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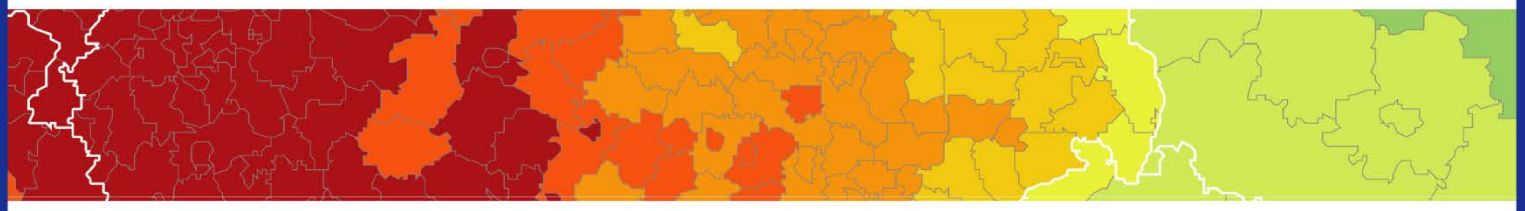

MISTA
Metropolitan Industrial Spatial Strategies & Economic Sprawl

Targeted Analysis

Annex 3.3
Case study report: Riga (LV)

Annex 3.3 – Case study report: Riga (LV)

This targeted analysis activity is conducted within the framework of the ESPON 2020 Cooperation Programme.

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Annex 3.3 – Case study report: Riga (LV)

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Abbreviations

AA	Agglomeration Areas
COVID-19	Coronavirus disease 2019
DG REGIO	Directorate General for Regional and Urban Policy
EC	European Commission
ELFS	European Labour Force Survey
ESPON	European Territorial Observatory Network
ESPON EGTC	ESPON European Grouping of Territorial Cooperation
EU	European Union
EU 15	European Union countries that were member states prior to 2004 (incl. UK)
EU 13	European Union countries that joined after 2004
FDI	Foreign Direct Investment
FUA	Functional Urban Area
GDP	Gross Domestic Product
GVA	Gross Value Added
HR	Human Resources
ICT	Information and communication technologies
JRC/EC	Joint Research Centre of the European Commission
LAU	Local administrative units
KIBS	Knowledge intensive business services
LQ	Location quotient
MISTA	Metropolitan Industrial Spatial Strategies & Economic Sprawl
MR	Metropolitan Regions
NACE	Nomenclature of Economic Activities for Statistics
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Co-operation and Development
POLIMI	Politecnico di Milano
R&D	Research and Development
RPR	Riga Planning Region
SME	Small and medium-sized enterprises
SWOT	Strengthens, Weaknesses, Opportunities and Threats
WIFO	Austrian Institute of Economic Research

Executive summary

Riga is a special case among the MISTA project's seven stakeholder cities. The post-socialist transition brought a lot of problems and also the 2008 economic crisis was very strong, leading to large population loss, huge brownfield areas and many empty buildings. Riga was one of the fastest shrinking EU capital cities. In spite of the shrinking nature of Riga, areas outside the city can still be more a rational choice mainly for new companies that need greenfield areas, fast local decision making, affordable land, EU support for construction and good transportation connections. There are no public policies currently in Riga to counterbalance these advantages, but many say it is even not worth considering as Riga is still the biggest hub in the country with the largest concentration of highly educated people and the withdrawal of the industry seems not to be a significant trend. However, hard data is limited and does not provide a good illustration of movements of companies out of the city and the labour force conditions properly. What seems to be obvious is that only some settlements in the Riga metropolitan area with an industrial past were able – and motivated – to accommodate new industrial businesses. Many municipalities are reluctant to attract industrial activities due to the fact that no direct municipal income is attached to the settlement of businesses.

Riga intends to lure new business activities with high added value, and these are the activities that can pay for the higher prices of locations inside the capital following a trend in all stronger European cities. The main question is how and why the city should go against these trends, considering that there is no clear picture about the quality of the current labour force in the city and also about the future demand for different sectors.

The change of the demand in the quality of labour force seems to be a more threatening challenge than the withdrawal of the industry. This change was very much visible in the 1990s when the industry collapsed and led to high unemployment. Recently, changes are happening in a much smaller scale but still influence the future of the labour force. There was a recent labour shortage in general (which might be a consequence of the favourable world market situation before the COVID-19 crisis). More importantly, there is a lack of skilled workforce. This gap between the labour demand and supply may further widen and may create bigger tensions in the labour market than the withdrawal of the industry. It might be probable that not the industry, but the service sector will have much bigger impact on the employment of the low-skilled labour force in the future.

From the perspective of spatial planning and mobility, the location of logistics, retail and wholesale activities seem to generate more tensions, and this is the productive economic sector which is the strongest both in the core city and across the urban region.

The present situation can be described as laissez faire development: unregulated game between entrepreneurs and private landowners, in which municipalities are observers and the public is suffering from the huge externalities.

The national politics has been concentrating on strong redistribution of activities away from Riga; dealing with major infrastructure (including a road bypass and Rail Baltica). The importance of the metropolitan level is increasing from 2006 with the establishment of the Riga Planning Region with limited competencies. However according to the ongoing changes in the country's governance structure, some prospective may be foreseen regarding both the adjustment of the borders of Riga metropolitan region and its competencies.

Metropolitan coordination in shrinking and suburbanising areas are equally important to the case of economically growing areas, but for different reasons. Despite the low level of new economic development, there are huge urban development problems in the Riga metropolitan area: large brownfield areas, many vacant multi-family buildings, fragmented suburban areas with no public transport, large road congestions, lack of infrastructure capacities in some greenfield areas while it is costly to maintain surplus of such capacities in post-industrial areas, etc. Besides these "hard" factors there are also problems with the "soft" factors of economic development, especially regarding the lack of labour and the skills mismatch between the demand and the offer by the existing population.

In order to address all these problems efficient collaboration across the whole metropolitan area would be required. The current reality is just the opposite: a fragmented system of local municipalities, and the cooperation is further constrained by the existing taxation and planning systems, some elements of which explicitly hinder cooperation. As a result, there are no incentives for well-positioned municipalities to develop strategies to attract investors. Similarly, there are no regulatory or financial tools to provide leverage, which would limit such efforts by municipalities with unfavourable conditions.

The result is fragmented development with investments in sub-optimal locations while lacking investment in places which would offer much better conditions. The worst consequences of this laissez faire development process can be seen in the bad traffic conditions across the metropolitan area. Illogical economic development is proving to municipalities the long-term disadvantages of sudden development (Garkalne and Marupe with the fastest population development or Adazi with economic development are clear examples on that).

Negative externalities are well known by most actors in the metropolitan area and in the last year signs of political cooperation efforts can be seen. In October 2019, a memorandum on the further development of the metropolitan area was signed by the local mayors and the Development Plan for the metropolitan area was elaborated in November 2019.

To unleash real potential, changes in the financial and regulatory/planning systems are needed, together with the strengthening of the regional/metropolitan level of institutional structure. In case of such changes the development of the metropolitan area would offer an impetus, even without additional EU financial support mechanisms (which could not be possible due to the relative high level of development). It is important to show that the quicker economic development of the Riga metropolitan area would do not come at the expense of other parts of the country as this should not be treated as a zero-sum game. If the Riga metropolitan area

could strengthen its position in the Baltic region, this would provide additional benefits also for other parts of the country.

The main conclusions of the case study can be summarized in the SWOT table below:

Strength	**Weaknesses**
▪ A high level of manufacturing within the metro area (~10%) ▪ Municipalities in the agglomeration area with industrial heritage ▪ Wage differences within the metro area are not significantly different to those outside the metro area ▪ Ample amount of land for development if financing is available	▪ Gap between the labour demand and supply with regard to skills and education ▪ High tendency for brain-drain with young professionals seeking more opportunity and higher incomes abroad ▪ Lack of cohesive metropolitan scale governance, what exists occurs on a voluntary basis ▪ Local municipalities mostly have counter interest in productive developments ▪ Challenging bureaucracy for businesses in the core city ▪ Land for development is in private hands ▪ Lack of good data to gain a better understanding of metropolitan scale economic activities
Threats	**Opportunities**
▪ Limited national & EU funding ▪ Uncoordinated development of business activities in the metropolitan area is causing negative externalities (pollution, noise, traffic) ▪ Lack of suitable utilities and infrastructure to ensure that the site is functional	▪ A large amount of brownfield land, with little development pressure for housing ▪ Relatively flat topography allowing plenty of options ▪ Plans for metropolitan collaboration and the positive political ecosystem ▪ New Rail Baltica lines ▪ High potentials in logistics

Source: ESPON MISTA (2020).

1 Introduction

The current paper is one of the outcomes of the ESPON MISTA project with regard to the trends of manufacturing in the Riga metropolitan area. The MISTA project aimed to develop an understanding of the current contrasted and complex relationship between the city and industrial land, manufacturing and productive activities. The project does so through producing an updated and critical understanding of how the sector has evolved over the last decades across Europe and in particular in large urban areas.

The project intends to support (re-)developing a strategic relationship with manufacturing and production systems within the contemporary urban economy and life. In this perspective, the project aims at considering critically the complex debate on the consequences of deindustrialization and changing of the urban economic base. In doing so it heavily builds on the experiences of the seven stakeholder cities/urban areas (Berlin, Oslo, Riga, Stuttgart, Turin, Vienna and Warsaw).

In Riga intensive research and consultation activities were conducted between October 2019 and November 2020. Firstly, a questionnaire was prepared by the research team and filled in by the local stakeholders in November 2019. This was followed by an online interview with the main representatives of the city and urban area in December. On the basis of the desk research, data analysis, the results from the questionnaires and interviews, a summary paper was elaborated. This served as a starting point for the extensive, 2-day long mission in February 2020, where MISTA researchers visited Riga and conducted a series of on-site discussions with the local stakeholders. As a result, the first draft of the Riga case study report had been prepared by May.

According to the original plans this report should have been validated by an on-site futures workshop in Riga in the course of May-June 2020. However, COVID-19 made this impossible, thus the workshop had to be postponed to November and even then, could only be organised online. Despite this difficulty, the workshop gave a good opportunity to critically revise the main statements of the report and also gave the possibility to further develop it in a co-creative way, using inspirational cases as the basis for creative, future-oriented thinking.
The final results of the city case studies are used in the MISTA project in two major ways. Firstly, a comparative analysis has been included in the main text of the final report. Secondly, city case study reports are annexed to the final report as self-standing descriptions and critical discussions of the case of the given city/metropolitan area.

The Riga case study report on the following pages summarises all the knowledge gathered in the different activities during the year of the research. The report does not intend to provide ready-made suggestions for the city, as the local stakeholders are very well aware of the local situation – even if different local actors have different viewpoints in some issues. MISTA rather aims to investigate the transferability of the major statements distilled from the comparative analysis, and the potential validity of inspiring practices of innovative metropolitan areas of the EU, considering the particular local conditions of the Riga metropolitan area.

As mentioned, the MISTA research has been conducted under very special circumstances, dominated for more than half of the time by the restrictions caused by the pandemic. The spread of COVID-19 has impacted not only the workflow and organisation of the project, but also in a more fundamental and challenging way the relevance of the results when the socio-economic fallout becomes more apparent. The empirical data, the interviews and also the site visits reflect the situation before the pandemic. Moreover, the longer-term effects of the pandemic, the changing context for industrial areas and manufacturing, are not fully known yet, there are only different hypotheses raised which are partly contradicting each other. From all these it follows that the MISTA report cannot address the most recent challenges and opportunities presented to the urban areas and to the local manufacturing and production activities.

The Riga case study report begins with the description of the state of manufacturing in the city region based on desk research and information collected from the on-site visit. This is followed by the evaluation of the potential of productive sectors, based on sub-sectoral data analysis on NACE1 and NACE 3-digit level. The next section summarises the outcomes of the futures workshops. The main body of the report is followed by an annex, including further details of the data driven SWOT analysis.

2 State of manufacturing in the city-region

2.1 Main demographic/social and spatial development trends

Population decline can be considered as one of the biggest problems of Riga. The city infrastructure was planned for 1 million inhabitants, reached 900 thousand by 1990. Independence has led to emigration of Russians followed by strong suburbanisation processes of the 2000s. In 2008 the economic crisis hit Latvia very strongly (similarly to Greece), leading to further emigration of the inhabitants into the European Union. As a result, the population in Riga city dramatically decreased to around 650 thousand by today. The past influences very much the options for the future. It is very costly to maintain the infrastructure which was planned for 1 million people: this creates problems for the financing of new projects.

In spite of the population decline in the core city, the metropolitan area has a rather stable population. The area concentrates more of the resources of the country than most of the metropolitan areas of the capital (50% of population, 70% of GDP, 80% of college and university students, 90% of institutions[1]).

In the boom years before 2008, speculative housing developments were built in the suburban area, suffering today from the lack of proper infrastructure. Examples on such urban sprawl areas are visible in almost all municipalities bordering Riga, especially in territories of Marupe, Kekava, Stopini and Garkalne counties.

Within the city many brownfield areas exist, as there were many Soviet micro-rayons devoted for industry which largely bankrupted in the process of transition. Only some of the socialist industries were converted to other uses after privatization in the early transition times. Most areas even today are physically run down, the decontamination and restructuring of which would require substantial capital from developers.

