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STATE OF PLAY REGIONAL REPORT
PILSEN METROPOLITAN AREA

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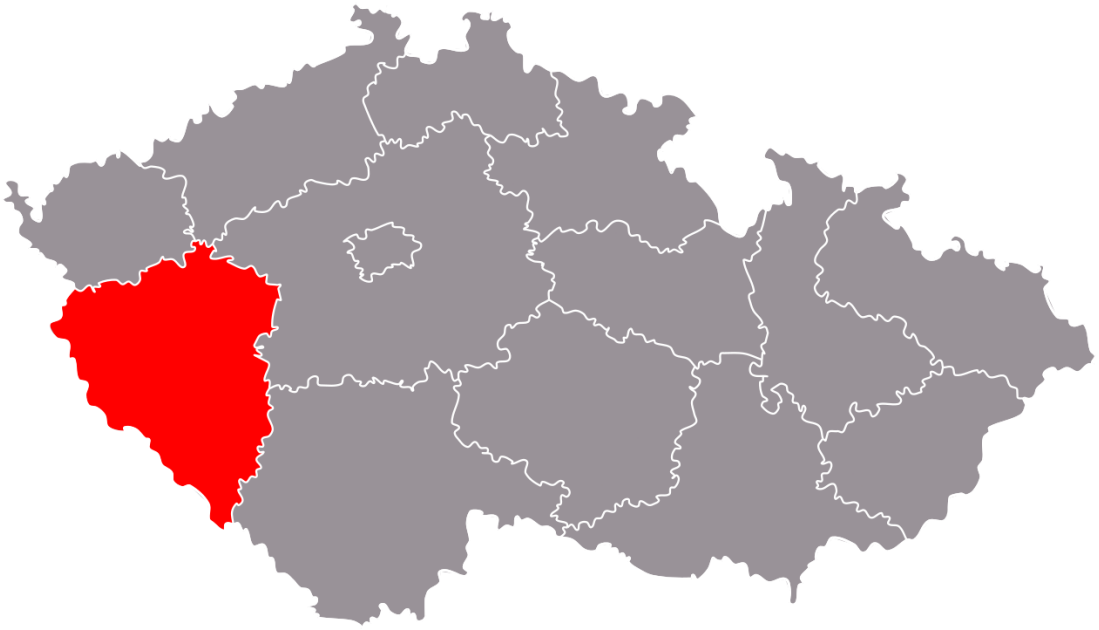
1.1 Pilsen Region

The Pilsen Region lies in the southwest of the Czech Republic (also referred to as "CR"), bordering the Federal Republic of Germany (Bavaria) in the west, the Karlovarský Region in the northwest, the Středočeský Region in the northeast, and the Jihočeský Region in the southeast.

Map 1 Location of Czech Republic in Europe
Source: https://cs.wikipedia.org/wiki/Geografie_%C4%8Ceska



Map 2 Location of Pilsen Region in Czech Republic
Source: CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=912943

The area of 7,649 km2 ranks the Region the third largest among 14 Regions of the Czech Republic, while as for population it ranks eighth. The Region comprises seven Districts: Domažlice, Klatovy, Pilsen-city, Pilsen-south, Pilsen-north, Rokycany, and Tachov. Their characteristics vary significantly from one District to another in terms of landscape character, population size and structure, economic potential, as well as the size and density of settlements.

It is the landscape relief that accounts for the variability of natural conditions, in particular. Geographically, the Region breaks up into several areas: Plzeňská pahorkatina (the Pilsen Uplands), a part of Brdská vrchovina (the Brdy Highlands), Český les and Šumava (the Bohemian Forest and the Šumava Mountains); climatic, geological, and hydrological conditions of the respective areas differ to a great degree. Mineral reserves, which are crucial for the development of manufacturing, are located particularly in the central parts surrounding the city of Pilsen. It regards resources of coal, heat-resistant and ceramic clays, and building stone. In the Šumava foothill area, there are resources of limestone. As for agriculture, there are quite favourable conditions for farming in the Region. The agricultural land covers about 49.3 % of the total area, of which arable land makes 66.9%. Forestry is characterised by sufficient natural resources of wood, as forest land covers 40.4% of the total area of the Region (large forests are particularly in Šumava, Český les, and Brdská vrchovina). As for the volume of coniferous roundwood removals, the Region ranks seventh within the CR.

The environment of the Region is of good quality when compared to other Regions of the CR. Specific emissions according to REZZO 1–4 in the Region are lower than the national average. In 2017, specific emissions of sulphur dioxide were 0.55 t/km2 (i.e. 41.1% of specific emissions in the CR), specific emissions of nitrogen oxides were 0.88 t/km2 (i.e.

44.1% of the national level), specific emissions of carbon monoxide were 5.51 t/km2 (i.e. 60,9% of the national level), and solid emissions were 0.50 t/km2 (i.e. 71.7% of the national level). The least damaged areas comprise the mountainous parts of Šumava, Český les, western parts of Brdská vrchovina, and the areas surrounding the municipalities of Manětín and Nečtiny. The environment protection in Šumava is ensured by the following organisations: the Šumava National Park and the Šumava Protected Landscape Area. There are five protected landscape areas (Šumava, Český les, Slavkovský les, Brdy and Křivoklátsko) and 193 small-size protected areas in the Region.

The city of Pilsen and its surroundings, where the environment is severely damaged, are an exception. Specific emissions reported for the Pilsen-city District are several times higher than the national average. The city of Pilsen and its surroundings suffer the effects of a high concentration of industrial activities and heavy road traffic. The overloaded road network makes the quality of the environment much worse due to emissions of nitrogen oxides and hydrocarbons and noise. Mining or quarrying activities devastated the most the areas in the surroundings of the following municipalities: Nýřany, Tlučná, Vejprnice, Břasy, Radnice, Stříbro, and Ejpovice.

The road network in the Pilsen Region consists of 5,120.4 km of roads and motorways, of which 415.0 km are first class roads, 1,493.0 km second class roads, and 3,103.2 third class roads. The Pilsen Region has 109.2 km of motorways, most of which are in the Tachov District (44.7 km), the Rokycany District (25.9 km), and the Pilsen-north District (18.9 km). Length of railways in the Region was 705.4 km as at 31 December 2018.

What is typical for the Pilsen Region is a high number of small settlements that are scattered about the Region; since medium-sized towns are missing, the structure of centres is atypical in comparison to other parts of the CR. The city of Pilsen with its 172 441 population contrasts with small municipalities, as it is the second most important centre of Bohemia, right behind Prague. The Pilsen Region comprises 57 towns, in which 391,500 population live (67.0% of the Region's total population).

Based on Act No 314/2002 Sb on determination of municipalities with authorised municipal authorities and municipalities with extended powers, the Czech Republic has from 1 January 2003 a new administrative structure: it is divided into 205 administrative districts of municipalities with extended powers. The Decree of the Ministry of the Interior No 388/2002 Sb determined administrative districts of municipalities with authorised municipal authority and administrative districts of municipalities with extended powers. After the end of activity of district authorities (as at 31 December 2002) an important part of their powers was thus shifted to municipalities with extended powers. The Pilsen Region was divided into 15 administrative districts of municipalities with extended powers under which 35 administrative districts of municipalities with authorised municipal authority come. The following belong to the municipalities with extended powers: Blovice, Domažlice, Horažďovice, Horšovský Týn, Klatovy, Kralovice, Nepomuk, Nýřany, Pilsen, Přeštice, Rokycany, Stod, Stříbro, Sušice, and Tachov.

Main settlements in the Region lie on development lines of regional importance and on the western radial route, which connects Pilsen and Prague and is directing through a corridor to the border with Germany. Out of these hubs, there are sparsely inhabited territories with prevailing residential and agricultural function, with insufficiently developed social and technical infrastructure, and limited transport services. The following will contribute to revitalization of these settlements: establishment of small businesses, revival of crafts, and development of services related to tourism. Municipalities associate to form microregions in order to enable at least partial implementation of some activities.

Within the period of 1990–2018, housing construction intensity peaked in 2008. The number of completed dwellings per 1 000 mid-year population was 4.70. In the year 2018, the value of the housing construction intensity amounted to 4.16. The population of 584,672 inhabitants ranks the Region seventh smallest in the Czech Republic (as at 31 December 2018), making up 5.5% of the CR's total population. However, the population is distributed very unevenly over the Region. Almost 30% of the population live in the city of Pilsen and another 23.2% is concentrated into 16 towns of 5,000+ inhabitants. About 14.3% of the population live in smaller towns under 5,000 inhabitants.

The Pilsen Region has the third lowest population density in the CR, which amounts to 76.4 inhabitants per km2 (the population density of the CR is 135.0 inhabitants per km2). Within the Region, the lowest density is reported for the Tachov District and the Klatovy District (38.9 and 44.4 inhabitants per km2 , respectively).

Regarding the distribution of the population by age, the Region ranks among the oldest ones in the CR - the 2018 average age amounted to 42.7 years. In the Klatovy District, the average age was even 43.7 years. On the contrary, the lowest average age (41.7 years) was in the Tachov District. A high share of senior population in the Pilsen Region is reflected also in the ageing index (i.e. the ratio of the 65+ years population to that under 15 years of age). In 2018, the value of the index amounted to 129.7, which is the sixth highest figure in the CR (the ageing index in the CR was 123.2). The highest values of the index were reported by the following Districts: the Klatovy District (145.7), the Pilsen-city District (135.1), and the Rokycany District (131.8). On the contrary, the lowest value was reported by the Tachov District (113.1).

The population of the Czech Republic increased by 39,745 inhabitants in 2018 (when compared to 2017). The number of live-born children in the CR decreased by 369 children, year-on-year (i.e. a decrease by 0.3%). In 2018, population of the CR increased thanks to net migration (38,629 persons) and the natural population change, which amounted to 1,116 persons.

The population of the Pilsen Region increased by 3,856 inhabitants in 2018 (when compared to 2017). The number of live-born children only increased by 16 children, year-on-year (i.e. an increase by 0.3%). The natural population change (a decrease) amounted to -194 persons. The population of the Pilsen Region increased thanks to net migration, which amounted to 4,050 persons.

As for the number of live births (10.4 per 1,000 mid-year population), the figure for the Pilsen Region was lower when compared to the national average in 2018. In relative terms, the highest number of live births was in the Pilsen-city District (11.0), the Tachov District (10.5) and the Rokycany District (10.5). As for abortions (27,3 per 100 births), the Pilsen Region ranks the fifth lowest in the CR. Compared to the previous year, the number of abortions per 100 births decreased by 5.5. Compared to the CR, the abortion rate in the Pilsen Region was lower; per 100 births, there were by 1.5 abortions less in the Pilsen Region in comparison to the CR. Higher abortion rate in comparison to the regional average was achieved in the Klatovy District (38.0), the Domažlice District (33.9).

