

# REGIONAL ANALYSIS OF CHALLENGES AND NEEDS

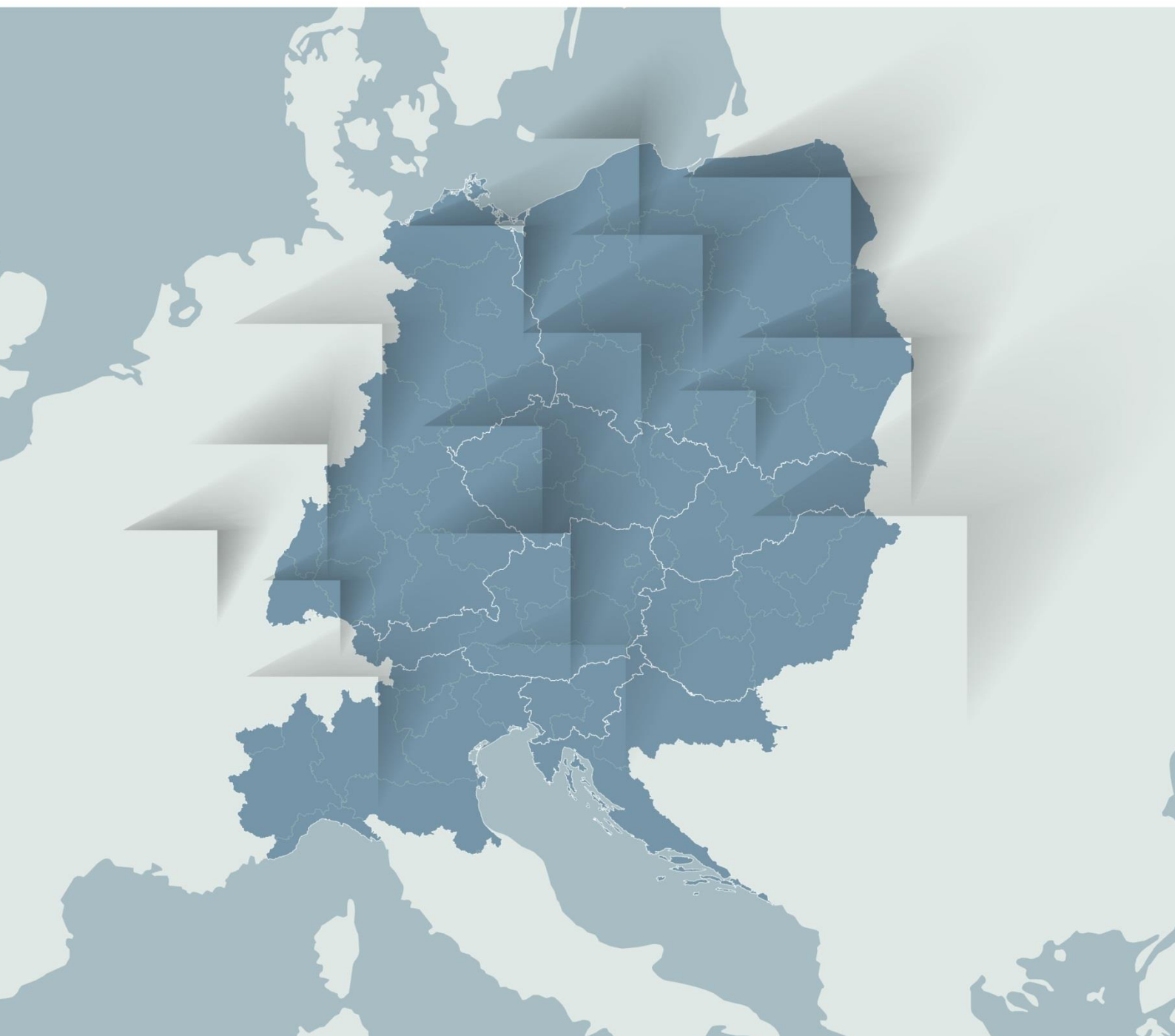
for the Ústí Region (CZ)

---

D.T2.1.3

Final  
17 03 2020

---



The Regional analysis for challenges and needs for the Usti region  
was developed by the project partners

Usti region



and

New railway line Dresden - Prague EGTC

New Railway Line Dresden-Prague EGTC



European Grouping of Territorial Cooperation



## TABLE OF CONTENTS

ABBREVIATIONS .....	5
<b>1. CURRENT SITUATION ANALYSIS.....</b>	<b>6</b>
1.1. Geographical and socio-economic description of the area, delimitation, and definition of its catchment area .....	6
1.1.1. Geographical data, relief, natural and administrative boundaries .....	6
1.1.2. Identifying the corridor and determining its catchment area .....	7
1.1.3. Connections with relevant TEN-T and RFC corridors in the area .....	8
1.1.4. Examination of technical parameters of the area .....	11
1.1.5. Examination of intermodality and terminals in the area .....	12
1.1.6. Bottlenecks, barriers .....	13
1.2. Presentation of the transport infrastructure system .....	15
1.2.1. Transport infrastructure characteristics (road, railways, waterways, airports) .....	15
1.2.2. Multimodal interfaces .....	25
1.2.3. Cross-border links .....	26
1.3. Presentation of major economic activities and the settlement system .....	27
1.3.1. Description of the settlement system .....	27
1.3.2. Demographical and socio-economic situation .....	28
1.3.3. Description of cross-border relations .....	33
1.3.4. Presentation of companies in the area (manufactures, logistics, transport), identifying their activities.....	35
1.3.5. Industrial production, major floater (origin) and destination points .....	37
1.3.6. Agriculture production, food processing .....	38
1.3.7. Logistic, storage and distribution points .....	41
1.4. Presentation of freight characteristics .....	43
1.4.1. Partners (market actors) .....	43
1.4.2. Current major directions.....	44
1.4.3. Dimensions of the freight traffic .....	45
1.4.4. Presentation of loading devices .....	49
1.4.5. Presentation of current technology (workflow and operation), capacity limits .....	53
1.5. SWOT analysis .....	54
<b>2. ANALYSIS OF FREIGHT TRENDS (TIME RANGE 2030 / 2050).....</b>	<b>55</b>
2.1. Possible directions of developments .....	55
2.2. Possible new connections .....	57
2.3. Terminating links (if any).....	58