The metropolitan territory of Riga has two interpretations:

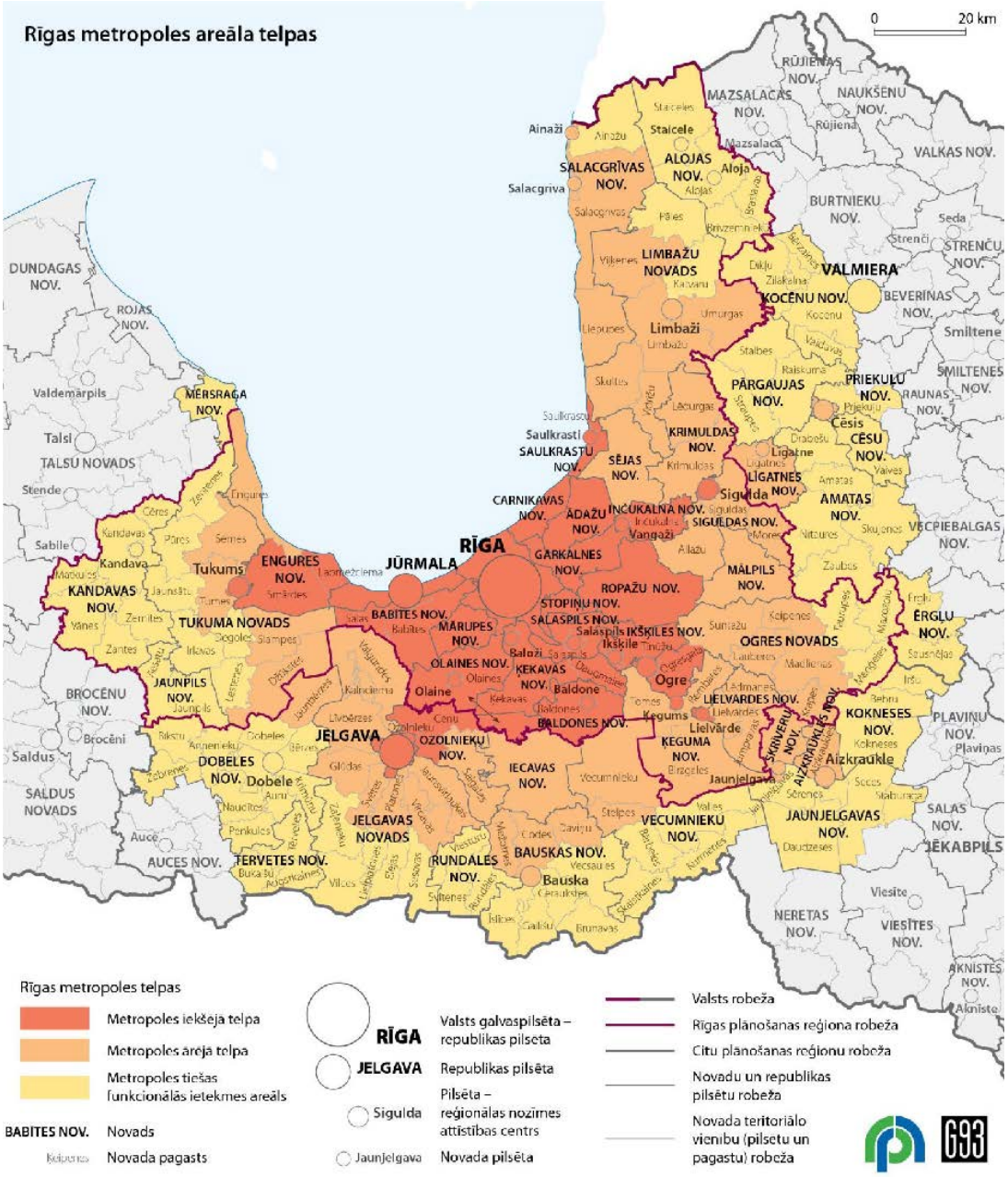
- An earlier established entity is the Riga Planning Region (RPR) which is one of five planning regions in Latvia responsible for regional planning. The planning region was established on the basis of previous 4 administrative rayons (Riga, Tukums, Ogre, Limbazi). A new legislation on the spatial scale and competencies of regions is under development, which will have an impact on the metropolitan area.
- The real functional urban area (metropolitan area) is currently “only a map” developed for the “Action Plan for the Development of the Riga Metropolitan Area” in November 2019. This area is a territorial delineation without institutional competencies. The metropolitan area has three belts: 1) a close one where the rate of commuters to the city is above 50%, an intermediate one where the rate is between 30-50% and an outer one with commuters’ share between 20-30%. (See the map below.)

As can be observed by the figure below the territorial delineation of RPR (inside the purple lines) does not follow the logic of functional relationships: although it includes almost fully the

[1] Source: Riga Planning Region Sustainable Development Strategy 2030.

core of the metropolitan area, it is zigzagging between the outer metropolis and the functional impact area, excluding some of the former, while including some of the latter areas.

Map 1: The spatial scale of Riga metropolitan areas (both the Riga Planning Region and the functional metropolitan area).



Source: RĪCĪBAS PLĀNS RĪGAS METROPOLES AREĀLA ATTĪSTĪBAI, November 2019

Table 1: Main characteristics of Riga city and Functional Urban Area.

	Riga City			Riga FUA*		
	2001	**2011**	**2018**	**2001**	**2011**	**2018**
Population	756 627	658 637	632 479	1 040 014	958 015	932 595
Activity rate	57.4%	61.3%	63.9%	Na	Na	62.8%
Unemployment rate	11.2%	16.7%	6.5%	Na	Na	6.1%
% of mining, energy and manufacturing in employment	17.6%	10.6%	9.5%	Na	Na	11.5%

*Source: Urban Audit, * The FUA is defined as the commuter zone of the city, its population is close to that of Riga Planning Region*

2.2 Main trends in the development of the economy and manufacturing

The deindustrialization process is going on since the transition started, in laissez faire way, led by market forces. The share of manufacturing in GDP was 11.59% in 2000 in Riga and decreased to 8.12% by 2017 (this rate was 12.07% in Latvia)[2]. Consequently, manufacturing still plays an important role in the city.

Regarding the spatial distribution of manufacturing in Riga there are two types of industrial areas: end of 19th century and Soviet era. Not much happened in these areas as there is no population growth thus strong growth pressure. Large industrial areas were privatized in unfortunate way into many pieces, leading to fragmented ownership structures (in most cases it took 2 decades to consolidate the situation). Things went smoothly only if professional developers acquired the former factories.

Part of the changes happened in the North of the city centre area, turning post-industrial areas into housing and business areas – with conflicts as railway lines and cargo transport still exist.

In recent years, the shrinkage of the population came to a halt, population number has stabilized. There are priority development territories assigned. One of these is the planned new central business district “Skanste”, around Skanste street. Another big project is the “Knowledge mile” in Tornakalns, on the left bank of the river Daugava – where the first two buildings of the university are already functioning.

The biggest redevelopment project is the former State Electrotechnical Factory (VEF) around Zemitani: this VEF area is turning into new types of high-tech industry. Another example is on the left side of the river Daugava, in the Mukusalas street area, around the bridge, with mixed office development, close to the planned new university campus in Tornakalns. These areas

[2] Source: Central Statistical Bureau of Latvia.

have good location and infrastructure. Less or no polluting industry and manufacturing with high added value is coming to such areas.

The big question is within the port area, on the left bank of the river: part of it is a big area zoned for industry but owned by someone who has no interest to develop it. In addition, the accession to this area raises environmental questions as the west side of the port is surrounded by protected water-lands.

The strong manufacturing sectors in the Riga urban area, outside of the city, are food production, chemical and pharmaceutical industries. In addition, other – less manufactured – sectors appear, like logistics or warehousing, and ones that create high value added, like IT businesses or research-oriented companies (e.g., in Salaspils south to Riga)

There are contradictory statements about the scale of companies moving out from (or not settling to) Riga. There is a valid statement that resettling is very expensive that is why companies do not choose this solution, on the other hand the settlements in the metropolitan area with the largest industrial potential state that they have many inquiries from companies intending to move out. What is however seems to be a fact is that only some settlements in the agglomeration area have substantial industry (the ones with some kind of industrial past) and all the others are more interested in luring residents rather than businesses. According to the added value of the different parts of the production sector (https://rpr.kartes.lv) industry is relevant only in some settlements outside Riga: Olaine, Marupe, Kekava, Adazi, Salaspils, Sauriesi, Ulbroka and Pinki.

On the other hand, many activities, not specifically manufacturing, but logistics, wholesale and retail has appeared in the city borders causing substantial transportation problems. Since 10 years ago new warehouses and logistical centres were built, 30-40 km-s from Riga – around the main bypass ring-road and the Via Baltica (Riga is in the centre of the Baltic states).

> Rail Baltica is planned as a new development. This would mean new railway station in Riga and it would have also regional relevance. The three countries established joint stock company RB Rail, center in Latvia, co-financed by the EU. There are still debates between the three countries what should be share of the cargo and the personal functions. By 2026 the first section should be built of this EU-gauge railway line. Only Rail Baltica, the upcoming EU financed main railway line with EU standard gauge, connecting Tallinn to Warsaw, is considered as basic opportunity to improve the situation. The passenger traffic on the new railway line is planned to cross the river towards the airport and then follow the line of the bypass ring-road. The cargo line of Rail Baltica is planned to go straight to south. The regional level has to be careful to get out advantages from this major investment, regarding some stops on the line.

There are also huge public transport problems within and around the city. There is no public transport along the Riga bypass ring-road, which is a 2*1 lane road (with plans to rebuild it into

2*2 or 2*3 lane road). Public transport is organized on Riga city level, there is no transport association existing which would cover the metropolitan area.

> Currently the transport of the metropolitan area is organised separately by the city of Riga (inside the city borders) and the nation state (outside the city borders). The majors of the metropolitan area signed a joint memorandum about this issue and sent it to the transport ministry, which however passed the inquiry to the planning region (which has no competence on transportation…)

The process of moving out from Riga to the suburban area seems far not overwhelming, thus not endangering the current provision of workplaces. However according to certain opinions Riga would need more citizens, for that more housing and diversity of jobs would be needed. From a housing perspective the renovation of the existing stock is a major issue, while, from economic point of view the bottleneck seems to be less significant.

Besides the spatial aspects qualification is also a key issue regarding the future of industry. According to a recent survey of the Chamber of Commerce the three most relevant challenge entrepreneurs named for 2020 – before having any information on the Coronavirus crisis - are: 1) potential decreasing demand of European markets, 2) shortage of labour force and 3) skills of labour force. As a result of the coming 4th Industrial Revolution the qualification required in industry tends to increase, so one of the major bottlenecks of new industries to settle in Riga might be the number and quality of labour force (that is why “import” of qualified labour force from abroad is a more and more common phenomena). It is a common statement of experts that workplaces in the industry are needed to keep residents inside Riga – or even lure them back. However, this statement is not properly supported by data evidence on the quality of the current workforce, on which qualities will be expected in the future, on the number of workplaces moved to the metropolitan area and on the workplaces created in the city.

The national educational system seems to be less efficient in assisting the potential employees in coping with the skills requirements. The national curricula are too extensive, giving little flexibility to initiatives important for the local labour market. Major changes are needed in educational system, e.g., regarding ICT skills, where there is huge demand, but only little supply. The city of Riga tries to provide limited number of training courses e.g., on robotics.

2.3 Main factors affecting locational choices of manufacturing

The location decisions of companies are based on the usual factors: companies are looking for labour force (either commuting or housing opportunities for people moving in), adequate and affordable physical space to build, availability of services (energy, etc.) and good logistical connections.

Within Riga the usual large-city-type difficulties emerge related to manufacturing. To buy sufficient land and premises is expensive, and there are additional problems with parking, access by road, potential dissatisfaction of residents living around, etc. Renting properties is an option but financially uncertain, as prices are going up.

Wage differences seem not to be big (10%) in different locations, there are no dramatic wage differences within and outside Riga. What matters more is land price, availability of utilities and accessibility. Environmental aspects, such as pollution regulation, are also important, but these regulations seem to be quite similar inside and outside Riga. All settlements and Riga itself allow companies with limited pollution to settle. (Naturally, the tolerated pollution level can differ in different urban zones.)

What is however also a decisive factor in choosing a proper location for businesses is the level of bureaucracy. Riga, as a bigger capital city has much more bureaucracy that makes the location decisions and the constructions much more complicated.

Zoning seems not to be a problem, in most municipalities there is enough place for investments in privately owned areas with existing zoning regulations for productive uses. In case adjustment of land use is needed by means of local plans for a smaller part of the settlement, the municipalities can elaborate on it.

The more serious issue is utilities. The municipalities have to build streets, supply water and sewage, which can be a very slow and expensive process. Electricity and gas are under national regulation, the local level cannot influence this.

2.4 Development preferences of the city (region) leadership

The development document of Riga Planning Region concentrates on creating a competitive and liveable metropolitan area. With regard to the economic structure, it aims to strengthen “knowledge-based green, innovative and flexible economics”. When this overall aim is detailed, creative industries, information technology, knowledge-intensive production based on chemical technologies and tourism based on health services are emphasized. These are natural objectives to set for a capital region that has traditions in special sectors like pharmaceutical industry.

Based on the planned development of the Rail Baltica Riga also intends to strengthen its role as a central transition location which would have an impact on tourism and logistics.

Based on the spatial vision of the Planning Region, it is obvious that economic development is planned to be strengthened alongside the major roads and part of the planned Rail Baltica lines. These are mostly the locations where major manufacturing development currently takes places.

The development plan of the metropolitan area (which is literally not the same as the development plan of the Planning Region) states that Riga, as a capital region is currently performing behind its potential in comparison with other Baltic or Western European main urban areas. With regards to industry and manufacturing the development plan emphasizes that a complex development of industrial territories would be needed with the provision of infrastructure and related services like housing. These areas should have direct link to the international transportation hubs (like port, airport, railway station.) Thus, the development plan emphasizes the importance of a more cautiously planned industrial development.

It is very common in many European metropoles that – due to the growth pressure – areas that may be potentially utilised by manufacturing activities are practically used for housing and office developments taking into account their high added value. Many cities are promoting these processes directly or indirectly. This choice between different activities is less obvious in case of Riga both regarding its development planning and the opinion of the practitioners. The number of inhabitants in Riga is stagnating, thus there is no pressure from this side. It seems to be also obvious that the renovation of the existing housing stock is also not a first preference.

> A subsidy programme for panel buildings exists in Latvia but does not work well in Riga: out of 6000 buildings only 109 have been renovated within the last 10 years. The negligence of the building stock also leads to suburbanisation as the agglomeration is the place where family houses can be built (in Riga only 6.3% of the housing stock is family housing). Several other cities achieved more in energy efficient renovation.

There are substantial brownfield areas that would be suitable for economic development – however the price of their development is high, which can only be utilised by high added value activities. So, all in all one may not state that the development preferences of either the city or the metropolitan area would be against of manufacturing. One can only observe that not too much is implemented actively for encouraging the realisation of the development visions.

2.5 Tools through which the municipality is able to control the development processes

The main revenue for the municipalities is PIT (Personal Income Tax) and also the real estate tax which is based on some basic parameters of the property (e.g. size but not value). According to the law, developing business is the task of the central level, thus municipalities do not get anything from the business tax revenues. On the other hand, according to the latest regulation of the business tax, companies are not obliged to pay it in case the profit is not paid as dividend but turned back to the company as investment. Most of the starter companies are in this situation. The lack of business revenues of local municipalities creates disincentives to locate business activities as in reality it is the task of municipalities to deal with infrastructure which is not covered by any business income. On the other hand, municipalities where new industries are going to, are struggling with rapidly increasing needs for human and physical infrastructure for providing space for the new developments.

One idea on changing this regime is that municipalities should get some portion of the business turnover tax. Another idea is to share the PIT of people between the places where they live and where they work. However, this version is not in the interest of most agglomeration settlements which has limited business activities. This solution would result in higher revenues for Riga and less for more suburban settlements, that is why it is strongly debated.