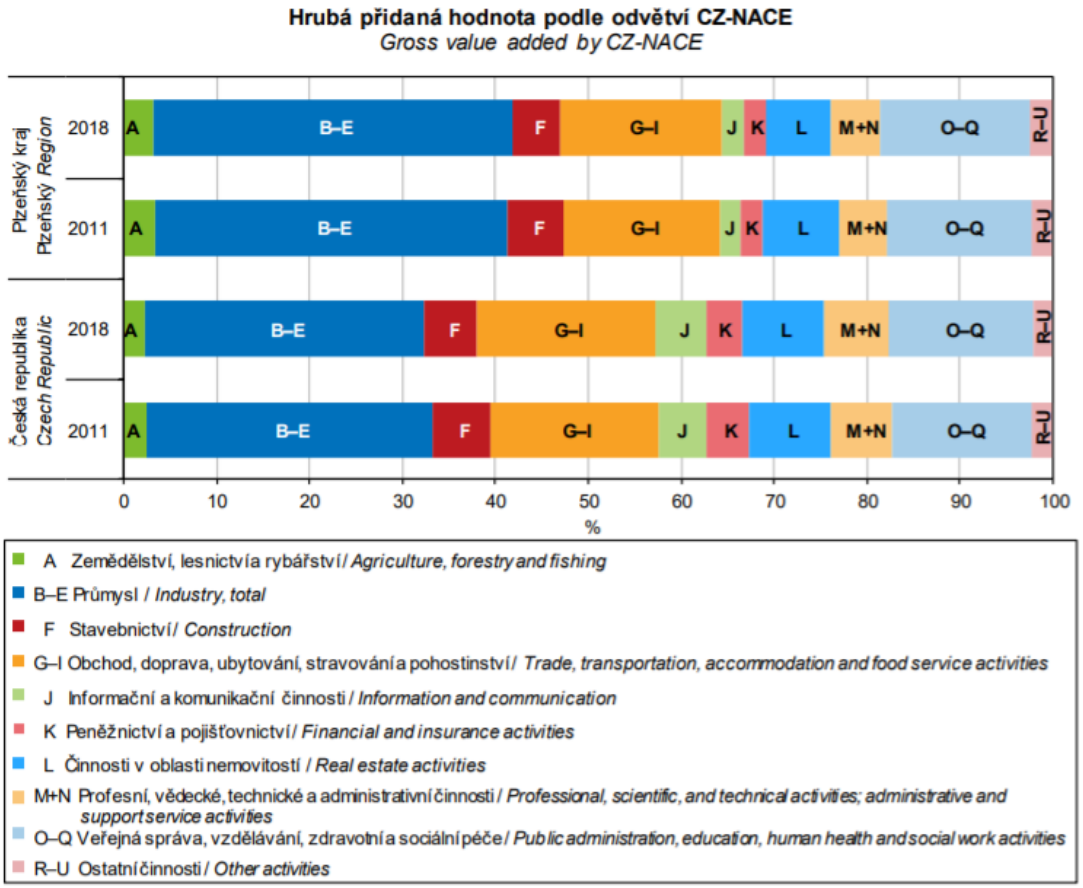
As for the number of marriages per 1,000 mid-year population (5.2) the Pilsen Region was comparable to the national average (5.1). In relative terms, most marriages were concluded in the Domažlice District (5.6) Rokycany District (5,4) and Tachov District (5.4). The divorce rate in the Pilsen Region (2.4) was comparable to the national average (2.3). In relative terms, most marriages were divorced in the Rokycany District (2.7) and in the Pilsen-south District (2.6), while the least (2.2) in the Domažlice District and Klatovy District.

In 2018, the share of the Pilsen Region in the total gross domestic product of the Czech Republic at current prices was 4.9%. In GDP per capita (CZK 449,822) it ranked fifth in comparison with other Regions of the CR.

	Macroeconomic indicators		**Labour market**			
Territory designation[1]	**GDP** (EUR million)	**GDP per capita** (EUR)	**The employed** (thous. pers.)	**Primary**[2] (%)	**Secondary**[3] (%)	**Tertiary**[4] (%)
Pilsen region (NUTS3)	10 218	17 539	293,0	3,3	41,8	54,8
Southwest (NUTS2)	20 559	16 803	594,8	4,7	41,2	54,1

Chart 1 Macroeconomic indicators and labour market in Pilsen Region in 2018
Source: Czech Statistical Office, own processing

[1] Name of Urban centre; rural centres or municipalities, FUA = Functional Urban Areas, etc
[2] Agriculture, forestry and fishing
[3] Industry and construction
[4] Market and non-market services



Graph 1 Gross value added by CZ-NACE
Source: https://www.czso.cz/documents/10180/91345195/33010819.pdf/0497e658-77d2-4940-97b5-3675eef635ad?version=1.5

Important food enterprises in the Pilsen Region are: Pilsner Urquell Brewery (founded in 1842) - the biggest Czech beer exporter (which is a part of Asahi Group Holdings, Ltd. - a Japanese beer brewing company); Stock Pilsen a.s., a traditional producer of spirits (nowadays the biggest producer of spirits in the Czech Republic), and Bohemia Sekt Českomoravská vinařská a.s. in Starý Plzenec - an important wine producer.

Engineering belongs to important industries in the Region; it is associated especially with the name of Škoda. The following belong to the key assortment produced by Škoda: facilities for both classical and nuclear power engineering and petrochemistry, products of ironworks and forges, heavy machine tools, rolling mill equipment, sugar mill equipment, hydraulic and curing presses, gear units, rail vehicles, trolleybuses, drive motors, and various types of steam turbines. Own research and a trading company are also developing there. Other important industrial enterprises, which have an influence on the Region's economy are: DIOSS Nýřany a.s., producing products from metal sheets and tubes, Okula Nýrsko a.s., plastics processor, and LASSELSBERGER s.r.o., which represents ceramics manufacturing.

Thanks to its location, the Pilsen Region is attractive for foreign investors. A dominant position among foreign investors belongs to Japanese plant Panasonic AVC Networks Czech s.r.o. producing flat panel display screens. Other important foreign companies are: VISHAY ELECTRONIC s.r.o., a company producing electronic parts, BORGERS CS spol. s r.o. producing textiles and textile floor coverings for the automotive industry, MD ELECTRONIC spol. s r.o. producing cable jumpers, and Daikin Industries Czech Republic s.r.o. producing heat pumps, air conditioning, and ventilation systems.

Cross-border cooperation with the neighbouring Bavaria within Euroregions helps to reduce socio-economic differences. It is the Domažlice District and the Klatovy District (Euroregion Šumava), and the Tachov District (Euroregion Egrensis) participating in the European Cross-border Cooperation Programme.

The 2017 number of employees in the Region amounted to 221.8 thousand headcount persons (by the so-called workplace method incl. enterprises with less than 20 employees, according to preliminary data), which is 38.2% of the Region's total population. The average wage per headcount person amounted to CZK 28 220 (according to preliminary data). The Pilsen Region ranked third behind the Hl. m. Prague Region and the Středočeský Region. The average wage, however, was by 1.7% lower than the national average.

According to the Statistical Business Register, there were 147,014 businesses in the Pilsen Region as at 31 December 2018, most of which were natural persons (78.5%). Most of the businesses (37.6%) have their seat in the Pilsen-city District. As for employment, a major role in the Region is played by 61 businesses with 500+ employees, of which 25 businesses employ over 1,000 employees.

The following organisations and companies in the Region have rather high numbers of employees: LASSELSBERGER, s.r.o., VISHAY ELECTRONIC spol. s r.o., City of Pilsen, IDEAL AUTOMOTIVE Bor, s.r.o., HP-PELZER s.r.o., International Automotive Components Group s.r.o., Pilsner Urquell Brewery, BORGERS CS spol. s r.o., University of West Bohemia in the city of Pilsen, MD ELEKTRONIK spol. s r.o. and Fakultní nemocnice Pilsen.

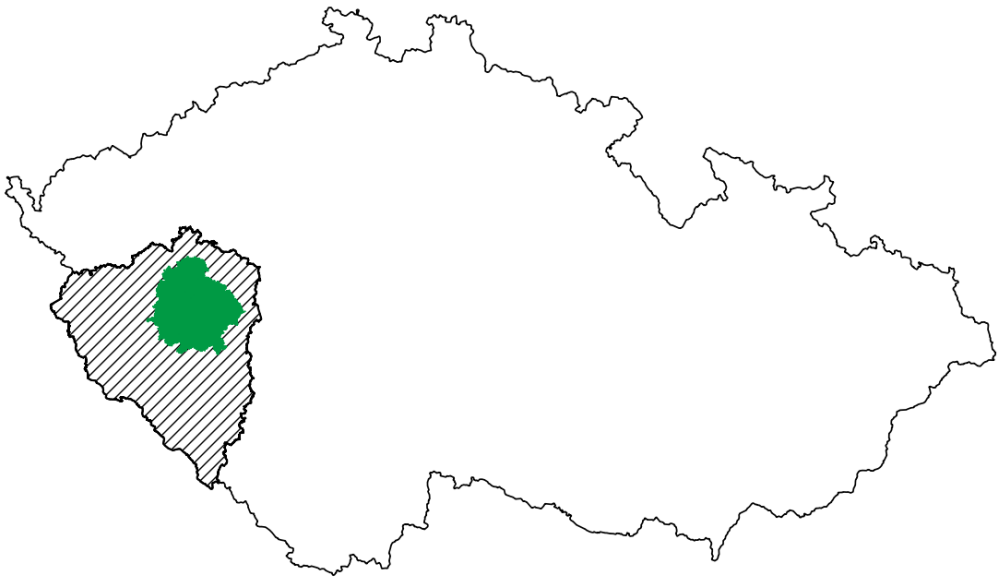
Within the CR, the Pilsen Region ranks among Regions with rather low share of the unemployed. There were 9,009 job applicants kept in the labour office register as at 31 December 2018 in the Region. Compared to other Regions of the CR, the Pilsen Region reports the second lowest share of the unemployed (2.12%). The highest share of the unemployed was reported for the Tachov District and the Rokycany District (2.86% and 2.48%, respectively), while the lowest was in the Pilsen-south District (1.71%), and the Pilsen-city District (1.79%).

There were 34,866 vacancies kept in the labour office register in the Pilsen Region (as at 31 December 2018), i.e. approximately 0.3 job applicants per vacancy. The worst ratio was in the Klatovy District (0.6 job applicants per vacancy). Graduate and juvenile job applicants accounted for 4.5% of the Region's total number of unemployed job applicants kept in the labour office register.

There are 10 hospitals with 3,321 beds in total (in all departments) in the Region. Some of the therapeutic institutions for long-term patients became parts of hospitals and they are not registered separately any more. The network of pre-school and school facilities comprises 276 nursery schools, 222 basic schools, 15 grammar schools, 44 programmes of technical (vocational) education (at schools excluding follow–up courses). University education in the Region is provided at the University of West Bohemia in the city of Pilsen) by its 9 faculties (Faculty of Economics, Faculty of Education, Faculty of Philosophy and Arts, Faculty of Law, Faculty of Applied Sciences, Faculty of Mechanical Engineering, Faculty of Electrical Engineering, Faculty of Health Care Studies, and Ladislav Sutnar Faculty of Design and Art). Students can also study at the Faculty of Medicine in Pilsen (which belongs to the Charles University in Prague), further in a university centre in Pilsen (which belongs to the Metropolitan University Prague), and in Klatovy in a consulting centre of the Faculty of Economics and Management (which is a part of the Czech University of Life Sciences Prague).

1.2 Pilsen metropolitan area 2014 – 2020

The Strategy of the Regional Development of the Czech Republic 2014 – 2020 defined ITI territory as so-called metropolitan areas. One of the requirements was the number of inhabitants. The metropolitan area must have more than 300 000.