<b>3. PRESENTATION OF PLANNED DEVELOPMENTS (SCREENING OF DOCUMENTS)</b> .....	<b>60</b>
3.1. Identification and presentation of strategies and documents with relevance for spatial planning and infrastructure planning .....	60
3.2. Analysis of contents of identified strategies and documents .....	62
3.3. Presentation of completed and ongoing projects and actions .....	69
<b>4. SPATIAL ASPECTS OF NODES IN TRANSNATIONAL TRANSPORT</b> .....	<b>71</b>
4.1. Needs and requirements for improvement of node functions .....	71
4.2. Process of node development (analysis of the processual dimension) .....	74
4.3. Networking activities .....	78
<b>5. PRESENTATION OF NECESSARY ADDITIONAL DEVELOPMENTS</b> .....	<b>79</b>
5.1. Identification of regional challenges and regional needs.....	79
5.2. Maps with possible improvements .....	81
5.3. High-speed lines for freight trains .....	83
5.4. Presentation of future capacity utilization and modal shift .....	83
5.5. The business model of new lines/developments .....	84
5.6. Improvement of regional and cross-border accessibility (opportunities provided by the rail sector).....	85
5.7. Possible chronology of developments.....	86
5.8. Possible pilot projects .....	89
<b>6. STAKEHOLDER ANALYSIS AND STAKEHOLDER INVOLVEMENT</b> .....	<b>91</b>
6.1. Identification of relevant stakeholders for the elaboration of Corridor Capitalisation Plans .....	91
6.2. Description of the approach towards stakeholder involvement during the elaboration of the regional analysis of challenges and needs .....	91
<b>7. ANNEXES</b> .....	<b>92</b>
7.1. Maps .....	92
7.2. Figures .....	92
7.3. Tables .....	92
<b>8. SOURCES</b> .....	<b>93</b>



## ABBREVIATIONS

AC	alternating current
CEF	Connecting Europe Facility
CF	Cohesion Fund
ČD	České dráhy (Czech Railways - National railway company)
ČÚZK	The Czech Office for Surveying, Mapping, and Cadastre
DC	direct current
EIA	Environmental Impact Assessment
ERDF	European Regional Development Fund
GDR	German Democratic Republic (DDR)
GVD	graphic timetable of train transport (Grafikon vlakové dopravy)
OEM	Orient - East Med Corridor
RFC	Rail Freight Corridor
SŽCZ	Správa železnic (railway infrastructure owner and operator in the Czech Republic)
VDB CZSO	Public Database of the Czech Statistical Office
WW2	World War II

## 1. CURRENT SITUATION ANALYSIS

### 1.1. Geographical and socio-economic description of the area, delimitation, and definition of its catchment area

#### 1.1.1. Geographical data, relief, natural and administrative boundaries

Usti Region lies in the north-western part of the Czech Republic between the Central Bohemian Region and The Free State of Saxony. The Region is located along the TEN-T corridor ORIENT/EAST-MED so the main connections between Prague, Dresden, and Berlin lead through the Region.