> As an example, Adazi municipality can be mentioned which is popular among entrepreneurs. For the new businesses new capacities of the water and sewage systems have to be established. However, the municipality lacks the financial

resources for that – not even the PIT revenues of the municipality are increasing as most of the new employees are commuting to Adazi (at least in the first few years), paying their taxes somewhere else. In order to handle this problem, the municipality introduced a new system, requiring from every new company coming to Adazi to pay access fee to basic public services, however it is obvious for the local decision makers that some major part of the needed new infrastructure cannot be financed by individual businesses.

Another visited municipality, Olaine, is in a different position, having been industrial location already in the Soviet times, with well-developed infrastructures, allowing new companies to settle down.

Financial incentives for new businesses are only given in underdeveloped parts of Latvia, and the Riga Planning Region is also excluded from EU funding on the basis of state aid map (exceptions were only possible for industries with big added value). In this regard there is difference between Riga, the bordering municipalities and the rest of the RPR region.

In Olaine it was possible to get EU funding for new production premises creating new workplaces up till 45% support of the investment costs (only for the building, not for land, not for equipment). This grant – which will most probably disappear in the new budgetary period from 2021– created incentives for companies with high value added to settle outside of Riga.

Privatization has led to fragmented ownership structure, and by now land is mainly in private ownership, so the municipalities can hardly influence the development processes through their property. However local municipalities are responsible for spatial planning. Local government spatial plans are created on the basis of reflecting multiple interests of different stakeholders and have to be approved by the Ministry of Environmental Protection and Regional Development. For a few years, this task was delegated to the planning regions, but not anymore.

Municipalities also have short term (up to 3 years), middle-term (up to 7 years) and long term (up to 25 years) development plans. The new investments – mainly if they are bigger scale – have to fit into these plans. In case they do not, the modification may take many months including the elaboration of environmental impact study. The local development plans have to be in line with the Planning Region's sustainable development strategy and development program. On the other hand, the Planning region is not responsible for checking the spatial plans of local municipalities anymore (since 2013), thus it does not have direct influence on local spatial planning. Local spatial plans have to be sent for approval directly to the ministry (however, as it was emphasized by some of the respondents, ministry evaluates the spatial plan only in case of conflicts in case the plan is attacked by any parties).

Spatial Development Planning Law defines development planning levels and documents in Latvia. Spatial development shall be planned by developing the following mutually coordinated spatial development planning documents:

- At the national level - Latvia's Sustainable Development Strategy and National Development Plan.
- At regional level - the planning region's sustainable development strategy and development program.
- At the local level - the local municipalities sustainable development strategy, development program, spatial plan, local plan and detailed plan.

    All above mentioned plans exists in reality. Spatial plan defines zoning of all territory of municipality. Local plan is a tool for local planning - a long-term territorial development planning document of a local municipality, which shall be developed for a part of a territory for solving a planning task or elaborating or amending the spatial plan.

If the municipality does not have land, the situation is more difficult. Municipalities face restrictions if wanting to buy land. There are fears from corruption and also from the danger that municipalities would further increase the already high level of public debts. For all these reasons municipalities are constrained in their decisions to accrue land ownership and to take loans.

Under such conditions companies are relatively free in their location decisions, looking for places where there are some pieces/reserves of industry or infrastructure and where the settlements are responsive. In many cases investors purchase land on the private market even before contacting the municipality to clarify existing and future infrastructure conditions and plans for future development.

All this results in fragmented patterns of industrial development. The potential advantages of concentrations in industrial parks in suitable areas and/or aiming for the use of existing brownfield areas are not exploited properly. Most municipalities do not have the expertise to evaluate the consequences of the business location decisions, the need for changing the local plans and the ways of how to do it (that is also why strategic spatial planning would be in better place in the hands of a regional organisation).

2.6 Potentials for metropolitan area cooperation

As was mentioned before the metropolitan area has a formal organisation (Riga Planning Region - RPR), which spatial delineation does not match the borders of the functional urban area. On the other hand, the appropriate spatial unit, the metropolitan area has “only” a delineation and a development plan without any administrative empowerment.

The main competencies of RPR are strategic and spatial planning, regional scale cooperation projects, entrepreneurship promotion and support measures. The RPR Administration prepares two documents: Sustainable Development Strategy till 2030 and Medium-Term Development Programme – both are obligatory for municipalities to follow. During the planning process consultations are being held 4-5 times a year with local level planners in Consultative Working Group. Finally, the RPR Development Council (mayors of the 30 local municipalities) approves the plan.

In the RPR Development Councils all settlements have one vote plus Riga has 6 votes, this equals to 35 votes.

Regarding the strategic development plans of the municipalities, they have to be in line with the RPR plans, however the strength of RPR to judge local development plan seems to be questionable, as RPR plans are often considered only as guidelines.

Between 2009-2013 RPR fulfilled the role to oversee local spatial plans (recently only sustainable development strategy and development program are at the regional level). Thus, the spatial visions were overseen by the region but then, due to political consideration of reducing the importance of the planning regions (there was even an idea to eliminate the regional planning level), the argument came that the region is not good for this function and conflict of interest could have happened, thus the ministry took back this function.

> RPR prepared a strategic plan on territorial potentials and possible specialization of the metropolitan area – an area that has somewhat different borders than that of RPR - taking present realities and potential future development into account. Although such plans are considered to be useful, they only give orientations, used as a communication tool, but not having any legal strengths.

RPR ensures connection between the national and local level of governance through the function of coordination. In this way the region is capable of covering the issues which exceed the borders of one local government, and at the same time it defines the demand for territorial solutions of national and international level.

RPR administration ensures the execution of the decisions taken by the RPR Development Council on regional development planning, coordination, collaboration between local governments and other national governmental institutions.

There is no national legislation regarding territorial cooperation around major cities. It is the regional scale development planning documents, which include strategic directions and solutions for cooperation within functional areas of cities.

In practice metropolitan area related planning considerations are not functioning. For example, it should be avoided to turn greenfield areas into development areas as there are so many existing brownfield and empty areas. But building on greenfield is cheaper than on brownfield thus greenfield development dominates. Another metropolitan regulation should address transport issues. Riga city would like to build P+R places around existing railway stations but the suitable areas are under the control of different local municipalities and there are no tools against their will, which usually is different from P+R.

Despite all the difficulties metropolitan cooperation is slowly getting impetus. Not only experts but also politicians started to talk about this. In October 2019 there was a huge event organized, at the end of which a memorandum was signed on cooperation.

Metropolitan collaboration initiatives started from active work together with planners in RPR Consultative Working Group and regular presentations about the issue in Development Council meetings. Thus, the impetus came from bottom-up initiatives that were heard and understood by existing political leadership of the RPR. All next steps (the elaboration of the Metropolitan Plan, willingness to be involved in ESPON targeted research, regular metropolitan theme-oriented events, memorandum of understanding, Vienna visit with mayors of metropolitan area municipalities) are natural evolution of these activities. Another factor can be the establishment of Association of Pieriga municipalities (NGO consisting of mayors from municipalities around Riga) working actively for about 3 years now regarding common development issues.

This is a big step compared to the previous years in the core metropolitan area. Smaller settlements understand now that also for their residents it is important to improve transport links and infrastructure as their citizens are using these when going to the city.[3]

It was frequently mentioned by the interviewees that the plans on metropolitan and urban level are well developed, Riga is also for metropolitan development - it is defined in planning documents and actively promoted by city development department. However, the political will, mainly from the side of Riga politicians - that have different political parties in leadership than the neighbouring settlements - was absent during the previous decade. On the other hand, as a result of local elections in August 2020 a new city leadership is established in Riga. Currently a new vice mayor position is dedicated for metropolitan cooperation.

Besides formal RPR organisation there are co-operations between the municipalities in the metropolitan area based on different projects (e.g., lake protection close to Adazi).

Recent plans for administrative reform

There is a territorial reform process going on in Latvia. According to the plan of the ministry the number of municipalities will be reduced from 119 to 35-40, thus a dramatic change is foreseen. In the Riga area instead of 30 probably 6-8 municipalities would remain, about which a lot of discussions are going on and the first results are expected to come in the middle of 2020.

In the framework of the administrative reform the ministry plans to discuss the regional reform as well. According to the most recent plans – autumn 2020 - the number of planning regions would remain the same, but in case of Riga the borders would change, making the region more compact and leaving out important centres like Ogre or Tukums.

The big question is also about functions. Some ministries do not want to decentralize at all, some of them would delegate those functions that are less important for them.

[3] Also, a recent OECD report on Latvia (OECD Economic Survey on Latvia 2019) mentioned clearly that cooperation in transportation issues around Riga would be crucial https://www.oecd.org/economy/latvia-economic-snapshot/

The planned administrative reform is already strongly debated between local politicians and scientists. There are opinions according to which instead of mergers between settlements which are working efficiently, the links of these with Riga should be improved. There is a fear that the administrative reform as planned today will take 2-3 years without creating any positive outcome - at least that is what expected by the actors.

Even if Latvia is small in population, having only 2 million people, the territory is big, 67 thousand sq. km. Thus, a middle tier level is needed, even if only 35-40 municipalities would remain. The minister for regional development will take the decision and is now a bit more open for discussions in the Parliament. It is a strong view that stronger regions are needed, e.g., by strengthening planning regions by adding additional functions.

The key question about the Riga metropolitan area is the political link between Riga and surrounding municipalities. As in 2019 promising talks started, there are now hopes for more collaboration.

2.7 Potential inspirational cases from the stakeholder city-region

Cases that can be inspiring both for planners in the Riga metropolitan area and outside of it:

- The step-by-step transformation of the VEF factory (inspiration for cities with a brown field development through dispersed ownership).
- The training of the IT company with special focus on young women. (How to cope with the challenges of the industrial transformation)
- The use of the former industrial areas in Olaine (if outside the city, then at least by the rail lines and based on brownfield)
- The plans for the redevelopment of the most southern part of the harbour area for mixed use.

3 A data-driven SWOT analysis for Riga

3.1 Introduction and methodology

The following chapters provide an analysis of the employment structure of Riga metropolitan area. They are based on the analysis of shares and number of employees being employed in different sectors of productive economy (measured at NACE 1 digit level regarding Riga city and its agglomeration and NACE 3-digit level with regard to the whole country).

The detailed analysis has three main parts: 1) displaying and analysing the productive sectors that provide the biggest employment in the region – compared to the national average - 2) displaying and analysing the sectors that resulted in the fastest growth – compared to the national average - between 2012-2017 and 3) highlighting the sectors that represent the biggest potentials and the highest threats for the local economy.

There is a well-established methodological background behind Part 3 that follows the approach to the analysis of the regional network of branches pioneered by Otto et al. (2014) and Neffke et al (2017A, 2017B). The basis for this approach is the common recognition that innovation (and thus growth) is driven by the exchange of knowledge between firms, having a complementary knowledge base, in the form of labour flow between branches (labelled as “embeddedness”). In addition, the development potential of a production branch is also based on the existence of a “critical mass” of employees in the metropolitan area being metered by the share of employees exceeding the national average (labelled as “specialisation”).

Table 2: Categories of the empirical SWOT analysis.
Development potentials according to degree of specialisation and embeddedness

	Regional embeddedness of a branch	
Regional degree of specialisation	High specialisation and well embedded (Strength S)	High specialisation but weakly embedded (Threat T)
	Low specialisation but well embedded (Opportunity O)	Not specialised and weakly embedded (Weakness W)

Source: Otto et al. (2014), ESPON MISTA (2020).

Overall, both the degree of specialisation and the embeddedness in the regional sectoral structure are decisive for an assessment of the development potential of a branch. According to Otto et al. (2014) economic branches in a region can be classified into four different categories, by differentiating, according to the values of their localisation quotient and their embeddedness indicator (Table 1):

1. If the branch under consideration is heavily localized in the region and if this branch is also well embedded in "related" branches, the branch is large relative to the regional economy and it is likely that it will also strongly profit from localised knowledge transfers across industries in the region. As a consequence, its future development prospects

should be favourable, and the branch can be considered to be a "strength" of the regional economy.

2. By contrast, a branch with a low degree of specialisation and embeddedness is unlikely to profit substantially from localized knowledge transfers but is also small in terms of the regional economy. Despite the fact that such branches may be of importance for the other reasons (e.g. the presence of natural resources or the satisfaction of local demand) such branches have therefore been regarded as a regional "weakness" in previous analysis from a technological development perspective.
3. Branches that are lowly localised but well embedded are faced by a favourable regional environment of technologically or cognitively "close" branches (and thus diverse opportunities to use a common knowledge base) but are still relatively small. Such branches could thus offer special "opportunities" to develop new strengths through structural policy initiatives in the future.
4. Finally, branches which are highly localized, but only weakly embedded in complementary in the region, tend to be seen at risk which could be reduced by strengthening complementary branches through structural policy initiatives. This is because they are relatively large but are unlikely to profit substantially from their regional knowledge base.

(A more detailed explanation on this methodology can be found in the Annex.)