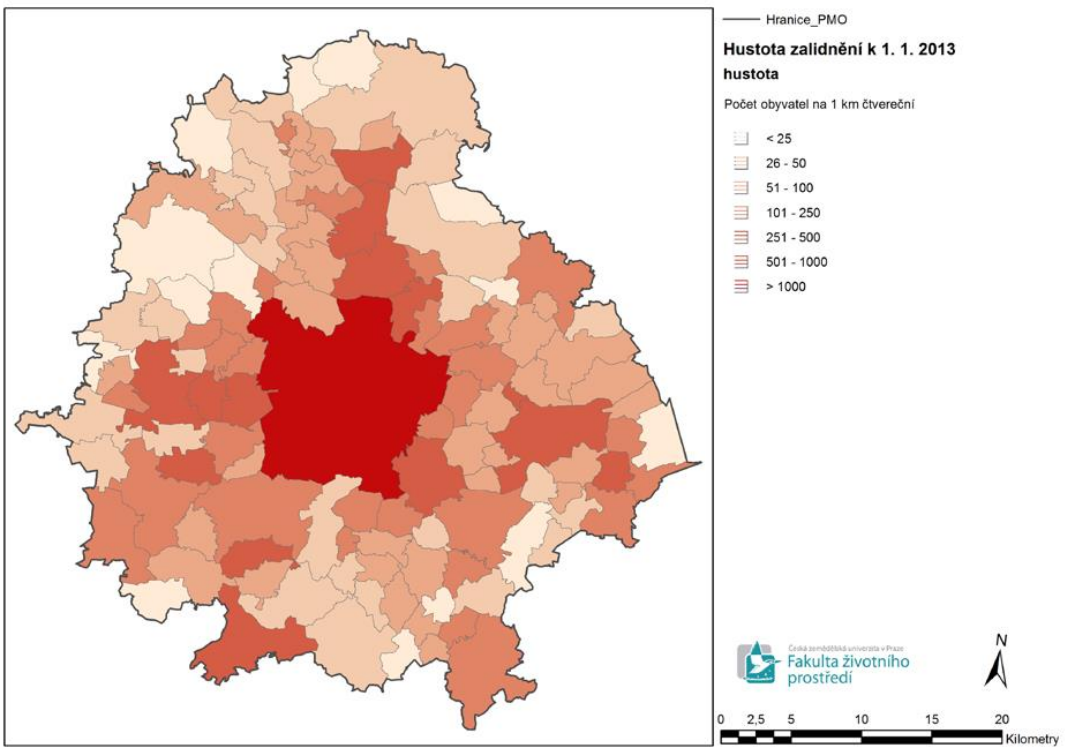
Map 3 Location of Pilsen Metropolitan Area in Pilsen Region and Czech Republic
Source: own processing

More than 50 % of inhabitants of the Region live in the Pilsen Metropolitan Area, 60 % of all business entities and 65 % of all job positions are in PMA. On the basis of these characteristics, it is possible to generalize some regional characteristics on the level of the Pilsen Metropolitan Area.

Indicator	Period	Pilsen Region	Pilsen Metropolitan Area	Percentage metropolitan area to region
Area (km²)	1/1/2014	7561	1364	18,0
Number of municipalities	1/1/2014	501	117	23,3
Number of inhabitants	1/1/2013	572687	309395	54,0
Number of business entities	1/1/2014	146342	86622	59,2
Number of job positions	25/3/2011	248358	160672	64,7

Chart 2 Basic characteristic of the Pilsen metropolitan area and Pilsen region
Source: Czech Statistical Office

Delimited metropolitan area consist of 117 municipalities of the Pilsen Region, which is nearly quarter of all municipalities in the region. As of 1/1/2013, 309 395 inhabitants lived in the Pilsen metropolitan area, which is 54 % of inhabitants in the entire Pilsen Region. Density of population in the Pilsen metropolitan area is 224,2 inhabitants per km^2.



Map 4 Density of population in the Pilsen Metropolitan Area as of 1/1/2013
Source: Strategic Environmental Assessment for Strategy ITI of Pilsen Metropolitan Area, version December 2014, CZECH UNIVERSITY OF LIFE SCIENCE PRAGUE. Faculty of Environmental Sciences.

Territory designation[5]	Area	POPULATION (%) 31.12.2018					SHARE OF UNEMPLOYED PERSONS (%) 31.12.2018
	(Sq Km)	Total ('000)	Total (%)	0-14	15-64	65+	Total
Pilsen Region	7 649	584 672	5,5	15,4	64,5	20,0	2,3
Pilsen Metropolitan Area	1 364	318 170	54,4	15,7	64,3	20,0	2,0

Chart 3 Population and share of unemployed persons in Pilsen agglomeration
Source: Czech Statistical Office, own processing

1.3 Pilsen agglomeration 2021 – 2027

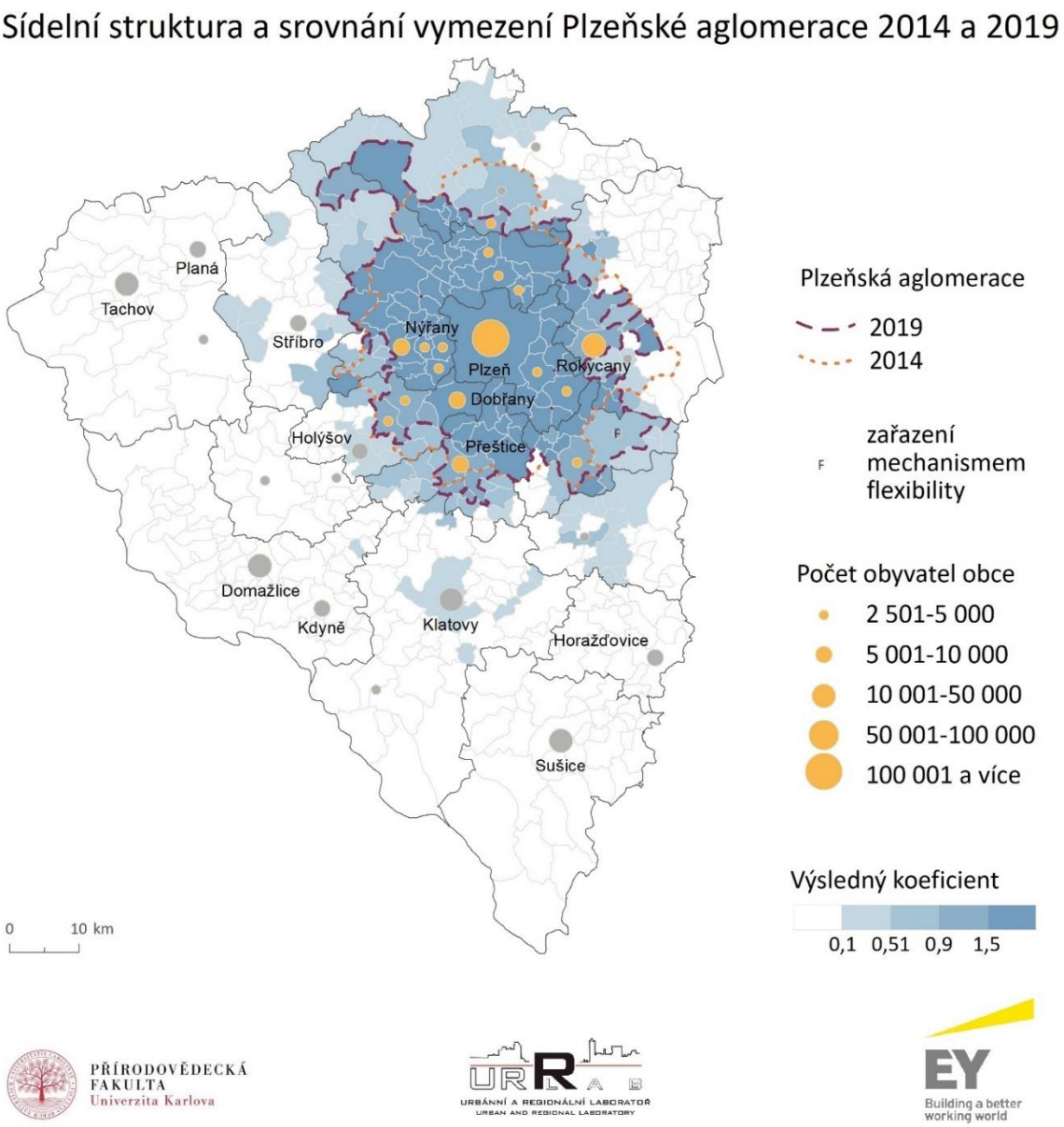
Due to preparation of SRD 21+[6] the managing authority – Ministry of Regional Development of the Czech Republic – has awarded new delimitation of metropolitan areas. The main goal of this has been set up efficient use of European Structural and Investment Funds (ESIF). The new territory has been delimited - The Pilsen agglomeration.

Pilsen agglomeration consists of 108 municipalities, which is 22% of all municipalities in the Pilsen region. The agglomeration covers area of 1,323 km2 (reaches the territory of 7 districts of municipalities with extended competence) and, as of 1st January 2019, there are 309,000 inhabitants. From the area it covers point of view, within the region, the agglomeration is not substantial. However, from the population point of view, more than 50% of the region's inhabitants live in the agglomeration with more than 50% of the agglomeration's inhabitants living in the City of Pilsen.

Area	Pilsen metropolitan area 2014-2020	Pilsen agglomeration 2021-2027
Number of municipalities	117	108
Area (km²)	1 364	1 323
Number of inhabitants	309 395	308 707
Density of population (inhabitants/km²)	227	233

Chart 4 Comparison of basic characteristic of the Pilsen agglomeration 21+ vs. Pilsen metropolitan area 2014+
Source: https://mmr.cz/getmedia/420ae22b-fe35-4b75-88d0-5824612a4e85/PrF_200120_ZAVERECNY-DOKUMENT_FINAL_02042020.pdf.aspx?ext=.pdf

[5] Name of Urban centre; rural centres or municipalities, FUA = Functional Urban Areas, etc
[6] Strategy of the Regional Development of the Czech Republic 2021+



Picture 1 Comparison of delimitation Pilsen agglomeration 21+ (data 2019) vs. Pilsen metropolitan area 2014+ Source: https://mmr.cz/getmedia/420ae22b-fe35-4b75-88d0-5824612a4e85/PrF_200120_ZAVERECNY-DOKUMENT_FINAL_02042020.pdf.aspx?ext=.pdf

2 Description of policy instruments addressed

2.1 Integrated territorial investments in the Czech Republic

Responsible Body name: Ministry of regional development (MoRD)

Integrated regional investments are used in the Czech Republic in the largest metropolitan areas of state-wide importance, in accordance with Article 36 of the Common Provisions Regulation and on the basis of their definition in the SRD. Cores of metropolitan areas (areas with concentrations above 300 thousand Inhabitants) are the largest cities in the Czech Republic (Prague, Brno, Ostrava, Pilsen), including their functional hinterland. Due to the population concentration and partly common problems, Ústí-Chomutov, Olomouc and Hradec Králové-Pardubice agglomerations are also added to these centres.

Specifically, the following it is concerned:

(i) metropolitan areas functionally defined for the City of Prague (and Central Bohemia Region), Brno, Ostrava, Pilsen and

(ii) Hradec-Pardubice, Olomouc and Ústí nad Labem - Chomutov agglomerations.

