actions for SME support are covered by ERDF funding:[139]

(a) *productive investment* which contributes to creating and safeguarding sustainable jobs, through direct aid for investment in SME;
(d) *investment in* social, health, research, innovation, business, and educational *infrastructure;*
(e) investment in the *development of endogenous potential* through fixed investment in *equipment and small-scale infrastructure,* including small-scale cultural and sustainable tourism infrastructure, services to enterprises, support to research and innovation bodies, and investment in technology and applied research in enterprises;
(f) *networking, cooperation and exchange of experience* between competent regional, local, urban, and other public authorities, economic and social partners, and relevant bodies representing civil society, referred to in Article 5(1) of Regulation (EU) No 1303/2013, studies, preparatory actions, and capacity-building.

Member States introducing TO3 in their programmes have to *demonstrate* that they have introduced measures to reduce the time and costs involved in setting up a business (1) and to reduce the time needed to get licences and permits to take up and perform the specific activ-

[139] European Regional Development Fund Regulation No 1301/2013, Article 3 (1) a, d, e, f.

ity of an enterprise, (2) and they have to monitor the impacts of their actions on SMEs[140]. Thus administrative burdens have to be eased for start-ups.

The 2014-2020 CP has also introduced a compulsory element of ESI Funds, which is the *performance framework*, linked also to performance reserve. Performance framework aims to ensure that programmes set out milestones and final targets and are on track in achieving them. The study has been so far deemed as helpful in enforcing a results-oriented approach[141]. Furthermore, in order to ensure good economic governance of MS who apply for financial assistance, a *macro-economic conditionality* has been introduced[142].

Under TO3, *cluster support* has priority in areas identified in the S3, whereas support in other areas needs a critical mass of SMEs and management quality to be supported[143].

In particular, ERDF support for SMEs focuses on *increasing efficiency, quality or innovation, marketing and branding*. Consequently, there is no priority for simple expansion of production capacity, mergers, and transfers of ownership or increase of number of staff per se[143].

Support to SMEs under TO3 encompasses three main aspects to smooth away disadvantages for SMEs compared to large enterprises. These are:

- *access to finance:* grants, loans, loan guarantees, venture capital, business angels;
- *asymmetry of information* (business know-how, information, contacts): consultancy services, business advice, networking, innovation consortia;
- *market access and entrepreneurial risk* (including improving the provision of value chains): internationalisation initiatives and risk reduction tools (e.g. investment readiness, proof of concept).

With *financial instruments[144],* certain adjustments and refinements have been undertaken in connection with their implementation. Next to clarification of the regulatory framework and introduction of the possibility to combine financial instruments with grants, the new requirement of the Common Provision Regulation (CPR-Art. 37 (2))[145] regarding financial instruments obliges MAs to carry out an *ex ante assessment* prior to committing funds to financial instruments.

In addition, there are various guidelines provided for preparation of the assessment. This requirement should contribute to a more appropriate design of financial instruments. Various information and communication measures towards SMEs as potential beneficiaries of funds

[140] Guidance on ex ante conditionalities (fiche 3 on Part II)
[141] European Commission, The implementation of the performance frameworks in 2014-2020 ESI Funds, August 2016.
[142] Regulation (EU) No 472/2013
[143] DG REGIO (2014): Draft Thematic guidance fiche for desk officers. Competitiveness of small and medium-sized enterprises (SME. Version 2-13/03/2014
[144] Financial Instruments (FIs) have been increasingly more present as financial support next to grants. FIs are believed to be more sustainable and to generate better quality projects and have been used to provide financing sources and alternative to grants and providing more stimulation for SME, especially after the crisis. The WP 3 of the ex post evaluation of Cohesion Policy programmes on Financial Instruments for enterprise support provides an assessment of FIs and their role. The design and context of the FIs is very context specific and there are no optimum sizes.
[145] EU Regulation No 1303/2013 Common Provisions Regulation, European Parliament and the Council of the European Union.

have been undertaken. The European Commission has devised various tools *(guidebooks)* to support developing *regional* SME policies as well as guidebooks for developing regional policies that specifically support SMEs[146] and for implementing the Small Business Act principles at the regional level utilising cohesion policy support[147].

The *e-Cohesion* platform is an initiative of the Digital Agenda[148], which aims at facilitation and reduction of administrative burden related to submission of documents by potential beneficiaries. It was previously estimated by the European Commission that digital services will reduce the administrative burden by 11%[149]. e-Cohesion is also a platform for exchange of information between beneficiaries and as such provides helpful online services.

6.2.1 The importance of regional governance for SMEs

According to the 'entrepreneurial ecosystem' concept [150and 151] the importance of the regional level and the relevance of the entirety of regional contextual factors is of key importance for SME development. It is thus increasingly recognised that effective SME policy design should be region-specific or adjusted to the region, i.e. take into account the strengths and weaknesses of a region. At the same time, SMEs and entrepreneurship appear to become more important in and for regional and local development and policy design, which is shown by manifold studies on the topic and the introduction of the concept of 'regional/local entrepreneurial capital'[152]. Another argument in favour of relying increasingly on SMEs in regional development is their high adaptive capability to regional environments and changes over time[153].