Two types of analysis are presented in this chapter. The first represents the sectoral employment shares and growth rates of productive activities at the level of NACE 3-digit branch groups. The second type of analysis presents the SWOT profiles for productive activities. It allows to identify viable sector specialisations and areas of opportunity for innovation-driven economic growth in the region. These results thus provide essential direct inputs for structural and cluster policy.[4]

3.2 Spatial scope of data analysis

The spatial objects of the analysis are the city of Riga, the environs of the city of Riga and the Riga metropolitan region, which is the sum of the city of Riga and its environs. While the city of Riga is defined from a purely administrative perspective, as the territory covered by the Riga city administration, the Riga environs were defined in the course of the project in co-operation with the respective city administration. In defining this region three criteria were applied:

1. The most important of these was an administrative criterium according to which the chosen definition should to some degree reflect the administrative boundaries of existing institutions (or mechanisms) for inter – regional co-operation in the city. This criterium was chosen to ensure to the best possible degree that the analytic results are useful for existing urban planning processes.
2. The second criterium was based on data availability. Since the analysis conducted below requires detailed information on the development of employment at a NACE 3-

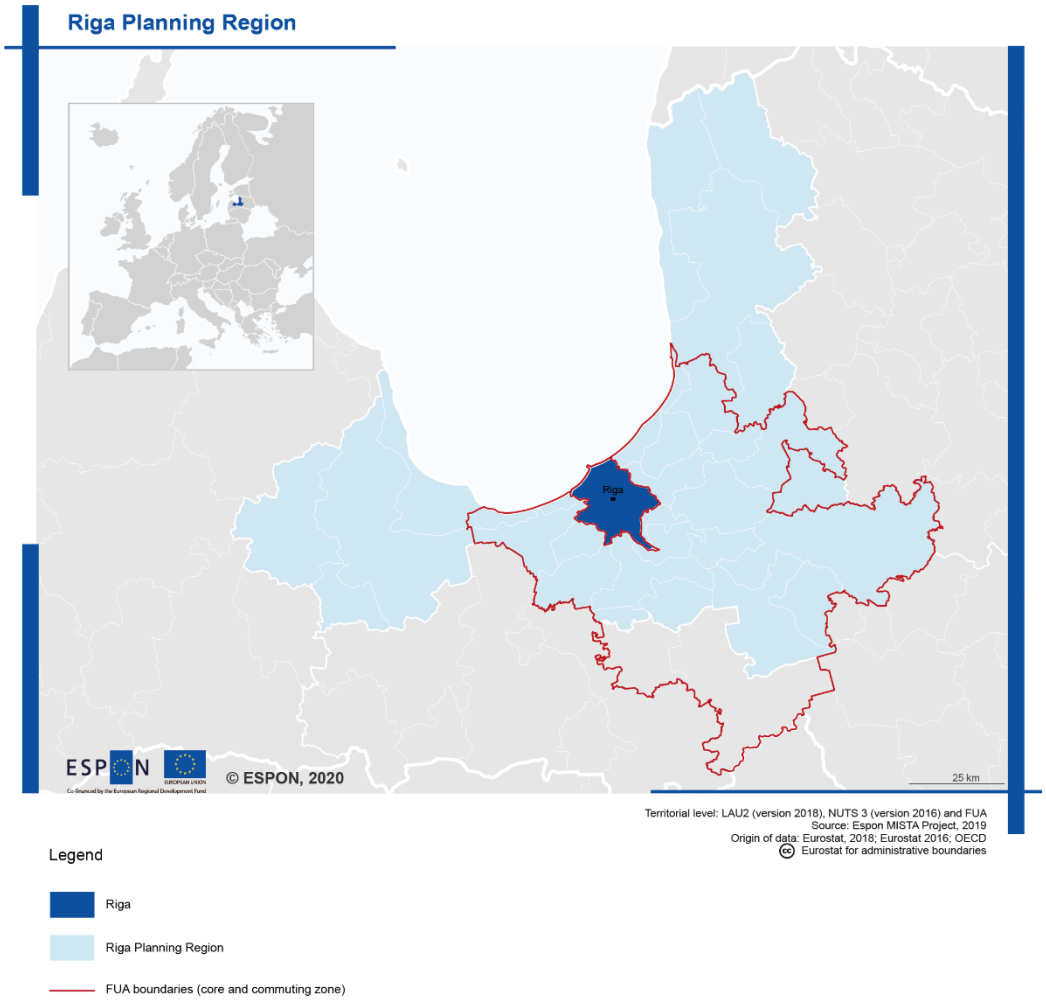
[4] Note that strengths, weaknesses, etc. are identified according to their degree of specialisation and embeddedness in the regional economy and not based on their degree of technology, R&D intensity and other factors evaluating the complexity and sophistication of a branch. Rather, being labelled as a “strength” can be regarded as a measure of revealed competitiveness of a branch in a specific region. Employment is reported at plant level and not at company level. This means that their assignment is to branch and region of the plant and not to that of the company headquarters.

digit level at a highly granular regional disaggregation level, this criterium prove to be the most constraining in the analysis. In the case of Riga, two data sources from the Latvian statistical office are available. First, employment data at the level of municipalities at the NACE 1 digit level for the year 2017, which is considered to be an experimental data source by the Latvian statistical office. The advantage of data is that it allows us to focus on the specialisation of the sub-regions of Latvia at a rather fine regional grid. The disadvantage is that this is possible only on a rather crude sectoral level and only for one year (2017). The second source is data at the NACE 3-digit level from 2012 to 2017, which is, however, available only at the NUTS 2 level (which in the case of Latvia is the entire country).

3. Given this difficult data situation it was decided to conduct the analysis in two steps. In the first we consider the data at municipality level to provide information on the patterns of specialisation within the metropolitan region of Riga for the year 2017 at the level of NACE 1-digit branches. In the second step this analysis is augmented by an analysis of national level data (using EU wide data as a reference) to provide information on the growth of productive sectors in the region at greater sector detail, and to conduct the proposed SWOT analysis.[5]
4. Finally, the third criterium was based on analytical consideration and was derived from the fact that knowledge spillovers as the central analytical concept guiding the current analysis in all likelihood exceed the regional scope of travel to work areas, which speaks in favour of using larger regions rather than smaller ones for the current analysis and may justify the focus on all of Latvia in our empirical analysis.

[5] The focus on such a large region as the whole of Latvia is a serious drawback for the growth analysis, because it does not allow us to consider the specifics of the city of Riga in more detail. The same does, however, not necessarily apply to the empirical SWOT analysis given that industrial networks often exceed the size of standard travel to work areas.

Map 2: Definition of the metropolitan region of Riga for the data analysis.



Source: ESPON MISTA (2020).

3.3 Size and growth of individual productive activities

3.3.1 Sector shares

Table 3 displays those sectors that provide the highest employment shares both in Riga and its environment.

Table 3: Top 10 branches in terms of employment (2017).

NACE	Name	Empl.	Share in %
Total metropolitan region			
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	104010	16,67
C	Manufacturing	59103	9,47
H	Transportation and Storage	55310	8,87
P	Education	48969	7,85
M	Professional, Scientific and Technical Activities	44783	7,18
F	Construction	43072	6,90
Q	Human Health and Social Work Activities	39002	6,25

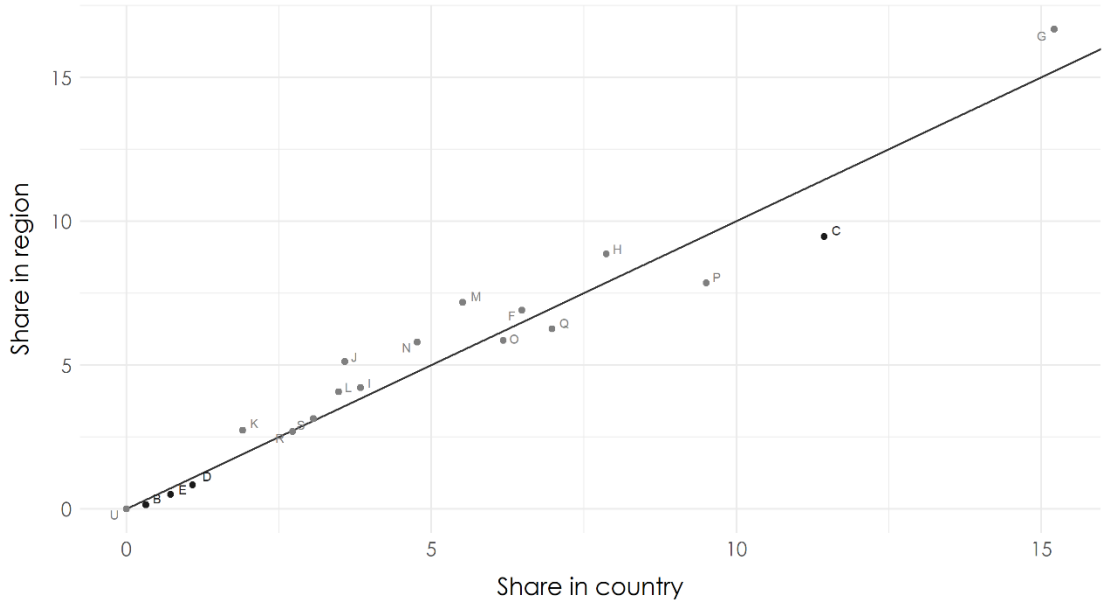
O	Public Administration and Defence; Compulsory Social Security	36567	5,86
N	Administrative and Support Service Activities	36194	5,80
J	Information and Communication	31912	5,11
Environs			
C	Manufacturing	23254	15,94
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	22549	15,46
H	Transportation and Storage	16880	11,57
P	Education	12748	8,74
F	Construction	10727	7,35
A	Agriculture, Forestry and Fishing	8356	5,73
M	Professional, Scientific and Technical Activities	6860	4,70
Q	Human Health and Social Work Activities	6671	4,57
O	Public Administration and Defence; Compulsory Social Security	6556	4,49
N	Administrative and Support Service Activities	5803	3,98
City of Riga			
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	81461	17,04
H	Transportation and Storage	38430	8,04
M	Professional, Scientific and Technical Activities	37923	7,93
P	Education	36221	7,58
C	Manufacturing	35849	7,50
F	Construction	32345	6,77
Q	Human Health and Social Work Activities	32331	6,76
N	Administrative and Support Service Activities	30391	6,36
O	Public Administration and Defence; Compulsory Social Security	30011	6,28
J	Information and Communication	29024	6,07

Source: Central Statistical Bureau of Latvia, ESPON MISTA (2020) calculations.

Figures 1 to 3 show the employment share of the NACE 1-digit sectors in the Riga metropolitan region, the city of Riga and the Riga environs in comparison to the national average and table 3 shows the data underlying these figures. These data characterize the Riga metropolitan region as a region in which production activities as defined in the MISTA project (i.e., the NACE sectors C to H) account for a comparatively large part of the economy. Within the metropolitan region the largest employment share is taken by “wholesale and retail trade, repair of motor vehicles and motorcycles” (NACE G). This accounts for 16.7% of the employed in the Riga metropolitan region. The second most important sector in terms of employment is manufacturing (NACE C) and the third most important is transportation and storage (NACE H), which take a share of 9,5% and 8,9% of total employment of the metropolitan region in 2017. Next to these sectors and following the expected structure of capital city regions also education as well as professional, scientific activities (with employment shares of 7.9% and 7.2%, respectively are important sectors for the metropolitan region. Furthermore, construction (NACE F) is the 6th largest sector with an employment share of 6.9% (see Table 3).

Interesting enough that even if Riga metropolitan area includes only about 50% the employees in the country, the sector profile of the metropolitan area is close to that of the country (see figure below).

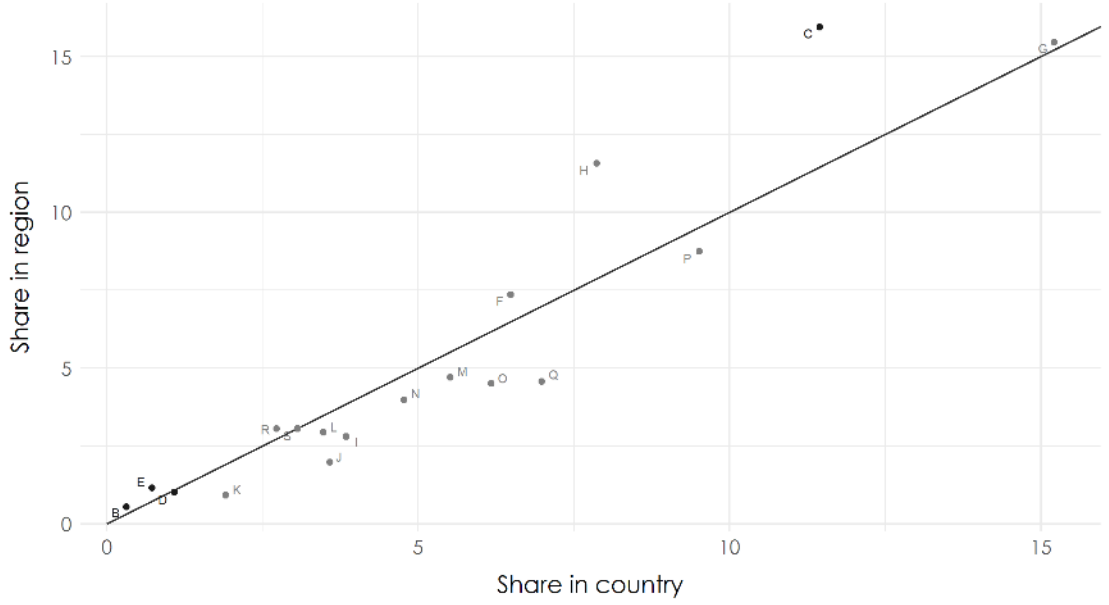
Figure 1: Sector shares of productive activities (total Riga metropolitan region).



Source: Central Statistical Bureau of Latvia, ESPON MISTA (2020) calculations; Industry (service) activities in black (grey); For illustrative purposes only branches with at least 100 employees are displayed. For NACE codes and branches see Table A1 in the annex.

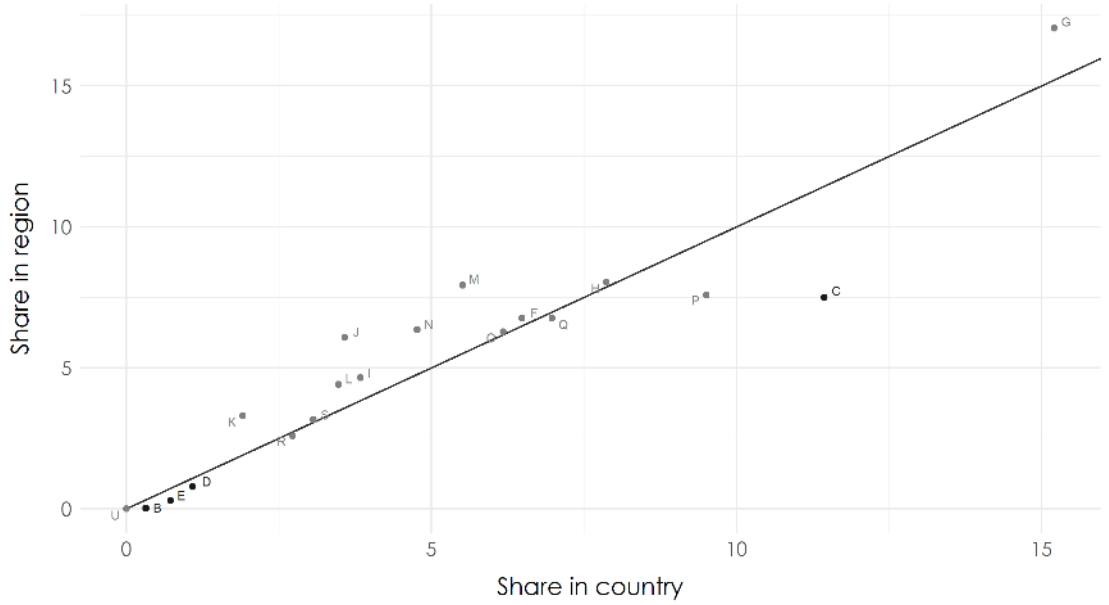
There are also noticeable differences in specialisation between the Riga city and environs. In particular in the environs of Riga manufacturing takes a substantially larger share of employment than in the city. In the environs this (with an employment share of 15.9%) is the largest sector, in the city of Riga this share is the fourth largest (with 7.5%). Similarly, the share of construction employment is noticeably higher in the environs (7.4%) than in the city (6.8%). By contrast “wholesale and retail trade, repair of motor vehicles and motorcycles” as well as “transportation and storage” are important sectors both in the city of Riga as well as in the enviros. The former accounts for 15.5% of all employed in the environs, the latter for 11.6%. In the core city “wholesale and retail trade, repair of motor vehicles and motorcycles” (with 17.0% of the employed) is the largest employer by far and “transportation and storage” is the second largest (with 7.5%).