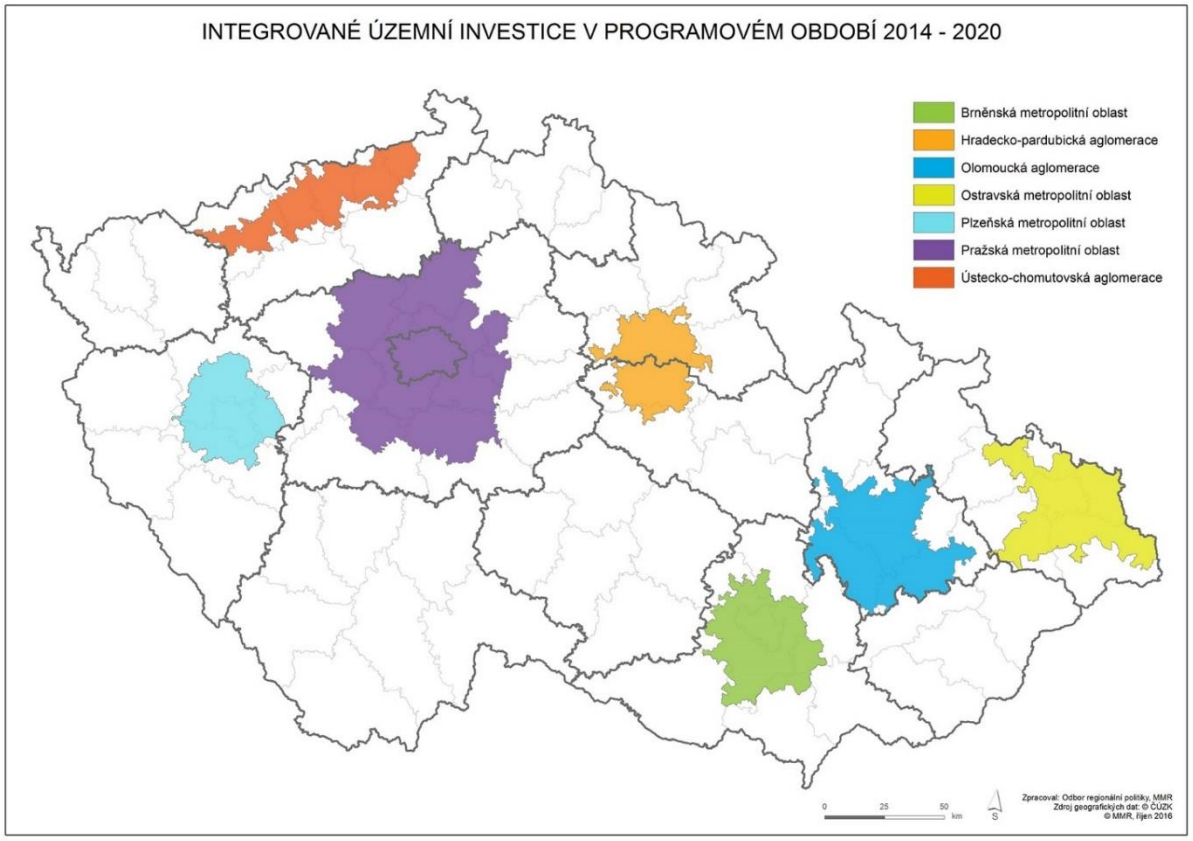
By the implementation of the ITI, CZ also fulfil the dimension of urban policy characterized by proportional representation of economic, social and environmental components, which is in line with Article 7 of the Regulation on ERDF on the sustainable urban development.

ITI in CZ	Population	No. of Core / Statutory Cities in Metropolitan Area	No. of Municipalities in Metropolitan Area
Prague	2 000 000	2	515
Ostrava	990 000	5	233
Brno	610 000	1	167
Usti-Chomutov	520 000	5	75
Olomouc	440 000	3	230
Hradec Kralove-Pardubice	330 000	2	145
Pilsen	310 000	1	117

Chart 5 Basic characteristics of ITI in Czech Republic

2.1.1 Integrated territorial strategies

ITI are implemented through integrated territorial strategies. The above-defined metropolitan area / agglomeration will submit one integrated territorial strategy based on partnership approach in region for the approval and implementation.



Map 5 Integrated territorial investments in programming period 2014 – 2020
Source: http://www.meduin.cz/Iti

Integrated territorial strategies will focus in its analysis and subsequent setup and hierarchy setting of priorities on key thematic areas of development specific to the metropolitan area in accordance with the objectives and priorities of the EU. The main themes linking the core cities of agglomerations with their functional hinterland include transportation, labour market, interconnection of research capabilities and utilization of their outputs in practice, innovation and entrepreneurship, and the environment, including technical infrastructure. Further the field of public services could be solved (mainly social, health and education services). Integrated territorial investments will be mainly focused on the implementation of larger, strategic projects that have a significant impact to the respective territory. Smaller projects will be supported by as well, if they properly complement the larger projects to achieve the desired synergy effects.

The Ministry of Regional Development will evaluate the compliance between the strategies and requirements determined by the Methodology Instruction for using integrated instruments in the programming period 2014-2020 for the presented Integrated Territorial Strategies. After that the presented strategies are evaluated by the

managing authorities of the OP in question, in particular with regard to the compliance of strategies and OP objectives, supported activities, planned results and the possibility of allocation of respective OPs. On the basis of approval of the managing authorities in question, an implementation contract will be made with relevant holders of the Methodology Instruction for using integrated instruments in the programming period 2014–2020.

The approved Integrated Territorial strategies will be implemented through specific calls announced by the managing authorities of the OP in accordance to the approved time schedule for strategies and their factual performance.

The projects presented as part of the Integrated Territorial Strategies for specific calls of ESI Funds programmes must comply with the conditions determined by the relevant programme and with the previously determined binding indicators, including monitoring and evaluation. The decision/funding contract are signed by the MA of the relevant OP.

Integrated territorial strategies will be supported not only by the ERDF operational programs through OP Environment, OP EIC, IROP, OP RDE and OP Transport, but also from the ESF Operational Programmes OP Employment and OP RDE and the Cohesion Fund - from the OP T and OP Environment.

2.1.2 Sustainable urban development, including the principles for identifying the urban areas where integrated actions are to be implemented (Articles 7 and 8 of the ERDF Regulation and Article 12 of the ESF Regulation)

In CZ, sustainable urban development is determined by three dimensions – economic prosperity, favourable environment and social cohesion. The main principles for the definition of urban areas to meet the sustainable urban development are:

- **Cities represent natural environment for research and innovation and the related business** – cities influence the development of neighbouring rural areas and are recognized as an important factor in the competitiveness of the entire region. Interventions aimed at strengthening cities and their clusters as engines of regional development will promote the creation of urban networks capable of transferring development and innovation impulses to the regions.
- **Infrastructure and accessibility of services** – transport and technical infrastructure represents an important material condition for the development and quality of sustainable urban development (particularly water supply, energy and other networks). A key task is to support the development of transport networks and to ensure coherence (integration) of regional transport systems.
- **Social inclusion** – one part of urban problems is related to the issue of security, crime prevention and social cohesion. Increase in social disparities in some local areas is becoming a problem of primarily large-sized cities. The biggest problems include high unemployment and social exclusion, which is often localized in certain neighbourhoods or locations with often devastated housing stock and disturbed environment.

- **Environment** – cumulatively acting negative impacts on the urban environment require an integrated approach to the care of the individual components of environment and mutual interconnection with other urban development policies. A fundamental problem is to reduce the negative impacts of transport and industry (causing air pollution, emissions of harmful gases and noise) to the environment and health of the population and a solution for the conservation and sustainable use of resources and environmental safety.
- **Strategic planning and development of urban-rural relations** – coordination and organizational measures play an important role in strengthening of the urban-rural linkages, especially in transport, engineering and civil infrastructure and tourism. In the area of public transport (provision of transport services), integrated transport systems are developed in linkage to major cities. They help connecting the city and its surroundings, which allow people to travel for work, education and services. The linkage city-rural areas is further reflected in the construction of technical infrastructure, especially in the area of waste management, water supply and wastewater treatment, in the field of civic amenities, in the provision of social services, health care and education, especially of the higher level. micro-regional centres offering a wide range of services to its surroundings are important for the development of relations between cities and rural areas. By their support, territorial cohesion will strengthen and a functional integration of the territory of the micro-region will occur.

The Czech Republic agrees to meet the requirement for **allocating at least 5% of the funding from the ERDF for sustainable urban development**. Fulfilment of the requirement of the allocation of at least 5% of the ERDF will be achieved through:

- Combination of interventions of OP Prague – a pole of growth, which itself meets the defining conditions for a possible contribution to the fulfilment of the given objective,
- **Implementation of activities within 7 ITI areas**

These metropolitan areas contribute more than 55% of the country's GDP, they contain more than 45% of the population, and the agglomerations are of key importance for the Czech Republic in terms of economic growth and international competitiveness. The highest order functions are concentrated here (e.g. administration, financial sector, science, research and development, higher education, infrastructure, culture and management structures). An important trend in the development of their spatial structure consists of intensive suburbanisation, but with a number of negative consequences, which affect their overall development.

The Integrated Plans for Territorial Development (IPTD) are specific plans for a sustainable development of towns in the Czech Republic. The plans can be implemented (but they are not mandatory) in České Budějovice, Jihlava, Karlovy Vary, Liberec, Mladá Boleslav and Zlín, and their facilities. Mladá Boleslav is an important industrial centre and a major source of growth of economy in the Czech Republic. The other 5 towns are

important regional agglomerations that are characterised as regional growth poles and a natural catchment area. In these areas it is essential to focus on interventions to create the necessary infrastructure that is essential for the follow-up development and without which there is a threat that the actual regional centre, and the surrounding region, would lag behind.

IDPA is an integrated development strategy describing the problems and needs of a defined territory, objectives and priorities resulting from them (including investment and non-investment plans). IDPA are systemically linked to the IUDP (implemented in the 2007–2013 programming period); they are, however, modified for the needs of a wider area and complemented by the manner of implementation (allocations within ESI Funds programmes and specific calls for projects from these IDPA, including contractual arrangements).

Fund	Indicative allocation of resources at the national level on integrated activities for sustainable urban development (EUR)	The share of the total allocation for the fund (%)
ERDF	min. 2.26 billion EUR	18.9%
(ESF)	min. 0.148 billion EUR	4.3%

Chart 6 Allocation of resources

Note: Until the problems of distribution of funds among the different integrated instruments is resolved, the table with indicative distribution will be left blank. CR meets the minimum ERDF allocation for the sustainable urban development in the amount of 5%.