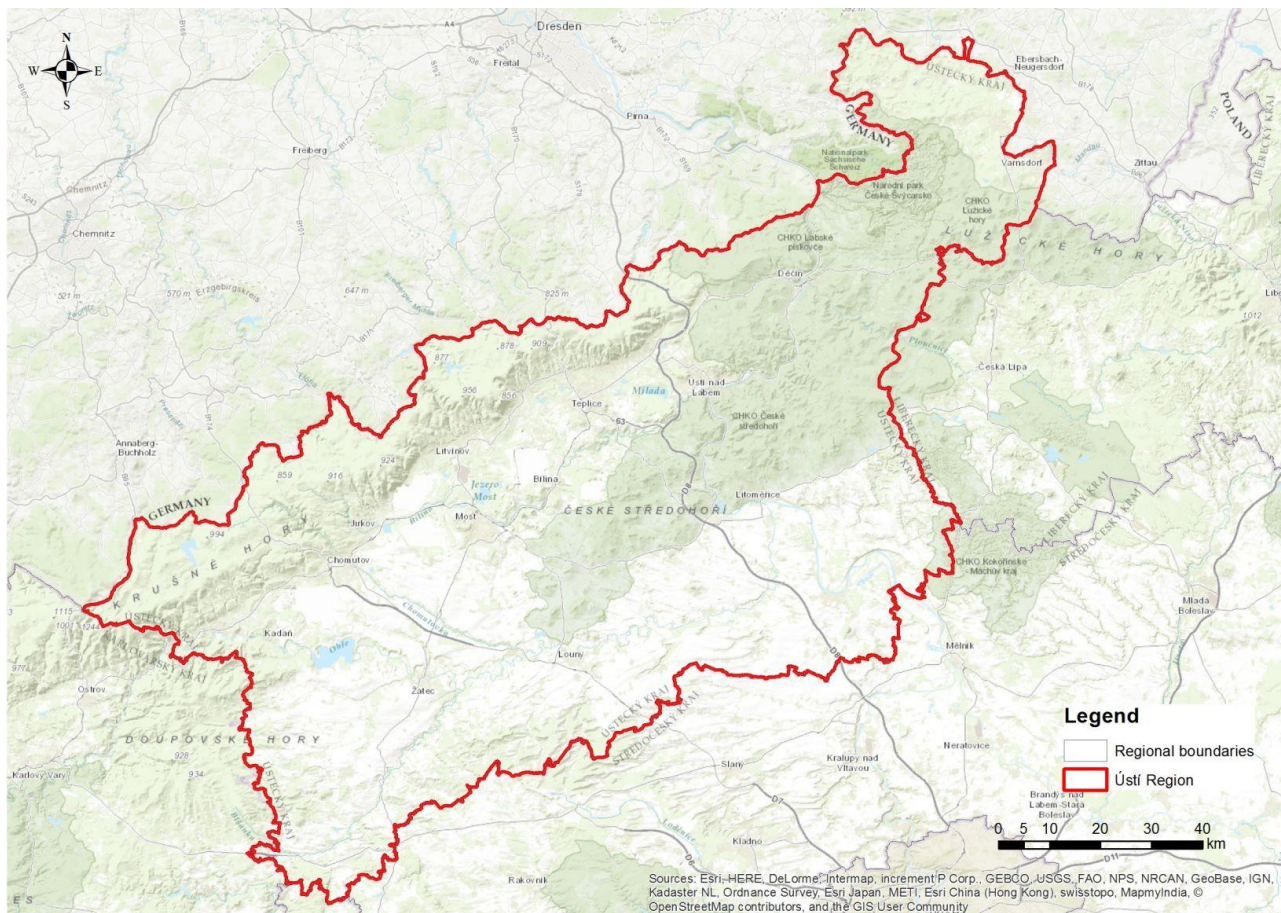
Usti Region occupies an area of 5 339 km<sup>2</sup> and has a population of about 820 000 (820 789 as of 31.12.2018).

Usti Region has relatively variable relief. Two main mountain ranges are spreading in SW - NE direction. The Central Bohemian Uplands spread through the almost entire centre of the region, while the Ore Mountains create natural borders with Saxony. Between both ranges, the Most basin is located, with brown coal deposits and the populous agglomeration arisen around mines between Chomutov and Děčín (which is with a population of over 500 000 people third largest urban agglomeration in the Czech Republic). Both mountains range significantly shape the transport infrastructure. Southern parts of the region lie in Eger River lowlands, while the south-eastern edge of the region lies in Elbe River lowlands.

As it is mentioned above, the borders with Saxony / Germany is naturally formed by mountain ranges (esp. Ore Mountains), with just one exception - Šluknov headland, which is surrounded by Saxon territory from three sides, and which is separated from the rest of Bohemia (and Usti Region) by Lusatian Mountains.

The inner-state boundaries are of rather administrative than natural character - it spreads through highlands and across mountain ranges and Elbe River lowlands. The Ústí Region borders to Karlovy Vary Region to the west, Středočeský Region (Central Bohemian Region) to the south and southeast, Pilsen Region to the southwest and Liberec Region to the east.