Figure 2: Sector shares of productive activities (city of Riga).



Source: Central Statistical Bureau of Latvia, ESPON MISTA (2020) calculations; Industry (service) activities in black (grey); For illustrative purposes only branches with at least 100 employees are displayed. For NACE codes and branches see Table A1 in the annex.

Figure 3: Sector shares of productive activities (environs).



Source: Central Statistical Bureau of Latvia, ESPON MISTA (2020) calculations; Industry (service) activities in black (grey); For illustrative purposes only branches with at least 100 employees are displayed. For NACE codes and branches see Table A1 in the annex.

This list of the largest branches in terms of employment shares, however, takes no account of the specialisation of the country in general and the size of sectors relative to the overall country. In this respect the location quotient[6] is more informative.

Table 4: Top 10 branches in terms of specialisation (location quotient, 2017)

NACE	Name	Empl.	LQ
Total metropolitan region			
K	Financial and Insurance Activities	17075	1,44
J	Information and Communication	31912	1,43
M	Professional, Scientific and Technical Activities	44783	1,30
N	Administrative and Support Service Activities	36194	1,22
L	Real Estate Activities	25381	1,17
H	Transportation and Storage	55310	1,13
I	Accommodation and Food Service Activities	26322	1,10
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	104010	1,10
F	Construction	43072	1,06
Environs			
B	Mining and Quarrying	793	1,71
E	Water Supply; Sewerage, Waste Management and Remediation Activities	1686	1,59
H	Transportation and Storage	16880	1,47
C	Manufacturing	23254	1,39
F	Construction	10727	1,13
R	Arts, Entertainment and Recreation	4443	1,12
A	Agriculture, Forestry and Fishing	8356	1,08
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	22549	1,02
S	Other Service Activities	4455	1,00
D	Electricity, Gas, Steam and Air Conditioning Supply	1488	0,94
City of Riga			
K	Financial and Insurance Activities	15740	1,73
J	Information and Communication	29024	1,70
M	Professional, Scientific and Technical Activities	37923	1,44
N	Administrative and Support Service Activities	30391	1,33
L	Real Estate Activities	21108	1,27
I	Accommodation and Food Service Activities	22235	1,21
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	81461	1,12
F	Construction	32345	1,04
S	Other Service Activities	15097	1,03

Source: Central Statistical Bureau of Latvia, ESPON MISTA (2020) calculations. For illustrative purposes only branches with at least 100 employees are displayed.

According to this the specialisation of the Riga metropolitan area closely follows that of most other urban agglomeration areas in Europe. Primarily service activities (e.g., "financial and insurance activities", information and communication" and "professional and support service activities" are heavily localised in the Riga metropolitan region (see Table 4). Among the productive sectors considered in the MISTA project only "transportation and storage" (1.13) , wholesale and retail trade, repair of vehicles (1.10) and construction (1.06) have a localisation

[6] This is defined as the employment share of a branch in a region relative to the employment share of this branch in national employment.

quotient above one and thus a higher share of employment that is higher than in the national average in the Riga metropolitan region.

The stark difference of the economic structure of the core city and the environs of Riga are, however, also corroborated when considering the location quotient. The economic structure of the metropolitan region mainly reflects the specialisation patterns in the city, which follow those of the aggregate metropolitan region closely, naturally due to the fact, that 2/3 of the population of the metropolitan area is living in the core city. The environs of Riga, by contrast, differ markedly form this structure. In particular – in contrast to many other regions at the outskirts of the large cities in the EU – the Riga environs are more strongly industrialised than the remainder of the country. Next to the mining and quarrying sector, which, however had only around 800 workers in 2017, utilities (i.e., water supply, sewerage waste management and remediation activities), transportation and storage, manufacturing and construction all have a higher share of employment in the Riga environs than in the national average. (However, we have to note, that even if manufacturing has a higher share in the employment structure of the environment of Riga, the number of employees in manufacture is higher in the core city, due to the higher population number.)

The specialisation of the city of Riga, by contrast, is more strongly focused on services. The seven largest NACE 1-digit branches[7] in terms of employment share in the city belong to service activities not analysed in detail in the MISTA project. Very often these divisions (such as e.g., “information and communication” or “professional, scientific and technical activities”) are marked by a high technology and knowledge intensity, high demand for highly skilled workers and also high value added. Among the production activities considered in more detail in the MISTA project only two NACE 1-digit divisions “wholesale and retail trade; repair of motor vehicles and motorcycles” and “construction” belong to the ten most specialized in terms of employment in the city of Riga.

This pronounced difference in specialisation of the core city and its environs is thus one of the outstanding specifics of the Riga metropolitan area. It suggests that the city of Riga is specialised on a number of high value-added service sectors, while the environs of the city – like most of the country – are specialised much more strongly on production activities. This implies a lower degree of “suburbanisation” of many of the important (service) sectors in the city and thus a much clearer geographical division of services and production than is usual in European metro regions.

3.3.2 Growth

At the larger geographical scale of the country, which is considered as the larger Riga region in the remainder of this analysis, however, the fastest growing sectors at the NACE 3-digit level

[7] These sectors are “financial and insurance activities”, “information and communication”, “professional, scientific and technical activities”, “administrative and support service activities”, “real estate activities”, “accommodation and food service activities”.

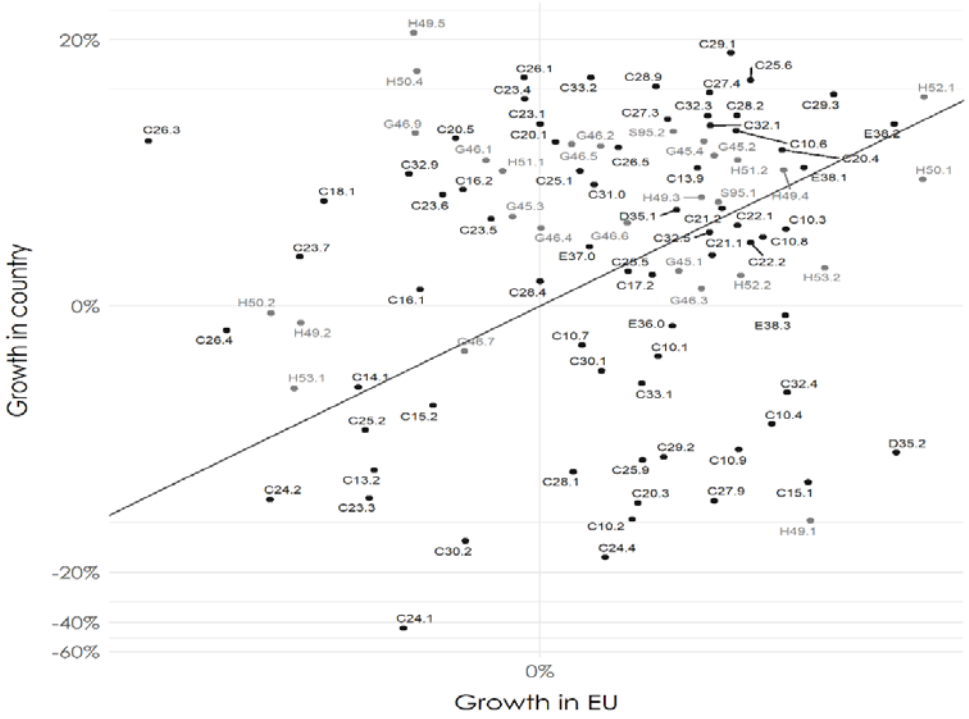
in the time period from 2012 to2017 (which is the longest period for which data is available) are mainly affiliated with manufacturing (i.e., NACE C) and logistics (NACE H). Thus, the fastest growing branch in terms of employment in this time period was transportation via pipelines (NACE H49.5) and the second fastest growing branch was manufacture of motor vehicles (NACE 29.1). In addition a further 6 of the 10 fastest growing branches ("installation of industrial machinery and equipment", "manufacture of electronic components and boards", "treatment and coating of metals"; "machining", "manufacture of other special-purpose machinery", "manufacture of electric lighting equipment", "manufacture of parts and accessories for motor vehicles") are manufacturing branches and the remaining two ("inland freight water transport" as well as "warehousing and storage") are related to logistics activities.

Table 5: Top 10 branches in terms of growth (2012-2017).

NACE	Name	Empl.	Growth p.a. in %
Total metropolitan region (Latvia)			
H49.5	Transport via pipeline	559	21,98
C29.1	Manufacture of motor vehicles	408	16,64
H50.4	Inland freight water transport	215	12,94
C33.2	Installation of industrial machinery and equipment	541	11,85
C26.1	Manufacture of electronic components and boards	870	11,85
C25.6	Treatment and coating of metals; machining	2245	11,39
C28.9	Manufacture of other special-purpose machinery	396	10,44
C27.4	Manufacture of electric lighting equipment	166	9,59
C29.3	Manufacture of parts and accessories for motor vehicles	1290	9,38
H52.1	Warehousing and storage	2186	9,00

Source: Central Statistical Bureau of Latvia, ESPON MISTA (2020) calculations. Only industries with at least 100 employees in 2017 are considered.

Figure 4: Growth of productive activities (Latvia vs EU).



Source: Central Statistical Bureau of Latvia, ESPON MISTA (2020) calculations; Industry (service) activities in black (grey); For illustrative purposes only branches with at least 100 employees are displayed. For NACE codes and branches see Table A3 in the annex.

While most of these activities are small in terms of absolute employment the strong representation of manufacturing branches among the fastest growing branches in Latvia is another important stylized fact, that is in strong contrast to the EU wide developments (documented in the background report to task 1 of the MISTA project) where only selected branches of manufacturing show high growth in metro regions. This is also reinforced by the fact that many of these rapidly growing manufacturing branches, have outperformed the EU average performance in the period 2012 to 2017 (See figure 5).

3.4 SWOT profiles of productive activities

As a consequence of the strong industrial orientation of the Latvian economy and thus also the economy of the Riga metropolitan region is more strongly specialised on manufacturing relative to the European economy. This applies in particular NACE 3 digit to branches that are related to the manufacture and processing of wood products and some branches in the textiles industry (see table 6). Thus, of the 10 most localized branches in Latvia two belong to this wood processing industries (“sawmilling and planning of wood”, “manufacture of products of wood, cork, straw and plaiting materials”) and further two to the textiles and clothing industries (“manufacture of knitted and crocheted apparel”, “manufacture of wearing apparel, except fur apparel”).

Next to this there is, however, also a very visible specialisation on logistics as many of the most localized three-digit branches in Latvia (such as “freight and rail transport”, “transport via

pipeline", "support activities for transportation" and "inland freight water transport") are closely connected to the logistics sector.

Table 6: Top 10 branches in terms of specialisation, Latvia compared to the EU (location quotient, 2017).

NACE	Name	Empl.	LQ
Latvia			
C16.1	Sawmilling and planing of wood	12897	12,19
C10.2	Processing and preserving of fish, crustaceans and molluscs	3521	6,73
H49.2	Freight rail transport	3069	5,25
H49.5	Transport via pipeline	559	4,70
C16.2	Manufacture of products of wood, cork, straw and plaiting materials	11869	3,67
C14.3	Manufacture of knitted and crocheted apparel	1147	2,68
H52.2	Support activities for transportation	24866	2,34
E37.0	Sewerage	1550	2,30
C14.1	Manufacture of wearing apparel, except fur apparel	7992	2,21
H50.4	Inland freight water transport	215	2,21

Source: Central Statistical Bureau of Latvia, ESPON MISTA (2020) calculations. For illustrative purposes only branches with at least 100 employees are displayed.

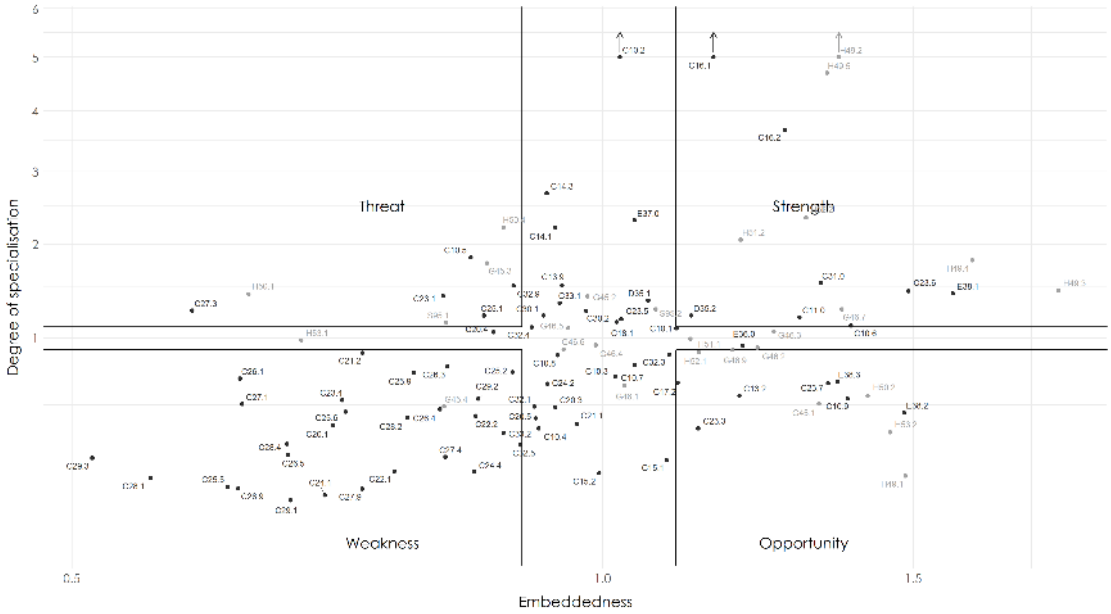
Among the localized branches in particular the logistics branches also belong to the most strongly embedded branches (in terms of human capital) in the Latvian economy (see table 7). Thus, branches such as "other passenger transport", "freight transport by road and removal services", "other postal and courier activities" or "sea and coastal freight water transport" all belong to the most strongly embedded in the Latvian economy, while among the manufacturing sector only the "manufacture of articles of concrete, cement and plaster", "manufacture of grain mill products, starches and starch products and the "manufacture of prepared animal feeds" belong to this group.

Table7: Top 10 branches in terms of embeddedness (2017).

NACE	Name	Empl.	Embed.
Total metropolitan region			
H49.3	Other passenger land transport	13844	1,81
H49.4	Freight transport by road and removal services	26566	1,62
E38.1	Waste collection	3428	1,58
C23.6	Manufacture of articles of concrete, cement and plaster	2405	1,49
H49.1	Passenger rail transport, interurban	337	1,48
E38.2	Waste treatment and disposal	494	1,48
H53.2	Other postal and courier activities	1353	1,45
H50.2	Sea and coastal freight water transport	198	1,41
C10.6	Manufacture of grain mill products, starches and starch products	576	1,38
C10.9	Manufacture of prepared animal feeds	320	1,38

Source: Central Statistical Bureau of Latvia, ESPON MISTA (2020) calculations. Only industries with at least 100 employees are displayed.