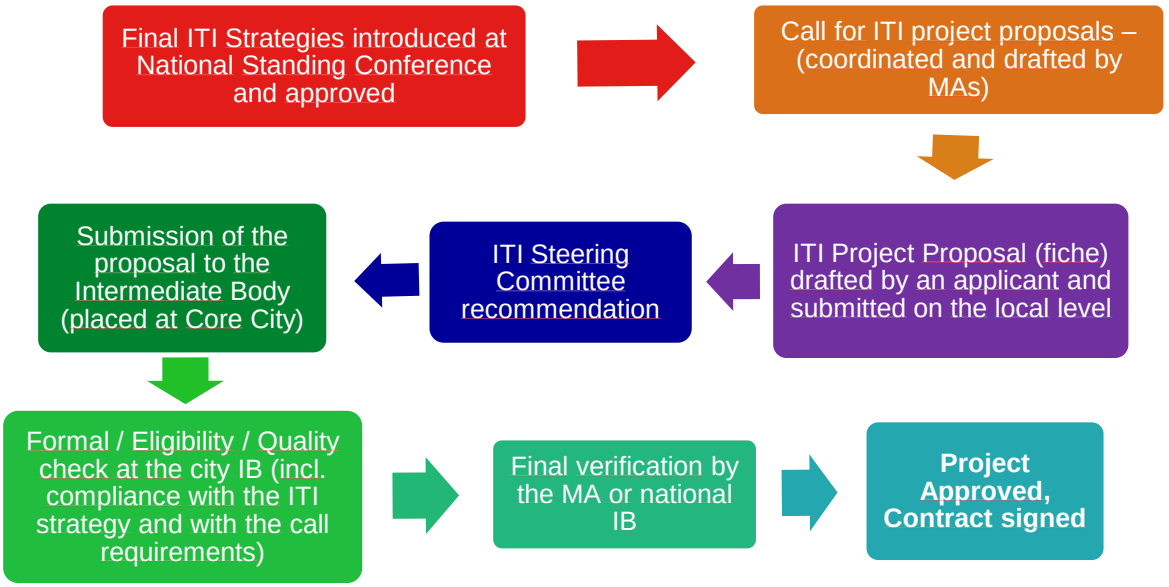
Picture 2 Benefits of ITI approach

Metropolitan Areas (ITIs) - article 7 ERDF (1301/2013)	Intermediary Body at the Local Level art. 123, ERDF 1303/2013	Managing Authority of ERDF OPs (or IB on the national level)	Ministry of Regional Development	National Standing Conference
ITI strategy preparation under partnership principle, set up of local governance principles, submission of the strategy	criteria for verifying compliance of integrated projects with ITI strategies, information to applicants, cooperation with MAs	approval of ITI strategies (compliance with OP priorities) and communication with ITI management	methodological guidance, support to ITI mgmt and to MAs, facilitation of multilateral meetings	coordination of territorial dimension of ESI funds
ITI overall management - coordination of WGs and ITI Steering Committee (recommendation to project fiche), project monitoring, reporting, risk and change mgmt, abcap support	assessment of integrated project applications in line with relevant steering documentation and in compliance with ITI strategies	definition of qualitative selection criteria at Monitoring Committee, publication of calls for ITI project proposals	formal and eligibility requirements check of ITI strategies	recommendations on timing and aim of project calls
Participation in debate on territorial dimension in ESI funds, requests for calls for ITI project proposals	regular reporting to MA, publicity to OPs with incorporated ITIs	ITI project appraisal, selection, contracting and monitoring	monitoring of ITIs and management of national governance	national discussion on and approval of ITIs, synergies with other integrated tools

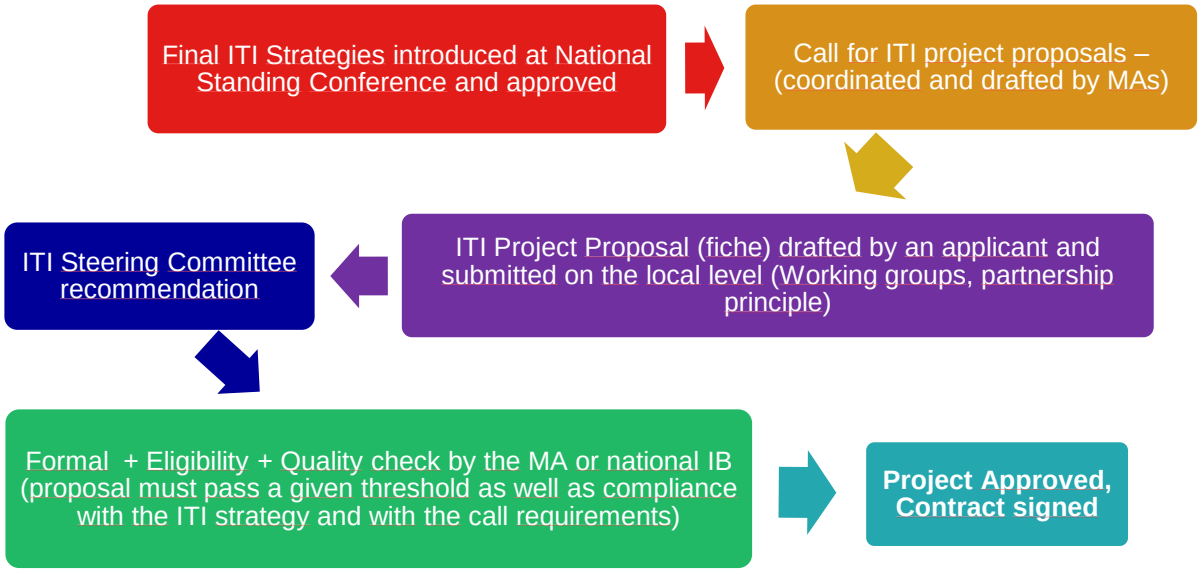
Picture 3 Institutional side of the setting of ITI – ERDF

Metropolitan Areas (ITIs)	Managing Authority of CF and ESF OPs (or IB on the national level)	Ministry of Regional Development	National Standing Conference
ITI strategy preparation under partnership principle, set up of local governance principles, submission of the strategy information to applicants, cooperation with MAs	approval of ITI strategies (compliance with OP priorities) and communication with ITI management	methodological guidance, support to ITI mgmt and to MAs, facilitation of multilateral meetings	coordination of territorial dimension of ESI funds
ITI overall management - coordination of WGs and ITI Steering Committee (recommendation to project fiche), monitoring and reporting, abcap support	definition of qualitative selection criteria at Monitoring Committee, publication of calls for ITI project proposals	formal and eligibility requirements check of ITI strategies	recommendations on timing and aim of project calls
Participation in debate on territorial dimension in ESI funds, requests for calls for ITI project proposals, reporting to MA, publicity to OPs with incorporated ITIs	ITI project appraisal, selection, contracting and monitoring	monitoring of ITIs and management of national governance	national discussion on and approval of ITIs, synergies with other integrated tools

Picture 4 Institutional side of the setting of ITI – ESF



Picture 5 ITI project submission and approval (ERDF)



Picture 6 ITI project submission and approval (ESF/CF)

Positive aspects

- Strengthening the role of cities
- Cities take into account the needs of their territory
- Cities address the problems beyond their administrative boundaries (use of FUA concept)
- Cooperation of agglomeration/metropolitan areas
- Exchange of experience
- Partnership principle
- Realization of strategic projects (but not only)

Programming period 2021 – 2027

- Focus on large strategic projects – use of Action Plans
- Functional approach to the territorial development
- At least 6% of ERDF to SUD

2.2 Operational programme Environment

The main objective of the Operational programme Environment 2014-2020 (OPE 2014-2020) is to protect and ensure quality living environment for the population of the Czech Republic ("CR"), to support resource efficiency, eliminate negative impacts of human activities on the environment and to mitigate climate change impacts.

Based on the analysis of current developments and trends the following priorities were determined:

- Priority 1: Improvement of Water Quality and Reduction of Flood Risks
- Priority 2: Improving the quality of air in human settlements
- Priority 3: Waste and material flows, environmental burdens and risks
- Priority 4: Conservation and care of nature and landscape
- Priority 5: Energy savings

OPE 2014-2020 is in line with EU strategic documents, and takes into account the concept of "green growth" and the international obligations of the Czech Republic, and supports the move towards smart and sustainable growth and to enhance the economic, social and territorial cohesion.

OPE 2014-2020 responds to current challenges, particularly associated with the increasing risk of climate change, and therefore places great emphasis on measures in the areas of mitigation and adapting to the expected impacts of climate change.

OPE 2014-2020 is coordinated with the relevant operational programmes, in particular with the Integrated Regional Operational Programme (IROP), Operational Programme Transport (OPT), the Rural Development programme (RDP) and Operational programme Enterprise and Innovation for Competitiveness (OP EIC).

OPE 2014-2020 also builds on the priority areas of PA 2 "Support for sustainable energy," PA 4 "Restoring and maintaining water quality," PA 5 "Risk Management Environment" and PA 6 "Protection of biodiversity, landscapes and air quality and soil" macro-regional strategy "EU strategy for the Danube Region".

OPE 2014-2020 focuses primarily on those problems where the Czech Republic failed to comply, within the deadlines, with obligations arising from the legislation of the EC/EU, or where the risk of future defaults was identified:

- Council Directive 91/271/EEC concerning urban waste water treatment,
- Directive of the European Parliament and Council Directive 2008/50/EC on ambient air quality and cleaner air for Europe,
- Directive of the European Parliament and Council Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air,
- Council Directive 1999/31/EC on the waste landfills,
- Directive of the European Parliament and Council Directive 2000/60/EC establishing a framework for Community action in the field of water policy,
- Directive of the European Parliament and Council Directive 2007/60/EC on the assessment and management of flood risks.

2.2.1 Strategic Framework OPE 2014-2020

More broadly, the OPE 2014-2020 aimed at contributing to the achievement of the basic objectives of the Europe 2020 strategy on the environment, thus reducing emissions, improving energy efficiency and increasing the share of renewable energy, as well as to achieve the objectives of its flagship initiative Resource-efficient Europe.

OPE 2014-2020 is based on fundamental principles established by the Treaty on the Functioning of the EU (Article 191), and leads to the fulfilment of selected priority objectives 7. Action programme for the Environment (Decision 1386/2013/EU):

- protect, maintain and develop the natural resources of the EU;
- turn the EU into a green and competitive low-carbon resource-efficient economy;

- protect EU citizens from environmental pressures and risks affecting their health and welfare;
- maximize the benefits of EU legislation on the environment via their better implementation;
- improve the knowledge and evidence base for EU policy on the environment;
- ensure investment policy in the field of environment and climate and address environmental externalities;
- improve environmental integration and policy coherence;
- enhance the sustainability of EU cities;
- increase the efficiency of the EU in solving international problems of environment and climate.

The basic links between the priority axes of OPE 2014-2020 and priority objectives defined in the main EU strategies are shown in Table 1 in Annex 1.

The data in the table shows that Investment Strategy 2014-2020 OPE least partially contributes to the solution of the priority objectives set by the main EU strategic documents.

The basic Strategic framework OPE 2014-2020 at the national level is given by the Partnership Agreement.

Broader strategic framework consists of government-approved documents: National Reform programme of the CR 2013, Czech International Competitiveness Strategy of the CR and the Strategic Framework for Sustainable Development of the CR.

Detailed strategic framework OPE 2014-2020 is determined by the State Environmental Policy of the CR 2012-2020, approved by the Government on 9.1. 2013, which identifies the following priorities:

- ensuring water protection and the improvement of their condition,
- preventing and reducing waste and its negative impact on the environment, supporting its use as a substitute for natural raw materials,
- conservation and sustainable use of soil and rock environment,
- reducing greenhouse gas emissions and reducing negative impacts of climate change,
- reducing the level of air pollution,
- efficient and environmentally friendly use of renewable energy sources,
- protecting and strengthening the ecological functions of landscape,
- preserving natural and landscape values,
- improving the quality of environment in settlements,

- preventing risks,
- protecting the environment from the negative effects of crisis situations caused by natural or anthropogenic threats.

For each of these priorities there are objectives and for each of the stated objectives there are proposed specific measures, including the deadline for implementation, responsibilities of state authorities (especially the relevant ministries) for the implementation and indicators.