**Map 1: Relief of Ústí Region**



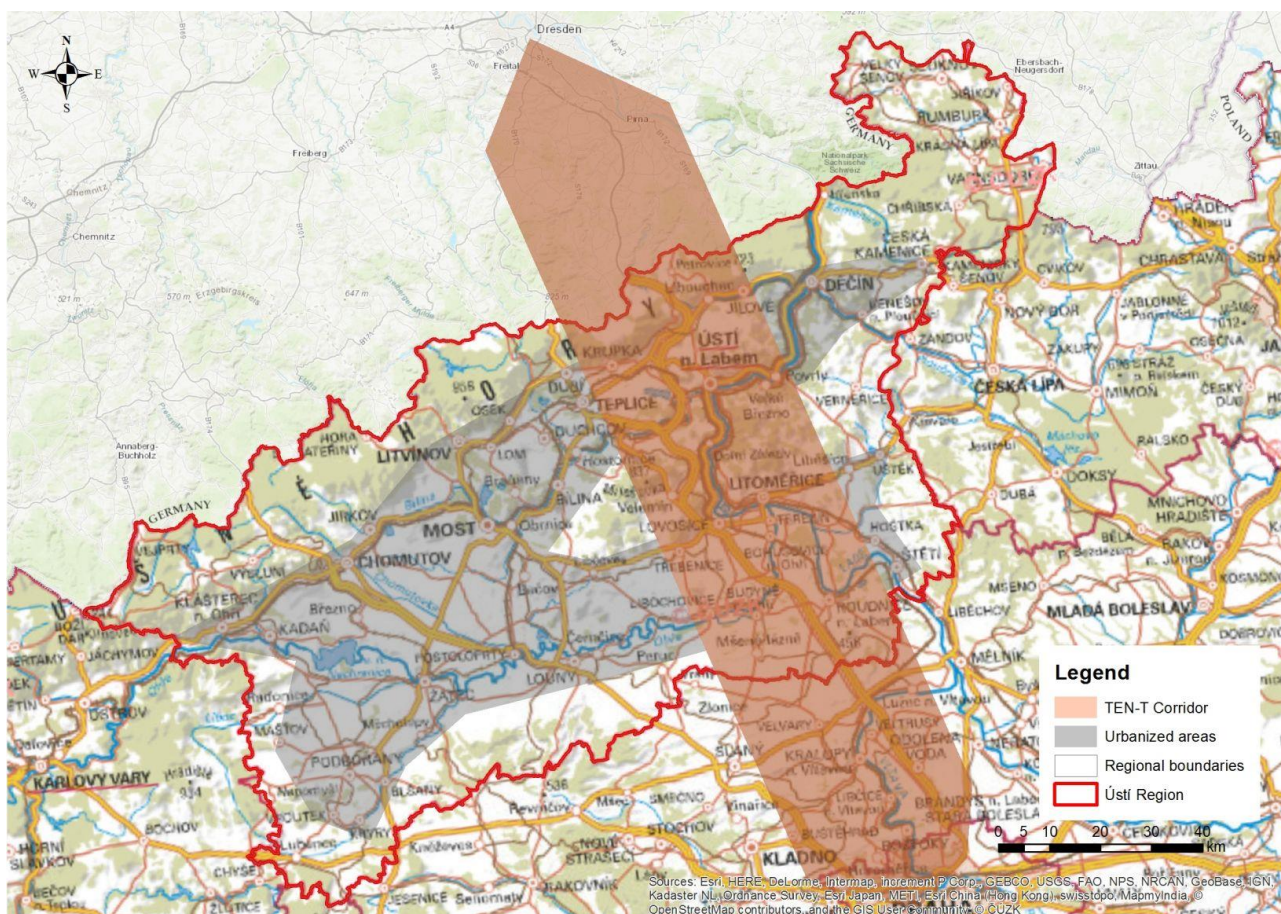
Source: Created in ESRI ArcMap 10.4. Base Map: ESRI Topographic Map of the World

### 1.1.2. Identifying the corridor and determining its catchment area

The TEN-T corridor ORIENT/EAST-MED spreads across central-western parts of the region. So far, the TEN-T corridor is represented by the Motorway D8/A17 Prague - Ústí nad Labem - CZ/DE - Dresden, conventional railway Prague - Ústí nad Labem - Děčín - Bad Schandau - Dresden and Elbe river waterway. In the future, it would materialize by the planned construction of high-speed railway Prague - Ústí nad Labem - Dresden.

The catchment area first of all consists of the administrative area of the Ústí Region (see Chapter 1.1.1). However the region is quite diverse, and we can also understand the catchment area as the corridor itself and urbanized areas and axes of the region (see grey areas in Map 2). The rural and peripheral areas have a low density of population and businesses, so they generate only low demand for transport via TEN-T routes. Some peripheral areas of the region (e.g. Šluknov headland) have an unattractive connection to the TEN-T corridor, and even after construction of high-speed railway Prague - Ústí nad Labem might not fully integrate to the catchment area of the TEN-T corridor.