The OECD sees a role for regional and local governance levels, amongst others, in entrepreneurship training/skills, in developing a culture of entrepreneurship and risk-taking, and in developing effective networks and partnerships among businesses and with universities, development agencies, knowledge organisations, etc.[154]. This again calls for including a broad variety of stakeholders in the regional development strategies. The role of government is primarily to facilitate interaction of the ecosystem stakeholders at the local or regional level (entrepreneurs, investors, education and training providers, technology institutions, support service providers, etc.).

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[146] E.g. European Commission (2013), Regional policy for smart growth of SME. Guide for Managing Authorities and bodies in charge of the development and implementation of Research and Innovation Strategies for Smart Specialisation.
[147] European Commission (2014), Regional implementation of the SBA, Guidebook Series How to support SME Policy from Structural Funds.
[148] The European e-Government Action Plan 2011-2015, Harnessing ICT to promote smart, sustainable & innovative Government launched 15/12/2010, the Digital Agenda (COM(2010) 245 final/2) adopted 26/08/2010.
[149] European Parliament, Research for Regi-Committe: e-Cohesion, 2016.
[150] Isenberg, D. (2011), The Entrepreneurship Ecosystem Strategy as a New Paradigm for Economic Policy: Principles for Cultivating Entrepreneurship.
[151] OECD (2014), Job Creation and Local Economic Development, p 22.
[152] E.g. Audretsch, D.B. & Keilbach, M. (2007), The Localization of Entrepreneurship Capital: Evidence from Germany; Fritsch, M. (2011), New business formation and regional development: A survey and assessment of the evidence; Westlund, H. et al. (2011), Economic Entrepreneurship, Startups and Their Effects on Local Development: The Case of Sweden.
[153] Smallbone, D. et al. (1999), Adapting to Peripherality: A study of small manufacturing firms in northern England. In: Entrepreneurship and Regional Development, Vol. 11, Issue 1, pp 109-128.

6.3 Linking SME development needs with types of interventions of European cohesion policy to support SMEs

SME development needs	Types of CP interventions
Supportive governance and clear and tailored regulatory framework	CP TO3 focusing on SMEs, for example supporting market access; SMEs can benefit also from other TOs MS introducing TO3 have to demonstrate that they have introduced measures to reduce the time and costs for setting up a business (reduction of administrative burden) Performance framework including clear and measurable milestones and targets, as well as performance reserve 5% of national allocations (by Member State, fund and category of region) Introduction of ex-ante conditionalities to ensure that MS have undertaken measures to create a good environment prior to receiving funding Introduction of macro-economic conditionalities ensuring good economic governance Simplification of the regulatory framework- Common Provision Regulation
Tailor-made financial support systems and better access to finance	Fostering access to finance (additional launch of the SME initiative by the Commission and the EIB) Clarification of regulatory frameworks of FIs Compulsory *ex ante* assessments by MAs before FIs are designed and funds are committed ERDF investments with investment priorities, e.g. productive investments as direct aid to SMEs contributing to sustainable jobs creation.
Involvement of SME support entities	Priority focused on supporting networking, cooperation, and exchange of experience Supporting valuable links with research centres and universities to promote innovation Strong focus on cluster support
Good infrastructure	ERDF investments focusing on social, health, research, innovation, business, and educational infrastructure, equipment and small-scale infrastructure
Skilled workforce	Focus on investing in human capital and in organisations providing practice-oriented vocational education
Management skills	
SME-relevant training programmes	Support for information provision and consultancy
Investments in R & D	Comprehensive S3 support Cluster support under S3 ERDF priority for increasing efficiency, quality or innovation, marketing and branding
Communication between actors and stakeholders	Improved communication from the EC towards MAs, authorities and beneficiaries Provision of guidance for SME strategies by the Commission Launch of the e-cohesion platform

6.3.1 Identified gaps in SME development needs and types of CP interventions

The above table summarizes the CP priorities and measures described in the chapter above in the light of SME development needs. Even though one can identify a measure or a priority at the CP level that corresponds to an identified SME need, one has to keep in mind that this guarantees neither their effectiveness (given that these are often only priorities and not concrete measures), nor their efficiency. The Commission has undertaken considerable number of interventions which were supposed to ensure effectiveness of programmes, clarify regulatory framework, and reduce administrative burden. It is suggested to focus also on other areas of SME support.

Particularly, a stronger focus seems to be needed in the following:

- *Involvement of SME support entities:* the CP recognizes the importance of this SME need, however more targeted measures are required.
- *Good infrastructure:* this must not only be recognized as a priority but also concrete measures should be taken especially in regards to ERDF, as evidence from case studies shows that some countries are still suffering from lack of infrastructure.
- *Skilled workforce:* having a skilled workforce is recognized as an SME need, however, CP should undertake more concrete measures towards ensuring that MS and regions focus on supporting the development of skilled workers.
- *SME-relevant training programmes:* despite the recognition, SME training programmes have limited effectiveness at all levels (EU, MS, and regional/local). CP could ensure that MS and regions invest into training programmes at their levels.
- *Management skills:* SME often fail due to a lack of management skills. However, owners/managers of SMEs are not always aware (early enough) that they suffer from a lack of management skills, hence more awareness for training measures as well as easily accessible trainings could be established.
- *Communication between actors and stakeholders:* the Commission has undertaken considerable measures in order to provide information exchange platforms (e-cohesion) and guidelines for SME development; nevertheless, communication and information exchange at the MS and regional levels may still be insufficient. Here too, the CP could attempt to encourage MS and regions to undertake similar measures.

ESPON 2020 – More information

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