2.3 Integrated territorial investments in the Pilsen metropolitan area

The metropolitan area should not be considered just a simple sum of all municipalities in vicinity of a bigger city with total number of inhabitants and typical characteristics, but rather a new form of a residential unit of its kind. There are different relations within the metropolitan area as opposed to the surrounding area. Surrounding municipalities merge with suburban areas of bigger cities thus creating coherent build-up areas. Also, inhabitants of the metropolitan area regularly commute to its centre for education, work and other services. As a result, there are extensive ties between the city and its surrounding areas, which altogether can be called the metropolitan area.

Multiple criteria analysis of indicators with high range validity was used for specification of the Pilsen metropolitan area. Aggregation method was used to create an aggregating indicator which consists of particular indicators characterizing development potential of municipalities of the Pilsen Region.

In spite of multiple topics, the ITI strategy focus on, specification of the Pilsen metropolitan area takes into account both addressing all particular characteristics and, at the same time, fulfilling a concentration condition of more than 300,000 inhabitants. Territorial priorities within job market (work / school commute), transportation intensity, integrated public transportation and territorial technical structure were taken into account.

Based on the analytical data, SWOT analysis and discussions with experts and territorial key players, essential problematic areas and needs were identified in the territory:

- Insufficient conditions for economic development are caused mainly by idle potential of science and technology, especially, in the area of co-operation between university research and development centres and innovative businesses in the territory.
- Next key issue is poor transport accessibility of the centre of the metropolitan area. This barrier poses a restriction to the workforce mobility, thus limiting the territorial potential, including functional connection within the territory (e.g. connection between university infrastructure built in the city and integrated public transportation system of the Pilsen metropolitan area).

Insufficient accessibility of the city centre worsens availability of education, employment and social and health services in entire metropolitan area. Additionally, insufficient accessibility of the metropolitan area from the Czech Republic and foreign countries restricts competitiveness of the territory.

- Poor accessibility of services to inhabitants living behind the central limits of the metropolitan area is caused, primarily, by insufficient level and network of education, health and social services, as well as by limited mobility of inhabitants in the Pilsen metropolitan area. It has been proven that high increase in number of senior inhabitants will significantly affect social and health services in future, therefore it is vital to improve transport accessibility of such services in the Pilsen metropolitan area.
- Higher level of risks and obstacles has been identified in the Pilsen metropolitan area within the environmental aspect caused by the geographic conditions and insufficient development of the technical infrastructure, primarily in the field of water management. Life quality of inhabitants of the Pilsen metropolitan area is negatively affected by these aspects.

Based on the statements listed above, which have been derived from the territorial analysis and relevant strategic documents of the city and region, it is obvious that the critical issue preventing healthy development of competitiveness of the metropolitan area is insufficient mobility caused, primarily, by missing transportation infrastructure and accessibility by the public transportation system utilizing integrated transportation system within the territory.

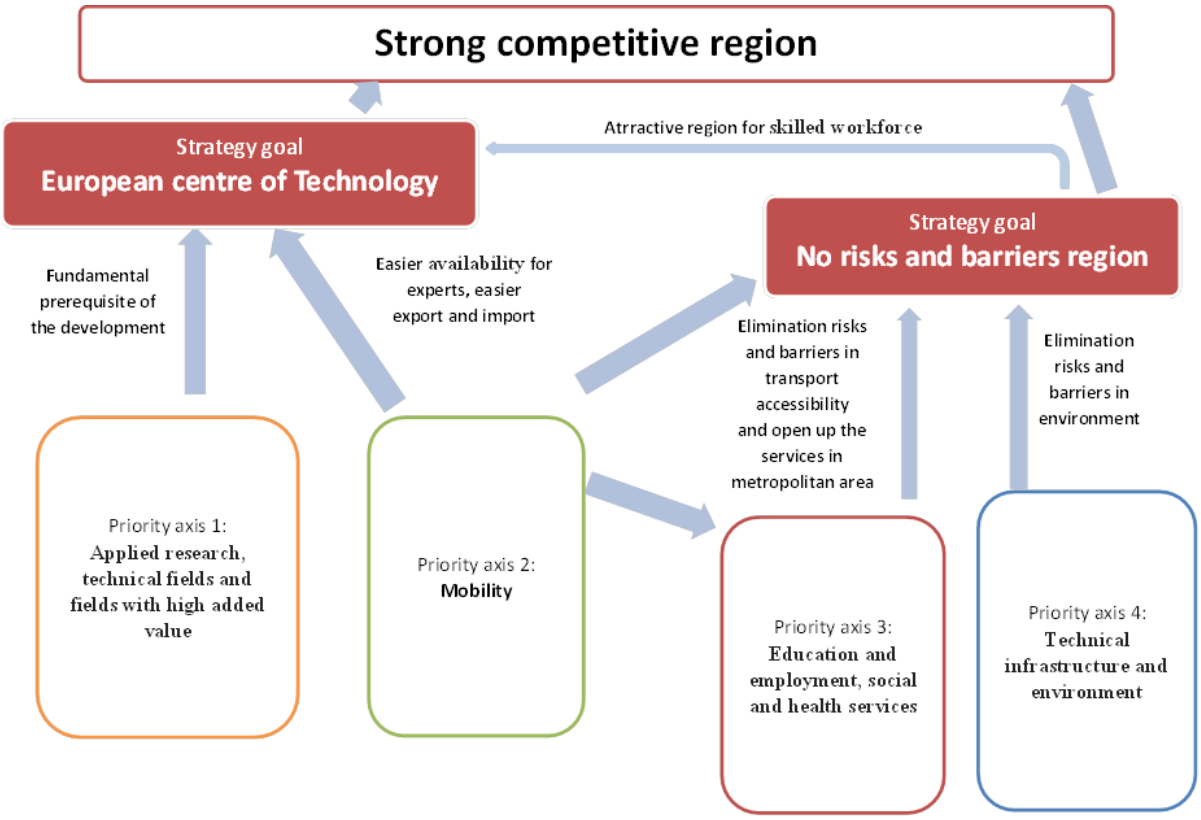
2.3.1 Thematic orientation of the metropolitan area

Vision of the strategy is “Pilsen metropolitan area–a strong and competitive region”, not just on the regional level but on national and international level as well. To fulfil this vision, it is necessary to encourage the greatest potential, which the metropolitan area has, i.e. outstanding fields, their products and necessary conditions and, at the same time, eliminate major issues preventing development of competitiveness.

Development of competitiveness of the Pilsen metropolitan area through collaboration of research organizations, including universities, with the private sector, development of human resources, primarily, in technical areas and fields with high added value, migration of prospective workforce with high qualification and improvement of overall attractiveness of the Pilsen metropolitan area for life.

With respect to the traditional manufacturing and technical fields and many related organizations operating in them, two universities, many scientific-research organizations, including founded centre of excellence and numerous organizations with strong links with technical fields, a major territorial potential is development of technical fields. Development of this area also addresses revealed weakness of the metropolitan area, which is low work productivity. Therefore, a strategic goal was defined: “Pilsen

metropolitan area–European technology centre", which sets the course and fundamental goal of the ITI strategy in order to meet the vision of a strong and competitive region.



Picture 7 Vision of Pilsen Metropolitan Area 2014 - 2020

To achieve this strategic goal and transform Pilsen metropolitan area into European technology centre, it is necessary to eliminate risks and barriers in the territory, which will make Pilsen metropolitan area more attractive. Therefore, a supportive strategic goal was defined: "Pilsen metropolitan area–Region without risks and barriers".

These strategic goals are fulfilled in several priority areas. To meet the first strategic goal, it is necessary to focus, primarily, on the areas of applied research, technology and fields with high added value. The second strategic goal is met through areas of education and employment, social services, technology infrastructure and environment.

Mobility, which directly fulfils both strategic goals, plays a specific role in the Pilsen metropolitan area. Addressing this priority will eliminate transportation barriers and risks. This will lead to bottleneck removal in the metropolitan area for both individual and public transport. Subsequently, accessibility of education, employment, social and health services will also be improved, which is an essential condition for addressing issues in the priority area "education and employment, social and health services".

3 Brief presentation of partner involved

3.1 Department of coordination of European projects of the Pilsen city

The Department of coordination of European project of the Pilsen city (ÚKEP) was established in 2005 as a donor-supported organization of the City of Pilsen. The main objective is to coordinate the activities of grant projects. It focuses mainly on project planning, processing grant applications, management and the implementation of projects and the subsequent administrative organization of those projects.

The ÚKEP provides information on obtaining subsidies and grants which aim is primarily resources from the European Union. It provides services to all individuals and businesses in the city of Pilsen and to other interested parties with whom they work on specific projects. It focuses on larger projects realized with contributions from the European Union, those from the Structural Fund as well from the Solidarity Fund. At the same time, it provides optimization of managing and financing structures. In the framework of the optimization of one's own resources, the applicant obtains funds from national, as well as local sources. When addressing specific projects, this is done with the cooperation of experts in the city of Pilsen, and, when necessary with certain projects, with external specialists as well.

Department for Coordination of European Projects of the City of Pilsen is in charge of the ITI strategy in the Pilsen agglomeration.

4 Urban resource-efficiency in Pilsen agglomeration

Cities play an important role in possible impact of climate change. Urban areas are insufficiently prepared for effects of climate change, such as heat, lack of water, drought or floods. Cities concentrate high number of people, high volume of socio-economic activities, and therefore high production of greenhouse gases. Increasing risks connected with climate change increase vulnerability of urban areas and can result in negative impact on life quality of inhabitants.

4.1 Water

The City of Pilsen is also well-known for its location at the confluence of four rivers– watercourses and reservoirs make up an integral and important part of its environment. Each watercourse plays an important part in capacity of the landscape to retain water and, subsequently, protect lives and properties of people against damaging effects of floods, each stream becomes a sanctuary for aquatic animals and plants and brings back to nature its species diversity.

The water topic has been incorporated into strategic documents on national (Regional development strategy of the Czech Republic 2021+) and local levels. Water in the landscape is also a topic of the Development programme of the Pilsen Region 2014+.

On the project territorial level–Pilsen metropolitan area–the topic of water has been incorporated into the ITI strategy of the Pilsen metropolitan area 2014–2020. The same topic is also reflected in the current preparatory phase of the ITI strategy for 2021+.

There are territorial weaknesses of the Pilsen metropolitan area defined in the ITI strategy 2014–2020. With regards to the water management, they are:

- insufficient flood protection measures in the build-up areas,
- dependency on one source of drinking water,
- inconsistent water quality in watercourses as a result of pollutant wash-out,
- reduced retaining capacity in the territory due to development of built-up areas.

Priority axis, Specific objectives and Measures related to the water management have been defined within the ITI strategy. The strategy focuses on construction and reconstruction of retention reservoirs and collectors as well as flood measures on watercourses.

The strategy 2021+ deals with limited sources of the underground water, hence focusing on protection of the surface water. Low surface permeability in urban areas causes a quick rain water runoff. It is essential to minimize rain water runoff through sewerage system without its diligent utilization or treatment using environmentally friendly measures. There are numerous towns in the project territory which do not have particular measures in place to deal with negative effects of the river basin areas. In basins of small watercourses, especially, there have been no flood areas identified, threatened areas have not been determined even in the zoning plan. Despite increasing risks, there have been a persistent pressure of investors to build on lands along watercourses. More frequent occurrence of extreme weather calls for the need of new technological measures and necessary changes in agricultural approach to land, measures focusing on retaining of water in the landscape, water erosion reduction etc. Flood control is currently a hot topic all across the agglomeration (Strategic development plan of Třemošná, Development plan of Dobřany, Territorial strategy of administrative district Blovice).