**Map 2: TEN-T corridor and urbanized areas of the region**



Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World

### 1.1.3. Connections with relevant TEN-T and RFC corridors in the area

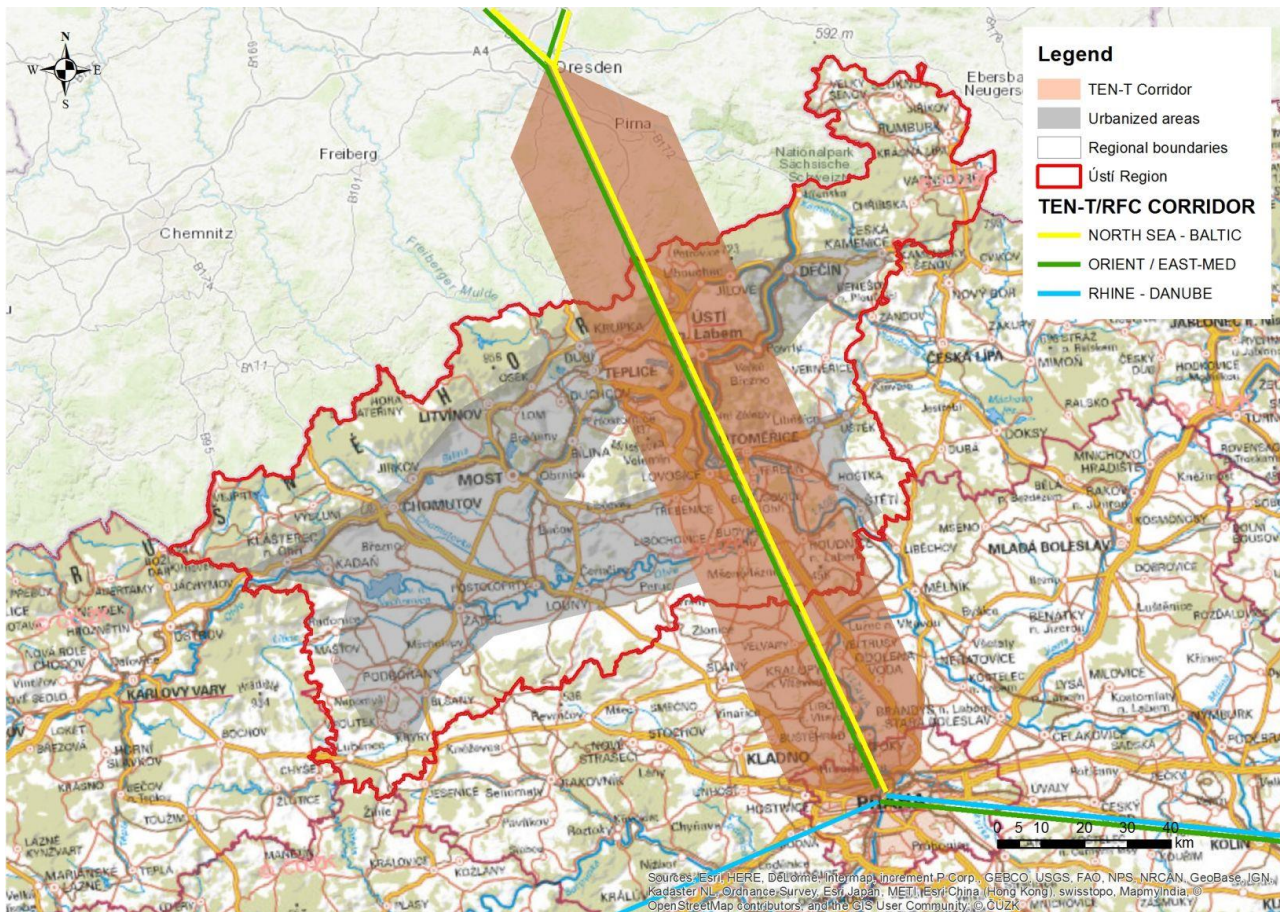
The TEN-T corridor ORIENT / EAST-MED in the Ústí Region represents also RFC7 corridor (ORIENT / EAST-MED) and a branch of RFC8 corridor (NORTH SEA - BALTIC). There are no connections with other TEN-T/RFC corridors within the region. From the rail freight perspective, there is the however significant connection of railways between the left and right bank of the Elbe river. While the TEN-T / RFC corridor is officially represented by the railway Prague - Ústí nad Labem - Děčín (number 090) located on the left bank of Elbe river, much more important for inner-state and international rail freight transport is the railway on the right bank of Elbe river (number 072) Kolín - Ústí nad Labem (-Děčín). The capacity of the railway between Prague and Děčín for freight transport is reduced by intensive passenger transport, so there is much more intensive freight transport on the railroad no. 072 (which technically serves as a bypass of Prague for rail freight transport) in direction of ORIENT / EAST-MED corridor).

Closest connections with other TEN-T and RFC corridors are in Prague (RHINE - DANUBE corridor) and Dresden (NORTH SEA - BALTIC), however, the importance of the RHINE - DANUBE corridor is reduced by the fact, that there is a very poor rail connection between Pilsen and Bavaria (there is an only single-track non-electrified railway with a top speed no more than 100 km/h). The only intensive-used rail freight connection between the Czech Republic and Germany is the TEN-T connection (Ústí nad Labem-) Děčín - Bad Schandau (-Dresden), which is the only double-track electrified rail connection between both



countries. This is, in fact, the significant bottleneck of rail freight transport between the Czech Republic and Germany.