Figure 5: SWOT Profile (Latvia).



Source: Central Statistical Bureau of Latvia, ESPON MISTA (2020) calculations; Industry (service) activities in black (grey); For illustrative purposes only branches with at least 100 employees are displayed. For NACE codes.

Given the rather traditional and somewhat less technology intensive profile of both the embedded branches the empirical SWOT-profile of Riga mainly identifies branches of the wood manufacturing and processing cluster and in logistics as both localised as well as highly embedded branches (see table 7). These branches could therefore be seen as the existing strengths of the Latvian and thus by extension also the Riga economy, with in particular logistics being an important potential specialisation.

Table 8: SWOT Profiles for Latvia (2017)

NACE	Name	Employment
Localized and embedded		
C16.1	Sawmilling and planing of wood	12897
H49.2	Freight rail transport	3069
H49.5	Transport via pipeline	559
C16.2	Manufacture of products of wood, cork, straw and plaiting materials	11869
H52.2	Support activities for transportation	24866
H49.4	Freight transport by road and removal services	26566
H49.3	Other passenger land transport	13844
H51.2	Freight air transport and space transport	204
E38.1	Waste collection	3428
C23.6	Manufacture of articles of concrete, cement and plaster	2405
Not localized but embedded		
H52.1	Warehousing and storage	2186
E38.3	Materials recovery	619
C23.7	Cutting, shaping and finishing of stone	415
H50.2	Sea and coastal freight water transport	198
C10.9	Manufacture of prepared animal feeds	320

C17.2	Manufacture of articles of paper and paperboard	1414
G45.1	Sale of motor vehicles	3507
E38.2	Waste treatment and disposal	494
C13.2	Weaving of textiles	222
H53.2	Other postal and courier activities	1353
Localized but not embedded		
H50.4	Inland freight water transport	215
C10.5	Manufacture of dairy products	3248
G45.3	Sale of motor vehicle parts and accessories	5465
C32.9	Manufacturing n.e.c.	1092
C23.1	Manufacture of glass and glass products	1930
C25.1	Manufacture of structural metal products	5514
S95.1	Repair of computers and communication equipment	823
H50.1	Sea and coastal passenger water transport	618
C27.3	Manufacture of wiring and wiring devices	1249

Source: Central Statistical Bureau of Latvia, ESPON MISTA (2020) calculations. Only industries with at least 100 employees are considered

Somewhat surprisingly also most of the embedded but not localised branches, that may be considered opportunities for future development, in the Latvian economy are also affiliated with similar sectors as the localized and embedded branches. This applies in particular to the logistics sector in which the branches “warehousing and storage”, “sea and coastal freight water transport”, and “other postal and courier activities” belong to the embedded but not localised branches. In the manufacturing sector by contrast again many of the embedded but not localised branches are in industries with lower technological contents (such as e.g., “cutting, shaping and finishing of stone”, “manufacture of prepared animal feeds”, manufacture of articles of paper and paperboard”, and “weaving of textiles”.

Finally, among the localized but not embedded branches there is a large number of branches in manufacturing (“manufacture of dairy products”, “manufacturing n.e.c.” “manufacture of glass and glass products”, “manufacture of structural metal products” and “manufacture of wiring and wiring devices”) and once more a number of logistics branches (e.g., “inland freight water transport”, “sea and coastal passenger water transport”). Only few of these branches (none except for “repair of computers and communication equipment” are considered high technology branches in standard typologies.

3.5 Main takeaways

- An analysis of the specialisation of the employment structure of the Riga metropolitan area at the NACE 1 digit level suggests a very strong differentiation in terms of specialisation between Riga city and its environs. The municipalities surrounding Riga are characterized by a strong industrialisation and a high share of employment in manufacturing, logistics and the construction sector. In the city of Riga, by contrast, there is a strong specialisation on a number of knowledge intensive service industries such as “financial and insurance activities”, information and communication” and

"professional, scientific and technical activities" that are not analysed in detail in the MISTA project.

- This indicates that Riga city is to a large degree a city that serves as a major modern service centre to a still strongly industrialized hinterland, with a very sharp division between the city and its hinterland in terms of economic structure. Strategic development initiatives for the entire metropolitan region could therefore aim to increase synergies between the service sectors located in the city and the more traditional production activities located in the environs.
- In addition, the analysis suggests that the knowledge intensive business services, that are not a focus of the MISTA project are a stronghold for the economy of the core city of Riga. Developing this sector could be another main policy goal for industrial policy in the city
- This general finding is also confirmed by a more detailed analysis of the industrial structure of Latvia. In this too logistics and quite a few of the NACE 3-digit industries with a lower technological profile (such as e.g., in wood processing and manufacturing as well as textiles and clothing) emerge as current strongholds within the productive sector in the sense that they are both more localised than in the EU average and also strongly embedded into a common knowledge base.
- Somewhat surprisingly also many of the strongly embedded production branches that are not localised in the Latvian economy and may therefore be considered opportunities for future development also often belong to the logistics sector and or the less technology intensive manufacturing sector (e.g., wood processing). This may thus indicate that the country as a whole holds a particularly strong comparative advantage in these sectors.
- One issue of policy relevance for the Latvian economy as a whole that can, however, not be answered from a purely empirical perspective alone, is whether this comparative advantage is compatible with other policy goals of the country (e.g., in terms of income convergence).

4 Outcomes of the future workshop

4.1 Workshop structure

The workshops, held on the 12 of November 2020 online for Riga, was intended as an exploratory and self-reflective process for MISTA's seven stakeholder cities to review how their planning policy, plans, regulation and technical capacity reflect their ambitions in terms of research from the MISTA project. Each workshop followed a similar structure and contained similar ambitions, including:

- Helping to expose motivations and priorities for each of the cities.
- Seeking feedback on how research could be applied to decision making processes.
- Exploring the relevance of the Inspirational Cases, based on a shortlist of 27 cases.
- Showcasing how to facilitate stakeholder co-creation based on the outcomes of the MISTA project and to create 'Metropolitan Industrial Spatial Strategies' related to 'Economic Sprawl'.

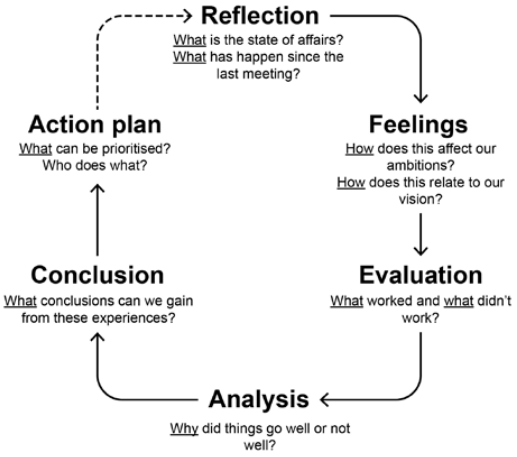
The workshops were not expected to generate exhaustive results but were designed to help create conditions for collaboration, exchange and expose what issues were most relevant to each city. The workshops also provided participants with a range of tools that could help to facilitate the use of the MISTA research for discussion and collaboration in the longer term.

Workshop program

The Future Workshop was based on the assumption, that knowledge transfer can depend on a number of factors. This could include the technical skills of those involved, the institutional capacity to interpret and apply the knowledge to the local cultural context, the planning environment, the economic conditions and the political landscape. As noted in the main MISTA report, the public sector at a city and metropolitan level across Europe has rarely been involved in shaping urban production networks. To be more actively involved in shaping the local (production) economy would require public authorities adopting new knowledge, developing new forms of collaboration (both inter-institutional but also outside the public sector) and in some cases new skills. Organisational change management offers a useful pathway. A development process where challenges are unclear, where shared meaning is required and where the end is poorly defined, can benefit from a reflexive approach based on co-creation and learning, what has been referred to as a 'community of practice'.

The MISTA futures workshop was based on 'experiential learning' methodology developed by Graham Gibbs 1988. The program was built around a six-step process, illustrated in the diagram below. The ambition of using this methodology was to bring together local actors within a community of practice and based on experiential learning, while showcasing a methodology that could be applied after the MISTA project was completed.

Figure 6: The two axes that define the policy scenarios.



Source: MISTA adaptation, based on Graham Gibbs 1988.

4.2 Workshop structure for Riga

Due to the limitations imposed by COVID-19, the event was conducted online. This presented certain disadvantages but allowed the local stakeholders to embrace online collaboration platforms.

The Riga workshop was hosted on the 12th of November with local actors for five hours. The event was hosted by Rūdolfs Cimdiņš, Sabīne Skudra and Katrīna Potapova (Riga Planning Region). The event included more than 20 attendees from: Riga Planning Region, Riga City (Development Department), Mārupe Municipality, Salaspils Municipality, Ādaži Municipality, Riga Business Association, Ķekava County Business Council, the Ministry of Environmental Protection and Regional Development and the University of Latvia.

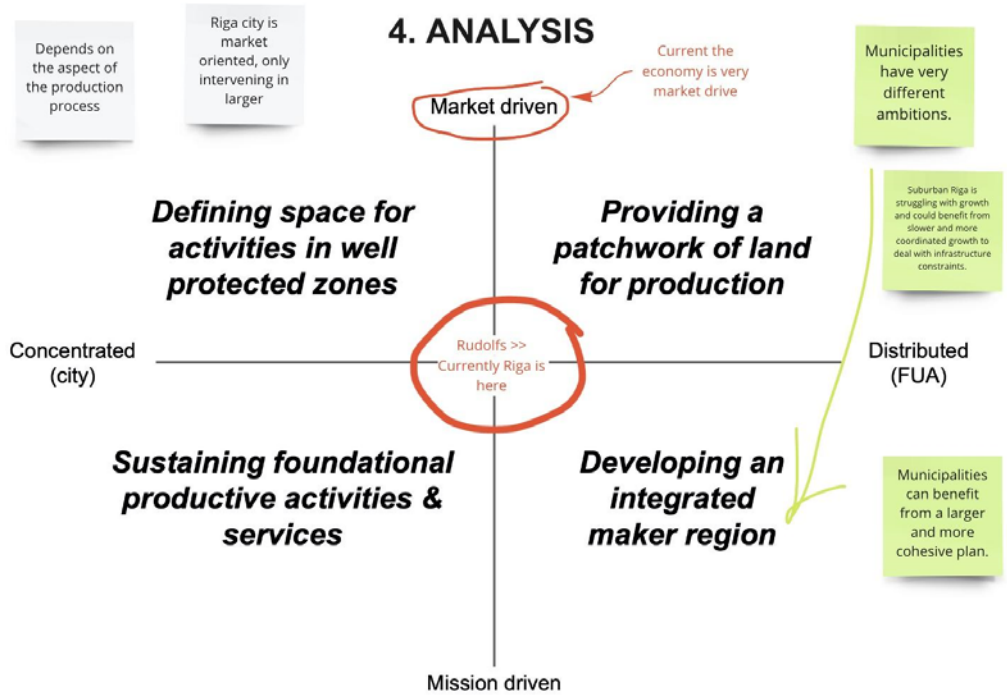
The workshop methodology followed the six steps noted above. The first step (reflection) began with a presentation of the MISTA's analysis of the city (see the report, above). The second steps (Feelings) used a simple exercise called 'the chart of emotions' to explore participants' latent feelings and motivators related to nostalgia, traumas, hopes and fears concerning production and industrial land. The third step explored a generic SWOT analysis regarding the role of production and industrial land. The fourth step (Analysis) aimed to narrow the focus towards action and involved presenting four scenarios for the future of Riga. The following step (Conclusion) connected the result of discussion with the presentation of 4 inspirational cases relevant to Riga. The final step (Action plan) was left for general discussion.

4.3 Scenarios

The scenarios are aimed to develop debate and are particularly useful to gauge how different actors view current and future ambitions. The scenarios are essentially structured around two questions:

- What is the scale of action (core city to metropolitan area)?
- What is the role of the public sector in stimulating the local economy (active role or driven by market forces)?

Figure 7: The outcomes of scenario making in Riga.



Source: ESPON MISTA (2020)

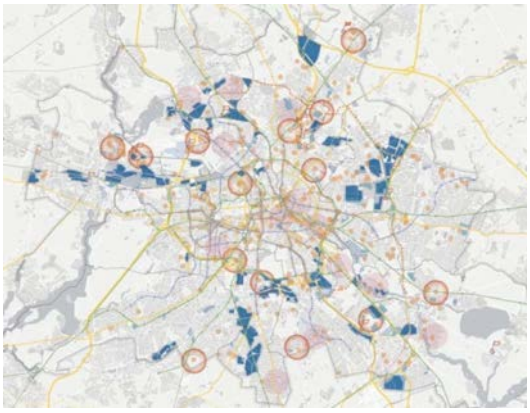
The first question revealed that considerable progress has been made in bringing together municipalities at a regional scale. This has been developing over the last two decades and is only now beginning to see the fruits of the efforts. Interestingly, actors involved at a metropolitan scale felt the situation was far more aligned than those functioning at a local level (in the municipalities). Both perspectives were aligned in the need to define metropolitan planning to avoid informal and poorly coordinated development as (good) land for development was running out at the metropolitan level.

When discussing the role of the public sector, differences emerged. Actors closer to Riga City considered the market driven approach effective in attractive investment. While actors outside of the city felt a more cohesive and mission driven approach was more appropriate.

4.4 Inspirational cases selected

Four inspirational cases were discussed in short at the workshop which provided an indication of the kind of interventions that were considered a priority.

Figure 8: The inspirational cases presented and discussed within the workshop.



Greater Manchester Combined Authority

Riga's metropolitan planning competencies have been evolving over the last two decades, particularly through developing trust and partnerships. The example of how Greater Manchester developed its Combined Authority offers a positive precedent in terms of what to expect and how to grow metropolitan cooperation.

Berlin Regional Development Plan 2030

Riga has become market driven and does not provide business or local public authorities with an indication of where activities should be located. Berlin's Economic Urban Development Plan helps to flesh out how certain activities can be best distributed across the city to take advantage of logistics and links to research.

Malopolska Regional Development Agency

Riga could explore regional development oriented through business development. Malopolska offers a wide range of services and support for businesses within the region.

Strijp-S

Riga is struggling with large, abandoned brownfield areas. Strijp-S from Eindhoven displays, how inner-city brownfield sites can be developed in a profitable way that results in an evolution of the industrial heritage and benefits the local economy. Through public partnership in the development process, community space can be integrated into the heart of the project.

Source: ESPON MISTA (2020).