The metropolis itself–the City of Pilsen–has in place Strategic plan of the City of Pilsen, Conception of runoff conditions and complex Study of revitalization of rivers focused, primarily, on flood control measures.

In the Strategic plan of the City of Pilsen, poor rain water management was identified as one of the major issues in the city. There is no availability of basic water management infrastructure in some city parts. Its absence or insufficient capacity affects level of facilities in the territory. City parts with no water line suffer from massive exploitation of the underground water sources, availability of which has declined rapidly. A major issue of the city is its dependency on the sole surface source of the drinking water.

A section of the Strategic plan called "Improvement of urban environment and increasing climate change readiness" incorporates an objective "Enforcing blue infrastructure in the city," which focuses on designing a water management concept that would introduce and implement rules for public and private investments.

The City of Pilsen was involved in a project called UrbanAdapt, which aimed at response to possible climate change in the urban environment, launching and developing a process of drafting adaptation strategies of cities.

According to the Adaptation strategy of the City of Pilsen, which is derived from the National adaptation plan, a significant urban issue with many effects appears to be a non-existent rain water management–insufficient soaking of water and its subsequent utilization as the process water (on urban level, e.g. watering of city green areas, road sprinkling, as well as individual utilization in households and gardens). Utilization of the rain water can help reduce consumption of the drinking water as well.

"Zelený poklad" foundation in the City of Pilsen publishes funding calls for green roofs and green infrastructure measures in order to increase effectiveness of the rain water management. The fund realizes a programme called "Ani kapka nazmar", which focuses on improvement of the rain water management especially in kindergartens and schools.

It is required to use various multifunctional elements of the green infrastructure (green tram ways, trees, climbing plants etc.) as a part of transportation and other construction projects. Such measures aim at reducing dustiness as well as increasing climate change adaptation (water retention, cooling of surface) and improving living conditions. If the City of Pilsen and its citizens adhere to principles of sustainable water management when realizing their projects, the city will be able to better face challenges related to climate change.

It is fundamental to promote awareness of the state of environment, impact of climate change and options related to cross-territorial adaptability measures.

4.2 Climate adaptation

Adaptability to climate change is a current topic on all territorial and administrative levels. Strategy on Adaptation to Climate Change in the Czech Republic, which was adopted, represents specific policies regarding development and implementation of adaptation strategy in the Czech Republic.

According to the analysis of meteorological data, observed current and expected climate change in the Czech Republic is demonstrated by:

- increase in average annual temperature,
- more frequent and short-term deviations and extremities (increase in number of tropical days, nights, extreme heat),
- change in precipitation rate in time and area while maintaining its average annual totals (e.g. intensive short-term precipitations, floods, droughts),

- increased frequency and intensity of other hydrometeorological extremities (such as storms, hails, windstorm).

The City of Pilsen prepared so-called "Adaptation strategy of the City of Pilsen with application of ecosystematic approach". This will be a strategic policy for planning and development of adaptations to climate change in the city. The goal of the strategy is to gather analytical and planning data that will be used to propose and apply a set of appropriate adaptation measures while taking into account ecosystematic approach (i.e. environmentally friendly adaptation measures). The basis for the adaptation strategy is identification of threats resulting from climate change, city vulnerability analysis and evaluation of particular (ecosystematic) measures.

The topic of climate change effects and necessity of adaptation measures is reflected in the analytical part of the Strategic plan of the City of Pilsen. Objective 3 of the Strategic plan focuses on improvement of urban environment and increasing climate change readiness. Measures of Objective 3 aim at improving air quality and noise reduction in Pilsen, enhancing blue infrastructure in the city (see part "water"), enhancing green infrastructure in the city and promoting awareness of environment of the City of Pilsen and impact of climate change as well as informing on various options regarding adaptation measures.

Correct application of rain water management principles is essential for the city's climate change adaptation capability. Green infrastructure of the city makes living conditions more pleasurable and decreases temperature.

If people are acquainted with environment they live in, including challenges, they can actively or passively contribute to its improvement.

4.3 Sustainable land use and urban renewal

The fundamental land planning document that outlines the future development of the municipality is a local plan. It is always processed for the entire administrative territory of the municipality. Its acquisition isn´t obligatory by law in Czech Republic. Despite this fact, most municipalities (even in the Pilsen metropolitan area) have processed the plan. The local plan regulates the development of the municipality. It can be likened to a „law on urban land use".

The City of Pilsen has its own approved local plan. It confirmed the city´s character as a strong regional centre with major commercial, cultural, recreational, educational and social facilities, including healthcare and social service facilities. The Pilsen local plan was awarded a Czech urban project of the year 2017. Local studies with an impact on the whole city as well as local studies addressing the territory of the particular Pilsen district have been also processed.

The image of the municipality is shaped by public spaces. This theme has sounded loudly in all municipalities in recent years. The City of Pilsen has processed a study, which deals with a concept of public spaces. Its main aim is to clarify the principles of delimitation,

evaluation of their position in the context of the city in its entirety and also review their quality. For the most important public spaces, public space cards have been created with recommendations on the direction in which the modification of the place should go.

„Improvement of the public spaces" is also one of the measures of objective 4 „Revive the city centre" of the Strategic plan of the City of Pilsen. This objective aims to turn unsightly and transport overstrained places to attractive and pleasant public spaces. The emphasis is put on multifunctionality and interweaving of functions.

The modification of public spaces is also related to the ongoing projects of recovery of housing estates in the City of Pilsen. The main aim of this long-term process is quality improvement of living for inhabitants. The most common and often repeated problems are modification of public grounds, replenishment of street furniture and the lack of parking spaces.

The aim of the whole Strategic Plan of the City of Pilsen for following years is to improve the living conditions of Pilsen residents in all areas, to propose necessary steps for sustainable development of the City and to provide the public and the business community information on long-term development plans.

On the Pilsen metropolitan area level, the main document ITI Strategy 2014 – 2020 doesn´t address the issue of land use and urban renewal. The new document for the period 2021+ sets an objective to support the sustainable spatial development of the agglomeration.

4.4 Waste

The process of the waste management planning in the Czech Republic is realized according to Article 43 of the Act no. 185/2001 Coll., on waste management, and comprises:

- National waste management plan
- Regional waste management plan
- Local waste management plan

The whole waste management process is under orders and principles of environmental development and in accordance with creation of elementary development documents in the particular territory.

There is a waste management plan on the regional level. This document deals with waste production and treatment and it is not a plan just for the Pilsen Region itself but also for all waste management subjects operated in this field of interest in the region.

The document is valid for the period of 10 years (2016 – 2026) and will be amended upon any significant change of conditions under which it was created – for example legal change in waste management law significantly affecting the waste management strategy, including setting new goals or amendment of current goals, policies or measures. Due to

„waste law", it is necessary to make an annual evaluation of its performance. Latest published evaluation is for year 2018.[7]

Four strategic goals have been set in the waste management plan of the Pilsen Region:

1. prevent waste and decrease waste production
2. minimize negative impacts of waste production on health and environment
3. sustainable development of society and approaching the idea of "circular society"
4. maximize utilization of waste and transition to circular economy[8]

In the Pilsen metropolitan area, a facility has been in operation since 2016 recovering energy from waste and processing a wide range of wastes. Produced heat energy is utilized for heating across the area of the City of Pilsen as well as for purposes of electric power production. Generated output is electric power and heat in form of hot water with parameters 135 C/70 C.[9] Capacity of the facility is 95,000 tons per year.

On the local level, the Waste management plan of Pilsen city 2017- 2026, which is in compliance with mandatory part of the Pilsen region waste management plan, is in place.

ITI Strategy 2014 – 2020 doesn´t address the issue of the waste management. However, this theme has been reflected in the Strategy 2021+. This document deals with an idea that a main goal of the waste management should be, first of all, waste prevention and its further re-use. It will support particular measures for waste treatment, recycling and subsequent re-introduction into the market.

4.5 Energy transition

Securing energy in its various forms is a necessary condition for running and development of the society. Not only sufficient production and transport capacity, but also the quality and reliability of the supply of various forms of energy is fundamental.

The development of renewable (alternative) energy sources is connected with the dynamic technological development in recent years, with their declining market prices, with the energy policy of the EU and also the Czech Republic and with the rising prices of non-renewable energy sources.

Energy is also a topic of the Development programme of the Pilsen Region 2014+. According to this document, Pilsen region has no preconditions for massive replacement of energy production from non-renewable sources with production from renewable sources.

The Strategic Plan of the City of Pilsen incorporates the measure (objective 1) "....strengthen the operational reliability and security of the existing technical

[7] *https://www.plzensky-kraj.cz/clanek/plan-odpadoveho-hospodarstvi-plzenskeho-kraje-2016-2026-0; https://www.plzensky-kraj.cz/clanek/uroven-plneni-planu-odpadoveho-hospodarstvi-plzenskeho-kraje*
[8] *https://www.plzensky-kraj.cz/clanek/plan-odpadoveho-hospodarstvi-plzenskeho-kraje-2016-2026-0*
[9] *https://www.zevoplzen.cz/o-nas*

infrastructure systems". Its aim is to verify the possibilities and conditions of running e.g. energy systems in case of crisis.

The City of Pilsen itself has developed The Local Energy Conception for period 2002 - 2022. The same type of the document has been prepared for the Pilsen Region. The City of Pilsen has been one of the first statutory cities in the Czech Republic to acquire this document. Information about energy system of the City are also provided in the document called „Pilsen – conception of technical infrastructure". On the City level, there is annual updating of data connected with the energy sector. This allows to monitor and evaluate the state of energy flows in the City, to estimate development trends and minimize the potential risks. Use of renewable resources is increasing in the City of Pilsen, e.g. biomass for production of electricity and heat is used, then water energy (small water plants), energy of the environment (heat pumps), solar energy. The Local Energy Conception is performed by the partial measures of the action plan. These measures include energy savings and greening in transport provided by the City, the support for construction of the buildings with almost zero energy consumption, reduction of energy intensity in the city buildings and the purchase of energy-saving appliances.

ITI Strategy 2014 – 2020 doesn´t address the issue of energy transition. But this theme is reflected in the Strategy for the period 2021+. This document deals with increasing share of energy produced from renewable sources. It will support the construction of facilities for the production of energy from renewable sources with an emphasis on utilization of urban areas and projects which lead to energy recovery of waste, such as increase of the heating capacity of the municipal incineration plant that can be used for heating of buildings.

4.6 Sustainable Urban mobility

Transport is an indispensable service for almost all city functions, but also the area of frequent conflicts with other city functions. The basis of sustainable urban mobility is the purposive interconnection and cooperation of all transport subsystems and sensitive regulation of individual car transport.

The Development programme of the Pilsen Region 2014+ deals with the moderation of traffic problems in Pilsen and thus with the development of sustainable urban mobility.

The City of Pilsen itself has developed the document called "The Principles of Development of the City Transport System", which focuses on the relations between the individual elements of the transport system and on ensuring the connection of individual types of transport.