**Map 3: TEN-T and RFC corridors in the area**



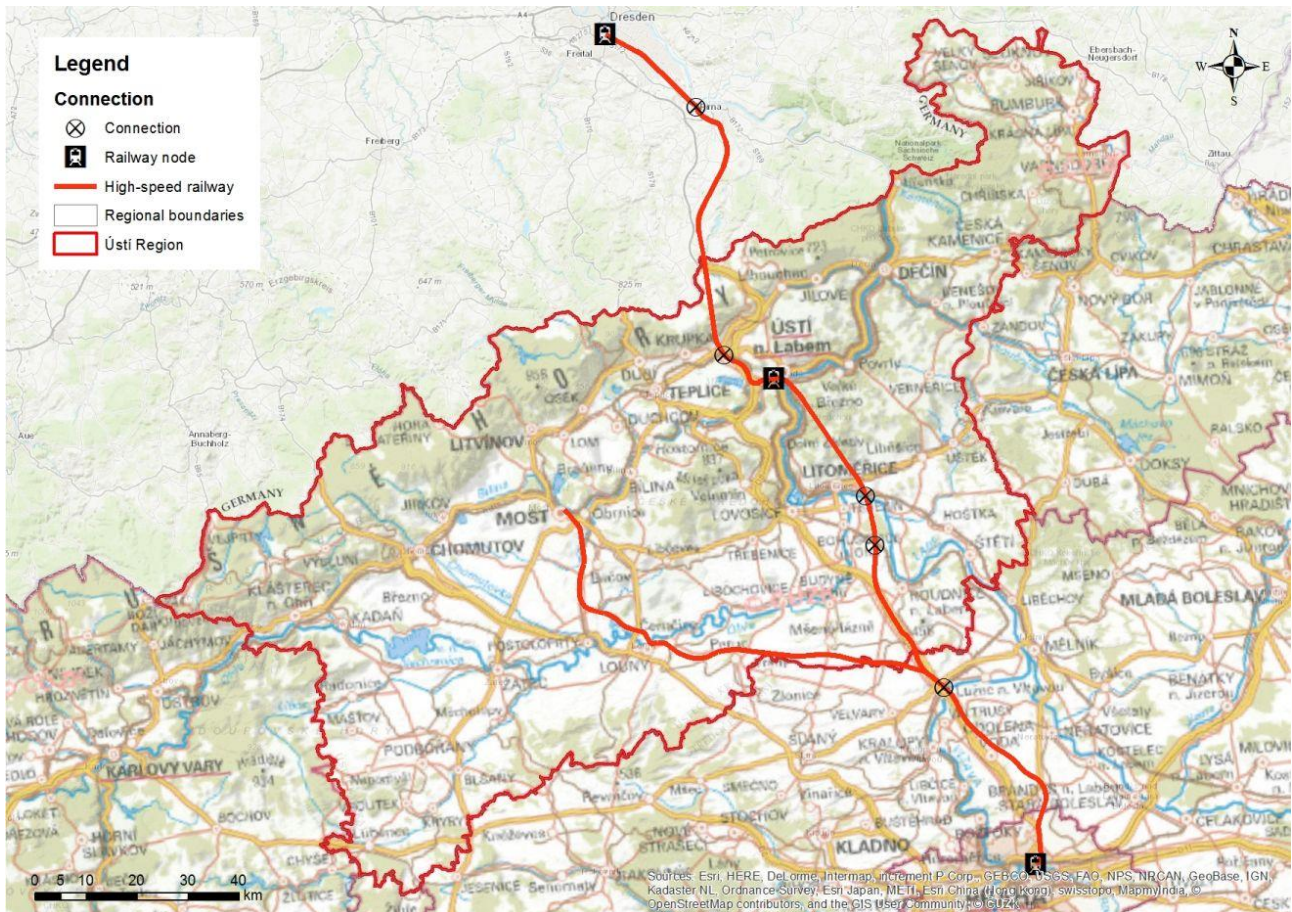
Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World

The planned high-speed railway corridor can be connected to existing TEN-T and RFC corridors generally in recent TEN-T / RFC nodes - Prague and Dresden. In detail, the planned corridor would have connections to existing corridors along the line, which would also allow phasing of its construction. The first connection can be in Nová Ves, just behind the bridge over the Moldau river, where the planned corridor would intersect recent corridor (railway no. 090). Another connection (where the phase of high-speed railroad construction Prague - Litoměřice would end) can be near Bohušovice nad Ohří. Just past the bridge over the Elbe river, there would be a connection to freight arterial railway no. 072 and the City of Litoměřice. The most important connection within the catchment area would be in Ústí nad Labem, where there would be the main node with a connection of the planned corridor to recent corridors and other railways. Another connection would be possible near Chlumec, at the southern approach to planned Ore Mountains Base Tunnel (EGBT). This connection of high-speed railway with conventional railway should be used by freight trains which would use the EGBT to increase cross-border capacity for freight trains and to prevent noise pollution in the valley of the Elbe River at night hours.



On the German side, the first connection can be near Pirna, where the freight trains using EGBT would leave high-speed tracks, which would be adjacent to the recent corridor. The main node with possible connections between the high-speed railway and conventional railways would be in Dresden.