4.5 Outcomes and discussion

Riga have evolved considerably over the last three decades. Participants looked back at times where the landscape was much simpler than it is today, now that urbanisation has moved out of the city of Riga and expanded the smaller towns of what is now a metropolitan area. This concern of uncoordinated development and particularly the lack of infrastructure to support economic growth was seen as a major challenge.

Conversely, the formalisation of metropolitan scale governance is seen to be a major step forward. Smaller municipalities felt like metropolitan planning needed to be much clearer in helping with spatial planning and particularly help support economic planning to avoid uncoordinated development. Stakeholders from public authorities also wanted to know what was expected of them to contribute to a stronger metropolitan area.

More cohesive development could be supported by an administrative capacity that could help align actors, support businesses and even develop land where necessary for the larger metropolitan area.

The problem of brownfield areas in the city was strongly emphasized highlighting, that there is no clear public vision yet, which brownfield areas would worth concentrated public efforts, taking into account, that development in brownfield sites is expensive. Only business activities with high value added would be able to bring in the needed capital.

Land is mostly in private hands in the Riga metropolitan area, which makes the direct public efforts complicate to implement. Consequently, even if there is a plenty of land available (not only brownfield) the public sphere has limited room for manoeuvre.

All participants emphasized the need for a stronger intervention of the public sphere, however in order to do that, first the values of productive industries to be located inside and outside the city border have to be clarified built on a clear vision on the role of metropolitan manufacturing.

5 Annex: further details on the methodology of the SWOT analysis used

5.1 Detailed description of the methodology

The methodology follows the approach to the analysis of the regional network of branches pioneered by Otto et al. (2014) and Neffke et al (2017A, 2017B). The basis for this approach is the common recognition that innovation (and thus growth) is driven by the exchange of knowledge between firms. According to increasing empirical evidence[8], knowledge exchange (and thus innovation) does not occur primarily within branches along narrow technological paths, as assumed by traditional approaches to agglomeration theory (beginning with Marshall, 1890) – and as referred to by a long tradition of "picking-the-winner" approaches to identifying sectoral strengths or "lead branches", which shaped regional economic policy until the 1980s. More recent results rather show that sectoral diversity is more likely to be positive for knowledge spillovers because a broad spectrum of branches offers access to different knowledge bases. Consequently, innovations are often generated by applying existing technological solutions (from one branch) to new problem areas (in another branch) by recombining knowledge from different areas (initially Jacobs, 1969).

Companies can, however, only absorb and process new knowledge if this knowledge is not too far away from their own knowledge base. Consequently, a central issue in the related varieties analysis conducted below is the measurement of the “embeddedness” of a branch. In this respect several approaches have been proposed in literature.[9] Most of them, however, are only able to identify proximity and define relatedness within the manufacturing sector or within the service sector. This makes them unsuitable for the present project as they are unable to measure the increasing linkages between services and production that characterize the economic “ecosystems” of urban agglomerations. For this reason, the current analysis relies on an approach by Neffke and Henning (2013). This approach argues that the exchange of personnel between branches (i.e., the direct movement of employees from one branch to another) is a good measure of the proximity of their knowledge base as such flows show that workers from one branch can meaningfully apply their knowledge base (gained in the source branch) in the destination branch. The approach therefore derives the measure of the proximity of the knowledge flow from flow data of employees between branches across all economic sectors.[10] This is because human capital of the workforce is highly job-specific, so that individuals (necessarily) lose part of their human capital when they move to a branch in which

[8] For an overview of the results of the meanwhile numerous relevant studies see, for example, Baudry and Schiffauerova (2009) and Boschma (2017).

[9] For a more detailed description of these approaches and their methodological advantages and disadvantages see Firgo and Mayerhofer (2018).

[10] This is the only approach that allows to consider the integration of and interdependencies between industry and services in the definition of proximity and relatedness, which is one of the central topics of the present project.

they cannot or can hardly make use of their previously accumulated (job- or branch-specific) knowledge (Neal, 1995; Parent, 2000). Such job changes between cognitively distant branches are rather unlikely. Rather, employees prefer to switch between branches that share a common knowledge base (i.e., are technologically or cognitively related to each other) and therefore need workers with similar skills, so that the employees can transfer a large part of their human capital when changing jobs between branches (and thus avoid losses of human capital and therefore income).[11]

Thus, the degree of cognitive or technological relatedness between two branches can be deduced from the probability of labour flows between these branches. Of course, this requires complete information on all job changes between branches at a very disaggregated sectoral level. Such data is provided by the results of a major research project conducted by the Institute for Employment Research (IAB) in Germany (Neffke et al., 2017A, 2017B), which examined labour flows between branches at a highly disaggregated level on the basis of the IAB dataset on employment history (BeH)[12] in order to define technologically or cognitively "close" branches for Germany (referred to here as "skill-relatedness"). The application of the labour-flows between branches obtained for Germany to regions of other countries seems justified. It can be feasibly assumed that branches (groups) that prove to be technologically or cognitively "close" or "skill-related" in Germany on the basis of inter-sectoral labour market flows at the level of NACE 3-digit branches, will be so in other highly developed parts of Europe as well: In fact, it can be rather ruled out that the same NACE 3-digit branches in Germany and regions in Austria, Norway or (Northern) Italy - that are subject to the present analysis - as regions with very similar levels of economic and technological development, differ substantially from each other in terms of production technology, qualification structure, input-output interdependencies etc., such that they would require systematically different knowledge bases.

We therefore use the matrix of branch-relatedness obtained from intersectoral job changes, the resulting sectoral connections for the analysis of the stakeholder city regions of the project. IAB distinguishes a total of 265 branch groups at the NACE 3-digit level in Germany. This means that a symmetrical matrix can be used to map a total of more than 70,000 target-source relationships between branches. For each of these bilateral relations a "skill-relatedness" index (*SRij*) is formed, which depicts the relative magnitude of the respective flow of labour between

[11] An empirical confirmation of this hypothesis is provided by Neffke et al. (2017A) for Germany. They show that job changes between branches are restricted to a limited spectrum of target branches that are cognitively "related" to the respective branch of origin.

[12] In principle, the results were calculated at the 4-digit level of economic activities, but for our purposes they were aggregated to the level 3 branches. We are very grateful to Anne Otto of IAB Nuremberg for providing the data and additional processing for the purposes of our analysis. The BeH data set (for a more detailed description see Bender et al., 2000) represents a complete survey. The employee history contains comprehensive personal information on all employees and companies in Germany subject to social insurance contributions as of 30 June each year. Information on employees and companies can be linked by means of anonymous personal and company numbers, so that on this basis (also) changes of job of employees can be identified.

two branches i and j as a measure of their "skill-relatedness". The basic idea here is that comparatively "large" labour flows between two branches are an indication that workers from branch i tend to move to branch j without any problems and can reuse their knowledge or skills from the old branch i quite easily. In this case the pair of branches under consideration can be qualified as cognitively/technologically "close" (or "skill-related").

What is meant by "comparatively large": In addition to their cognitive proximity, other factors are responsible for the extent of job changes between two branches, especially their size, but also their dynamics, wage levels or similar. An observable bilateral labour flow can thus be considered "relatively large" (and only then) if the number of job changes between the two branches is greater than would have been expected taking all the factors mentioned into account. Consequently, the "Skill-Relatedness" index compares the actual number of job changes measured with those that would have occurred if job changes between the two branches (given the characteristics of the branch) had been purely random. This (in the case of random changes) "expected" labour flows thus represents the benchmark for the classification of the observed labour flows. It can be easily calculated based on probability theory (cf. Otto et al., 2014).

Specifically, the "skill-relatedness" indicator as a measure of the cognitive "proximity" between two branches i and j is thus denoted as

Equation *(3)* $SR_{ij} = \frac{F_{ij}}{\hat{F}_{ij}}, SR_{ij} = \frac{F_{ij}}{\hat{F}_{ij}}$

where $F_{ij} F_{ij}$ denotes the observed job changes between branches i and j, and $\hat{F}_{ij}$ $\hat{F}_{ij}$ denotes the expected job changes between i and j. If this "skill-relatedness" index is > 1, the actual flows between the two branches are greater than would be expected in the case of purely random job entries and exits, which means that the pair of branches can be regarded as technologically or cognitively "related" or "skill-related". With index values < 1, on the other hand, job changes between the two branches are less frequent than would be expected, and a technological or cognitive relatedness obviously is not high in this case.[13] On the basis of the matrix of these 70,225 indicator values for the 265 branch groups of the NACE classification (level 3) it is now possible to represent the entire network of cognitively or technologically "related" branches and to use it subsequently for the calculation of the embeddedness (see above) as part of the empirical SWOT analysis for the individual branches in each stakeholder region.

Against this background, the starting point of the analysis is that the development potential of a productive branch in a region is determined not only by its own "critical mass" (i.e., its degree of specialisation), but also by the extent to which it can rely on a fertilising environment of complementary, (technologically or cognitively) "related" branches. Thus, following Otto et al.

[13] In the further analysis, a normalized "skill-relatedness" index is used, which assumes values between -1 and +1. Positive values thus indicate cognitive proximity, whereas negative values do not indicate such proximity.

(2014), a branches potential in a region can be empirically assessed along two dimensions. The first is the size of the branch in the regional economy, which is measured by the location quotient (LQ_{ir}) as a measure of the relative regional of branch *i* in region *r.* If this indicator is larger than one the branch is localized in the region, otherwise it is not.

The second is the embeddedness of a specific branch *i* in the “knowledge environment” of the region. This, similarly, to its own size, can be measured by the (weighted) regional specialisation of related branches (LQ_{ir}^{rel}) in the region. If its value of is larger than 1, then branch i is well embedded in the economy of region r, as it can draw on a large pool of "related" branches with a similar knowledge base. Values smaller than 1, on the other hand, denote branches that do not have such a regional "ecosystem" of related activities, which can affect their stability and resilience.

Table A1: Categories of the empirical SWOT analysis
Development potentials according to degree of specialisation and embeddedness

		Regional embeddedness of branch *i*	
		high $LQ_{ir}^{rel} > 1{,}1$	low $LQ_{ir}^{rel} < 0{,}9$
Regional degree of specialisation in branch *i*	High $LQ_{ir} > 1{,}1$	High specialisation and well embedded (Strength S)	High specialisation but weakly embedded (Threat T)
	low $LQ_{ir} < 0{,}9$	Low specialisation but well embedded (Opportunity O)	Not specialised and weakly embedded (Weakness W)

Source: Otto et al. (2014), ESPON MISTA (2020).

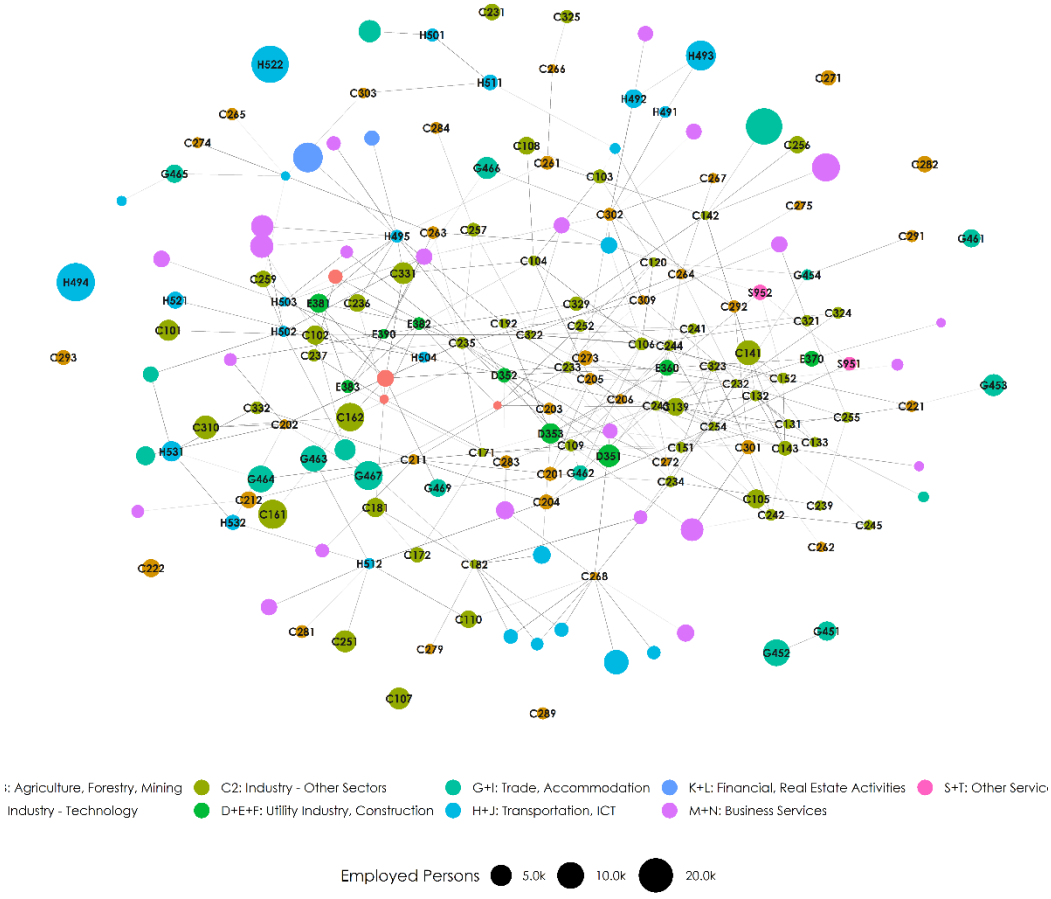
Overall, both the degree of specialisation and the embeddedness in the regional sectoral structure are decisive for an assessment of the development potential of a branch. According to Otto et al. (2014) economic branches in a region can be classified into four different categories, by differentiating, according to the values of their localisation quotient and their embeddedness indicator (Table A1):

1. If the branch under consideration is heavily localized in the region (LQ_{ir} > 1.1) and if this branch is also well embedded in "related" branches (LQ_{ir}^{rel} > 1.1), the branch is large relative to the regional economy and it is likely that it will also strongly profit from localised knowledge transfers across industries in the region. As a consequence, its future development prospects should be favourable, and the branch can be considered to be a "strength" of the regional economy.
2. By contrast, a branch with a low degree of specialisation and embeddedness (LQ_{ir} as well as LQ_{ir}^{rel} < 0.9) is unlikely to profit substantially from localized knowledge transfers but is also small in terms of the regional economy. Despite the fact that such branches may be of importance for the other reasons (e.g., the presence of natural resources or the satisfaction of local demand) such branches have therefore been regarded as a regional "weakness" in previous analysis from a technological development perspective.