Another strategic document developed on the city level is SUMP – Sustainable Urban Mobility Plan. It aims to support individual means of transport in places, where they are most beneficial and where they could address the widest range of users to replace car transport by sustainable means of transport. The implementation of SUMP applies to all means of transport. SUMP contains more than 90 different measures. A part of them have already been implemented, others are being prepared. The ITI tool also participates

in implementation of some measures such as construction of transport terminals, construction of parking systems (P+R – park and ride), cycle paths, greenways, extension of tram lines, renewal of the public transport fleet. The horizon to implement all measures is by 2025. After that, the city centre should be better accessible by public and non-motorized transport, car transport will move outside the residential areas and outside the city centre, the public transport will complete its integration between the city and the region and its services will be reliable and environmentally friendly, parking will be solved systematically, new P+R, P+G parking systems will be constructed, the mobility will be solved as unified service with regard to the users, the city transport expenses will be sustainable for the city.

The implementation of SUMP is one of the measures of the Strategic Plan of the City of Pilsen (measure 1.2), which determines a lot of particular activities such as systematic solving of parking problems within the city, improvement of connection of various types of transport, development of cycle paths and their interconnection. In the Strategic Plan of the City of Pilsen, the theme of transport and sustainable urban mobility is also reflected in an objective 3 and an objective 4 within the measures "To increase air quality and to reduce the amount of noise in Pilsen", "To reduce individual car transport within the city centre", "To support pedestrian and cycle traffic in the central part of the city".

The theme of transport and sustainable urban mobility has been also one of the key topics of ITI Strategy 2014 -2020. One of the strategic goals of the document has determined Pilsen metropolitan area as a region without barriers and risks. The aim of the priority axes 2 "Mobility" has been to increase the share of sustainable forms of transport through implementation of 3 measures – construction and modernization of transport terminals, optimization and development of cycle transport, development of urban railway systems and the renewal of the public transport fleet.

The theme of sustainable mobility resonates also with the new ITI Strategy 2021+. One of the main aims of the document is to finish the connection of the City of Pilsen to important municipalities in the surroundings and also to neighbourhood agglomerations and to increase the attractivity of other means of transport except individual car transport. It is necessary to complete the capacities of road and railway infrastructure and to create intelligent integrated transport system for the entire Pilsen agglomeration.

4.7 Air quality and noise level

The air quality in the whole Pilsen Region is at a very good level with an exception of the City of Pilsen and its surroundings. The air conditions in Pilsen are better than in other big cities in Czech Republic, yet they are not satisfactory enough for the life quality of the population. At the same time, Pilsen is one of the most noise polluted cities in the Czech Republic. Apart from Pilsen, the noise pollution poses a problem to bigger cities of the Pilsen metropolitan area with major roads stretching across it.

The Development programme of the Pilsen Region 2014+ deals with the themes of air and noise quality that relates to transport and industry.

The theme of air quality and noise level, especially within the big cities, is closely connected with the high level of transport. Pilsen is permanently burdened by individual and cargo transport due to the lack of detour routes. The main city streets and boulevards are overloaded with emission and noise pollution.

The Strategic Plan of the City of Pilsen deals with the theme within the measure 3.1 "To increase air quality and to reduce the amount of noise in Pilsen". To increase the quality of life of residents, cleaner air and less noise pollution, the City will build detour routes and will introduce effective measures to reduce emissions within the city centre. It is also necessary to implement a plan of regulation of possible smog situation and start to apply effective measures to reduce emissions within the City.

The improvement of air quality and noise level in the city is also connected with the development of the green infrastructure (trees, grassed tram tracks, climbing plants...). According to the Adaptation Strategy, one of the benefits of the planting of trees in the city is regulation of noise and also an improvement of air quality. The trees (and all plants) reduce dust and pollutants in the air by trapping them on leaves and in the substrate. In the regulation of noise, green roofs also play an important role. Vegetation of roofs has an important impact on regulation of emissions.

The reduction of noise and emission stress in the environment is one of the key themes of the Conception of the Environment of the City of Pilsen. It is a policy statement of the City, which defines principles of active policy in the area of environmental care.

In the ITI Strategy 2014 – 2020, the theme of air and noise quality is connected to the transport and to its all measures and objectives. The new document for 2021+ has the same approach. Air quality would benefit from wider use of alternative energy sources, from the development of public transport and other alternative means of transport. These themes will be supported by the ITI tool in the period 2021+.

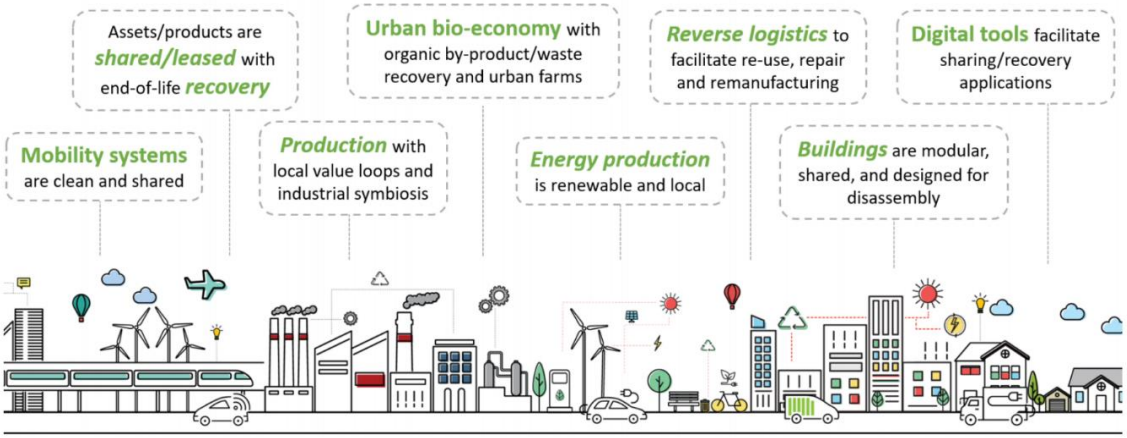
4.8 Circular economy

Unfortunately, there are no measures in this topic yet.

On the Pilsen region level, there is a document "Plan of waste management" in which the circular economy has been mentioned but only in a theoretical way. Practical measures are missing.

Also city (e. g. Strategic plan of the city of Pilsen) is not dealing with the circular economy.

However, in the Strategy of Pilsen agglomeration 2021+ there is an effort to incorporate this area among main strategic goals in accordance to main EU goal itself and transition to greener economy. This theme has been set as one of the four integrated solutions and it is called the Circular agglomeration.



Picture 8 What will a circular city look like tomorrow?
Source https://www.eib.org/attachments/thematic/circular_economy_15_steps_for_cities_en.pdf

5 Good Practices

On the Pilsen metropolitan area level, a few good practices will be presented in the area of sustainable urban mobility.

Within the priority axis Mobility, the ITI tool was used to construct a completely new tram line in Pilsen. Also, passengers can take advantage of modern and low-emission trolleybuses, transport terminals and hubs have been created across the metropolitan area and new kilometres of cyclopaths have been laid (not only as a part of Greenways system).

5.1 TRAM LINE, TERMINAL KAPLÍŘKA AND P+R KAPLÍŘKA

For improved accessibility of services and functions (elimination of transportation barriers), a key project of extension of the tram line to the University of West Bohemia and city industrial park Borská pole has been realized. A new transport terminal Pilsen / Kaplířova-Dobřanská has been created as a part of the project. Through this project, capacity requirements have been achieved in the area which, within the City of Pilsen, has reached the highest concentration of economic and education activities in recent years.

Picture 9 New tram line (photo by M. Pecuch)

Preparation of the tram line extension project took more than 20 years. As a result, passengers benefit from comfortable transport connecting the city centre and city parts that were previously serviced by crowded buses in a rush hour and mostly required transfers. Construction works began in October 2018. The tram line is 1.3 km long. Total construction costs amounted to CZK 0.6 bil. with 60% of total costs covered through ITI from IROP and OPT.

Integral part of the tram line construction will be a new transport terminal Kaplířova-Dobřanská, which will service Pilsen city public transport as well as public lines in the Pilsen Region. It is a key transport terminal for the City of Pilsen, as realization of the project will allow commuters from Přeštice and Nýrsko areas transfer from regional lines to city public transport lines. The budget of the project amounts to CZK 63 mil., including VAT, with CZK 38.7 mil. drawn through ITI from the Integrated Regional Operational Programme.

Additionally, the project incorporates building of a new parking place located in the area of former barracks in vicinity of the Labour Office building with 69 parking lots, including 4 handicapped lots. Another parking place was built at the residential house on the corner of Kaplířova street with capacity of 9 lots, including 1 handicapped lot.[10]

5.2 TERMINAL ŠUMAVSKÁ

At the end of 2019, a new modern bus terminal was opened in Pilsen right next to the main railway station. The project investment amounted to about CZK 150 mil.

The terminal consists of bus stands, covered platforms, service building, lay-by and escalators connecting the terminal with a underpass leading to the main railway station.

Picture 10 Terminal Šumavská (photo by M. Pecuch)

This project aims to improve comfort of passengers. Previously, the distance between the former bus station and railway station was 3.5 km. Current distance is just a few metres. There are two major tram lines as well as most trolley bus lines in the vicinity of the new terminal. The terminal will serve to all citizens of the City and, at the same time, to all citizens of the Pilsen agglomeration that commute to the regional capital for work and to school. Obviously, the transfer between different means of transport has been improved significantly both in terms of quality and speed. [11]

[10] plzen.eu; euractiv.cz
[11] plzen.eu

5.3 LOW-EMISSION TROLLEYBUSES

19 low-floor, alternative fuel trolleybuses. These cutting-edge vehicles have replaced older vehicles thus improving public transport comfort, e.g. Pilsen has a complete low-floor trolleybus fleet. Vehicles are fitted with cutting-edge optic-acoustic systems and devices enabling communication with persons with visual and hearing impairment as well as blind persons. Furthermore, low-emission vehicles reduce negative impact on the environment and human health. [12]

Picture 11 Low-emission trolleybuses (photo by M. Pecuch)

5.4 TRAM DEPOT SLOVANY

Reconstruction of the tram depot in Pilsen, incorporating elements of the blue-green infrastructure, poses an interesting investment further supporting mobility.

The investment amounts to more than CZK 2,1 bil.

Reconstruction will begin at the end of October 2019 and will finish at the end of 2022. Current condition of the tram depot is insufficient for a long period of time, both in terms of its capacity and technical condition of the building, equipment and facilities for employees.

Picture 12 Vizualization of Tram depot Slovany (source: pmdp.cz)

Additionally, the tram depot reconstruction in Slovany will bring significant improvement of the surrounding environment in terms of noise reduction below required limit and heat reduction through the green roof. At the same time, the green roof will allow

[12] pmdp.cz

accumulation of rain water. Water surplus from the green roof will be retained in a tank and, subsequently, used as cleaning water for trams.[13]

5.5 PLANS FOR FUTURE 2021+

Eventually, the Strategy 2021+, in its preparatory stage, will continue supporting sustainable mobility through various projects, such as support of trolleybus charging stations, building of new trolleybus / tram lines servicing new Pilsen districts or intelligent transport controlling systems with application of the artificial intelligence (so called Metropolitan control centre).

[13] plzen.eu; https://www.plzen.eu/o-meste/aktuality/aktuality-z-mesta/rekonstrukce-vozovny-slovany-zacne-na-konci-rijna.aspx