**Map 4: Connections of the planned high-speed railway to TEN-T and RFC corridors in the area**

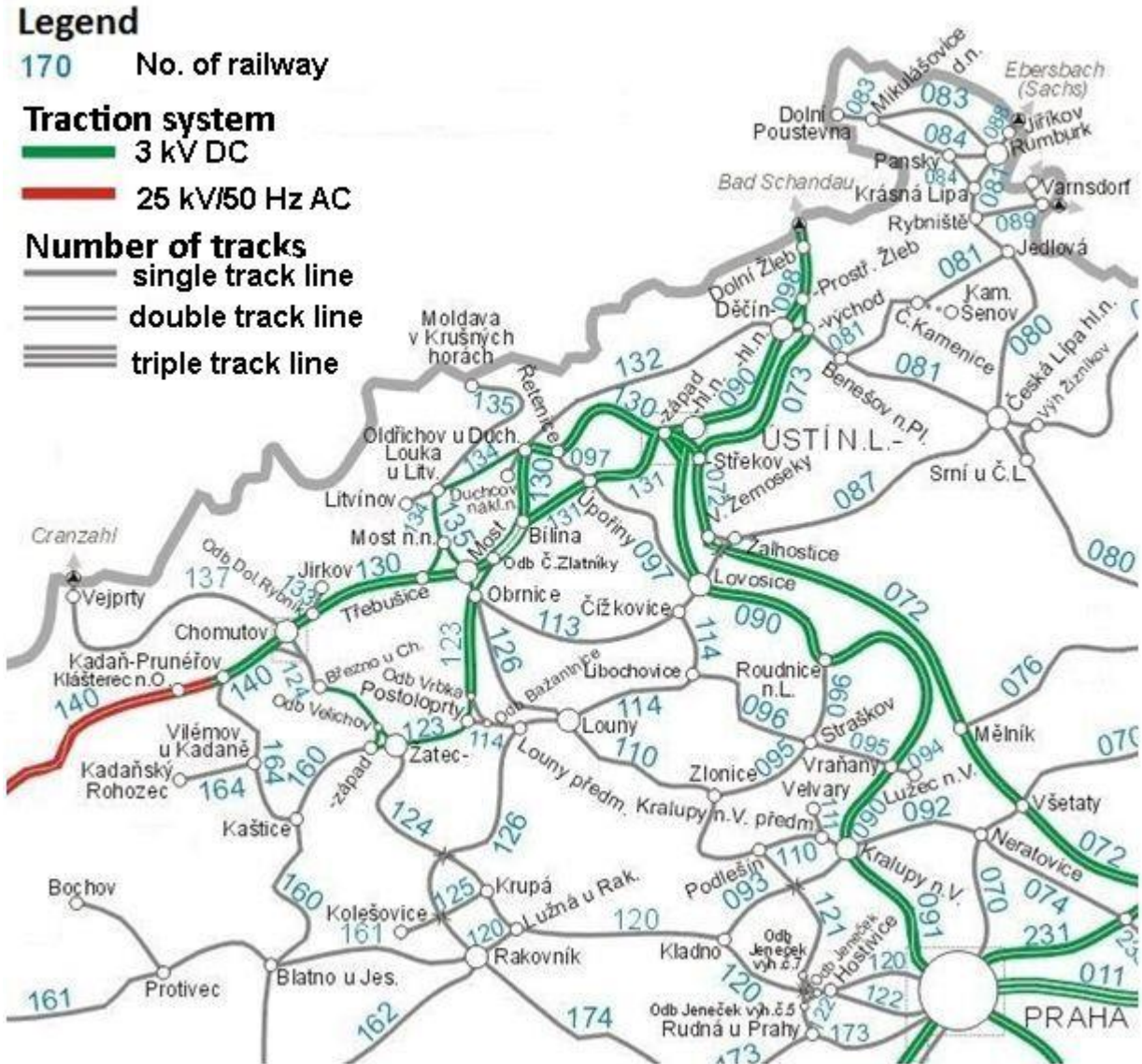


Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World



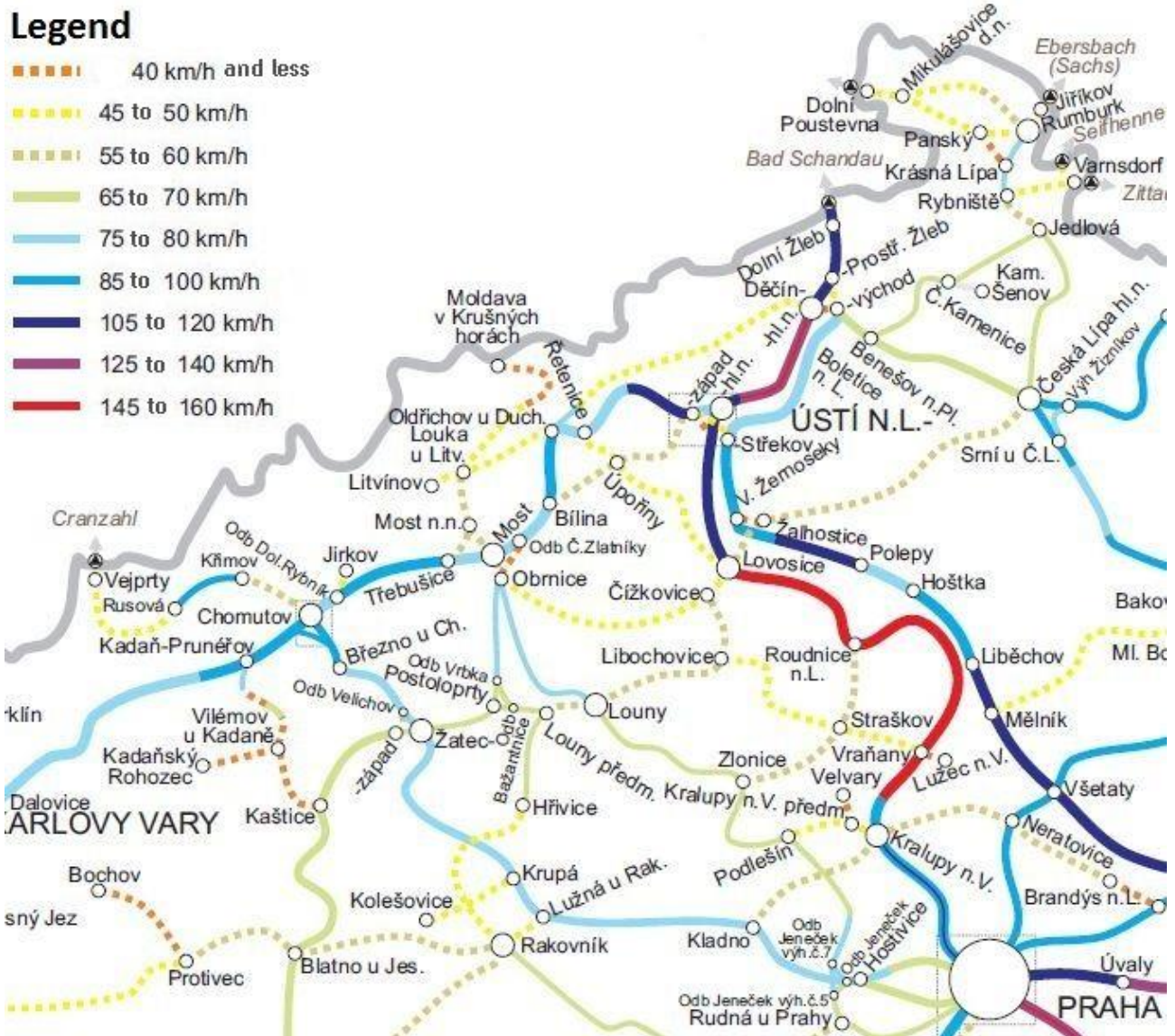
1.1.4. Examination of technical parameters of the area