3. Branches that are lowly localised (LQ_{ir} < 0.9) but well embedded (LQ_{ir}^{rel} > 1.1) are faced by a favourable regional environment of technologically or cognitively "close" branches (and thus diverse opportunities to use a common knowledge base) but are still relatively small. Such branches could thus offer special "opportunities" to develop new strengths through structural policy initiatives in the future.
4. Finally, branches which are highly localized (LQ_{ir} > 1.1), but only weakly embedded in complementary in the region (LQ_{ir}^{rel}< 0.9), tend to be seen at risk which could be reduced by strengthening complementary branches through structural policy initiatives. This is because they are relatively large but are unlikely to profit substantially from their regional knowledge base.

5.2 Network of branches

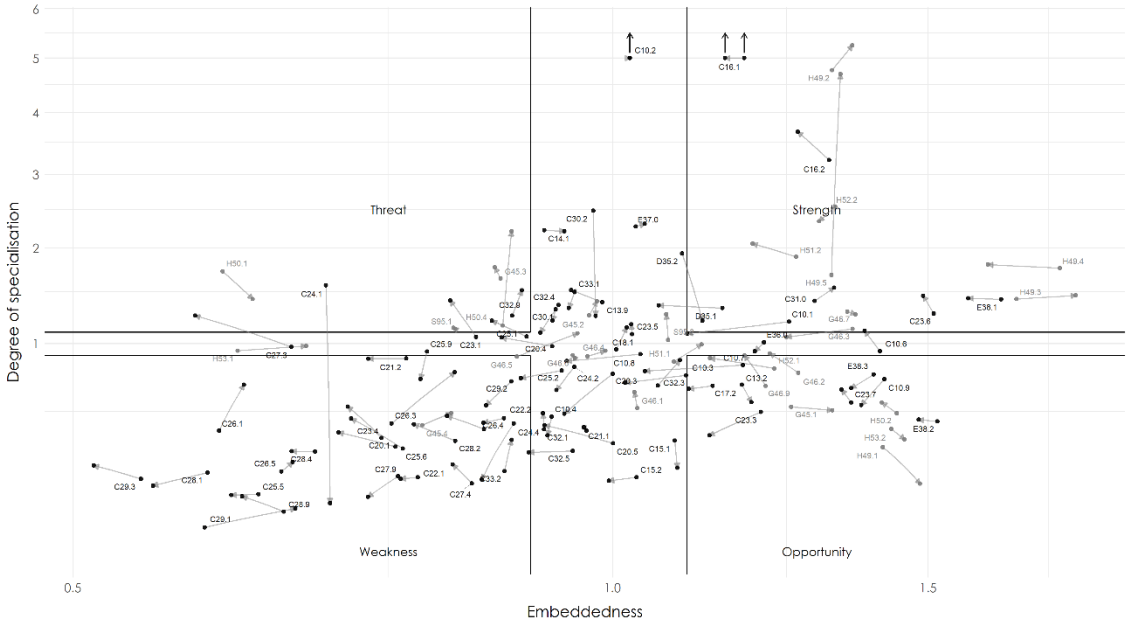
Figure A1: Network of branches (Latvia).



Source: Central Statistical Bureau of Latvia, network structure based on Neffke et al. (2017B), ESPON MISTA (2020) calculations. For illustrative purposes, only NACE 3-digit branch groups marking productive activities (in bold) and non-productive activities with strong links to productive activities with at least 100 employees are displayed.

5.3 A dynamic perspective on the SWOT profiles

Figure A2: Dynamic of the SWOT Profile (Latvia).



Source: Central Statistical Bureau of Latvia, ESPON MISTA (2020) calculations; Industry (service) activities in black (grey); For illustrative purposes only branches with at least 100 employees are displayed. For NACE codes and branches see Table A3 in the annex.

5.4 Employment shares of NACE1 digit divisions in Riga and in the Riga metropolitan region

Table A1: NACE 1-digit branch groups (2017).

NACE	Name	Empl.	Share in %	LQ
A	Agriculture, Forestry and Fishing	10611	1,70	0,32
B	Mining and Quarrying	881	0,14	0,44
C	Manufacturing	59103	9,47	0,83
D	Electricity, Gas, Steam and Air Conditioning Supply	5211	0,84	0,77
E	Water Supply; Sewerage, Waste Management and Remediation Activities	3115	0,50	0,69
F	Construction	43072	6,90	1,06
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	104010	16,67	1,10
H	Transportation and Storage	55310	8,87	1,13
I	Accommodation and Food Service Activities	26322	4,22	1,10
J	Information and Communication	31912	5,11	1,43
K	Financial and Insurance Activities	17075	2,74	1,44
L	Real Estate Activities	25381	4,07	1,17
M	Professional, Scientific and Technical Activities	44783	7,18	1,30
N	Administrative and Support Service Activities	36194	5,80	1,22
O	Public Administration and Defence; Compulsory Social Security	36567	5,86	0,95
P	Education	48969	7,85	0,83
Q	Human Health and Social Work Activities	39002	6,25	0,90
R	Arts, Entertainment and Recreation	16819	2,70	0,99
S	Other Service Activities	19552	3,13	1,02
U	Activities of Extraterritorial Organisations and Bodies	19	0,00	1,66
Environs				
A	Agriculture, Forestry and Fishing	8356	5,73	1,08
B	Mining and Quarrying	793	0,54	1,71
C	Manufacturing	23254	15,94	1,39
D	Electricity, Gas, Steam and Air Conditioning Supply	1488	1,02	0,94
E	Water Supply; Sewerage, Waste Management and Remediation Activities	1686	1,16	1,59
F	Construction	10727	7,35	1,13
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	22549	15,46	1,02
H	Transportation and Storage	16880	11,57	1,47
I	Accommodation and Food Service Activities	4087	2,80	0,73
J	Information and Communication	2888	1,98	0,55
K	Financial and Insurance Activities	1335	0,92	0,48
L	Real Estate Activities	4273	2,93	0,84
M	Professional, Scientific and Technical Activities	6860	4,70	0,85
N	Administrative and Support Service Activities	5803	3,98	0,83
O	Public Administration and Defence; Compulsory Social Security	6556	4,49	0,73
P	Education	12748	8,74	0,92
Q	Human Health and Social Work Activities	6671	4,57	0,66
R	Arts, Entertainment and Recreation	4443	3,05	1,12
S	Other Service Activities	4455	3,05	1,00
U	Activities of Extraterritorial Organisations and Bodies	0	0,00	0,00

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A	Agriculture, Forestry and Fishing	2255	0,47	0,09
B	Mining and Quarrying	88	0,02	0,06
C	Manufacturing	35849	7,50	0,66
D	Electricity, Gas, Steam and Air Conditioning Supply	3723	0,78	0,72
E	Water Supply; Sewerage, Waste Management and Remediation Activities	1429	0,30	0,41
F	Construction	32345	6,77	1,04
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	81461	17,04	1,12
H	Transportation and Storage	38430	8,04	1,02
I	Accommodation and Food Service Activities	22235	4,65	1,21
J	Information and Communication	29024	6,07	1,70
K	Financial and Insurance Activities	15740	3,29	1,73
L	Real Estate Activities	21108	4,42	1,27
M	Professional, Scientific and Technical Activities	37923	7,93	1,44
N	Administrative and Support Service Activities	30391	6,36	1,33
O	Public Administration and Defence; Compulsory Social Security	30011	6,28	1,02
P	Education	36221	7,58	0,80
Q	Human Health and Social Work Activities	32331	6,76	0,97
R	Arts, Entertainment and Recreation	12376	2,59	0,95
S	Other Service Activities	15097	3,16	1,03
U	Activities of Extraterritorial Organisations and Bodies	19	0,00	2,17

Source: Central Statistical Bureau of Latvia, ESPON MISTA (2020) team calculations. For illustrative purposes only branches with at least 100 employees are displayed.

5.5 Summary table on size and SWOT-profiles of all productive activities

Table A2: NACE 3-digit branch groups and SWOT profiles.

NACE	Name	Total Empl.	Total Reg.
C10.1	Processing and preserving of meat and production of meat products	4721	
C10.2	Processing and preserving of fish, crustaceans and molluscs	3521	
C10.3	Processing and preserving of fruit and vegetables	892	
C10.4	Manufacture of vegetable and animal oils and fats	113	
C10.5	Manufacture of dairy products	3248	T
C10.6	Manufacture of grain mill products, starches and starch products	576	S
C10.7	Manufacture of bakery and farinaceous products	5350	
C10.8	Manufacture of other food products	2524	
C10.9	Manufacture of prepared animal feeds	320	O
C11.0	Manufacture of beverages	2475	S
C13.2	Weaving of textiles	222	O
C13.9	Manufacture of other textiles	2685	
C14.1	Manufacture of wearing apparel, except fur apparel	7992	
C14.3	Manufacture of knitted and crocheted apparel	1147	
C15.1	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness; dressing and dyeing of fur	158	
C15.2	Manufacture of footwear	203	
C16.1	Sawmilling and planing of wood	12897	S
C16.2	Manufacture of products of wood, cork, straw and plaiting materials	11869	S
C17.2	Manufacture of articles of paper and paperboard	1414	O
C18.1	Printing and service activities related to printing	3463	
C20.1	Manufacture of basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms	928	W
C20.3	Manufacture of paints, varnishes and similar coatings, printing ink and mastics	342	
C20.4	Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	1194	
C20.5	Manufacture of other chemical products	338	
C21.1	Manufacture of basic pharmaceutical products	107	
C21.2	Manufacture of pharmaceutical preparations	2047	W
C22.1	Manufacture of rubber products	274	W
C22.2	Manufacture of plastics products	2712	W
C23.1	Manufacture of glass and glass products	1930	T
C23.3	Manufacture of clay building materials	172	O
C23.4	Manufacture of other porcelain and ceramic products	250	W
C23.5	Manufacture of cement, lime and plaster	343	
C23.6	Manufacture of articles of concrete, cement and plaster	2405	S
C23.7	Cutting, shaping and finishing of stone	415	O
C24.1	Manufacture of basic iron and steel and of ferro-alloys	139	W
C24.2	Manufacture of tubes, pipes, hollow profiles and related fittings, of steel	293	
C24.4	Manufacture of basic precious and other non-ferrous metals	155	W
C25.1	Manufacture of structural metal products	5514	T
C25.2	Manufacture of tanks, reservoirs and containers of metal	396	W
C25.5	Forging, pressing, stamping and roll-forming of metal; powder metallurgy	162	W
C25.6	Treatment and coating of metals; machining	2245	W

C25.9	Manufacture of other fabricated metal products	2007	W
C26.1	Manufacture of electronic components and boards	870	W
C26.3	Manufacture of communication equipment	468	W
C26.4	Manufacture of consumer electronics	115	W
C26.5	Manufacture of instruments and appliances for measuring, testing and navigation; watches and clocks	416	W
C27.1	Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus	1462	W
C27.3	Manufacture of wiring and wiring devices	1249	T
C27.4	Manufacture of electric lighting equipment	166	W
C27.9	Manufacture of other electrical equipment	102	W
C28.1	Manufacture of general-purpose machinery	563	W
C28.2	Manufacture of other general-purpose machinery	1881	W
C28.4	Manufacture of metal forming machinery and machine tools	290	W
C28.9	Manufacture of other special-purpose machinery	396	W
C29.1	Manufacture of motor vehicles	408	W
C29.2	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers	389	W
C29.3	Manufacture of parts and accessories for motor vehicles	1290	W
C30.1	Building of ships and boats	944	
C30.2	Manufacture of railway locomotives and rolling stock	582	
C31.0	Manufacture of furniture	6960	S
C32.1	Manufacture of jewellery, bijouterie and related articles	251	
C32.3	Manufacture of sports goods	172	
C32.4	Manufacture of games and toys	293	
C32.5	Manufacture of medical and dental instruments and supplies	651	W
C32.9	Manufacturing n.e.c.	1092	T
C33.1	Repair of fabricated metal products, machinery and equipment	5361	
C33.2	Installation of industrial machinery and equipment	541	W
D35.1	Electric power generation, transmission and distribution	5806	
D35.2	Manufacture of gas; distribution of gaseous fuels through mains	1098	S
E36.0	Water collection, treatment and supply	1687	
E37.0	Sewerage	1550	
E38.1	Waste collection	3428	S
E38.2	Waste treatment and disposal	494	O
E38.3	Materials recovery	619	O
G45.1	Sale of motor vehicles	3507	O
G45.2	Maintenance and repair of motor vehicles	9970	
G45.3	Sale of motor vehicle parts and accessories	5465	T
G45.4	Sale, maintenance and repair of motorcycles and related parts and accessories	223	W
G46.1	Wholesale on a fee or contract basis	2817	
G46.2	Wholesale of agricultural raw materials and live animals	1442	
G46.3	Wholesale of food, beverages and tobacco	9222	
G46.4	Wholesale of household goods	9785	
G46.5	Wholesale of information and communication equipment	2867	
G46.6	Wholesale of other machinery, equipment and supplies	5582	
G46.7	Other specialised wholesale	12503	S
G46.9	Non-specialised wholesale trade	2563	
H49.1	Passenger rail transport, interurban	337	O
H49.2	Freight rail transport	3069	S

H49.3	Other passenger land transport	13844	S
H49.4	Freight transport by road and removal services	26566	S
H49.5	Transport via pipeline	559	S
H50.1	Sea and coastal passenger water transport	618	T
H50.2	Sea and coastal freight water transport	198	O
H50.4	Inland freight water transport	215	T
H51.1	Passenger air transport	1498	
H51.2	Freight air transport and space transport	204	S
H52.1	Warehousing and storage	2186	O
H52.2	Support activities for transportation	24866	S
H53.1	Postal activities under universal service obligation	4111	
H53.2	Other postal and courier activities	1353	O
S95.1	Repair of computers and communication equipment	823	T
S95.2	Repair of personal and household goods	1392	

Source: ESPON MISTA(2020) calculations; S… Strength, W… Weakness, O… Opportunity, T… Threat; Empty cell indicates no specific SWOT profile in the region.

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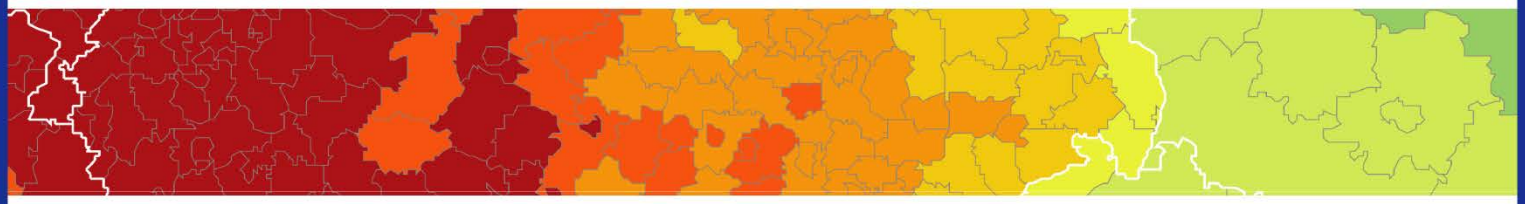

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