Picture 1: Traction system and the number of tracks



Source: SŽCZ (2019), adjusted by the author

**Picture 2: Maximum allowed speed on railways**



Source: SŽCZ (2019), adjusted by the author

### 1.1.5. Examination of intermodality and terminals in the area

Intermodality in the area is shaped by the Elbe river. Three out of four intermodal terminals in the Ústí Region are located along the Elbe river. Two of those terminals are ports connected to rail and road infrastructure, one terminal is just rail/road terminal, but is located close to another river port facility. There are following intermodal terminals within the region:

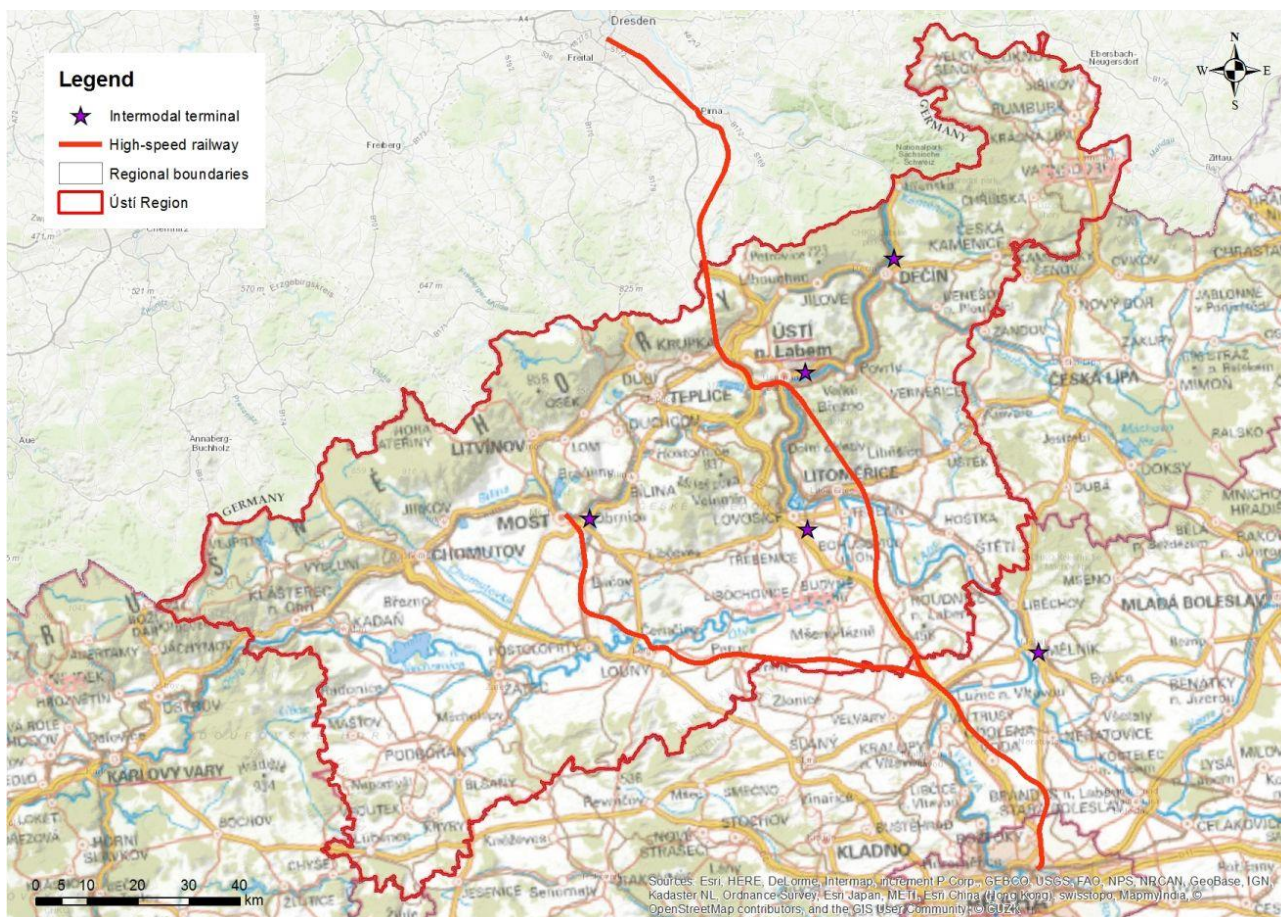
- T-Port spol. s.r.o. in Ústí nad Labem, where there is also Metrans container terminal (waterway/road/rail)
- Sächsische Binnenhäfen Oberelbe GmbH port in Děčín-Loubí (waterway/road/rail)

- ČD-DUSS a.s. Terminal in Lovosice (rail/road)
- Upline CZ s.r.o. Terminal in Obrnice (rail/road)

Closest intermodal terminals outside of the region are located in Mělník (Port Mělník, where there is one of biggest container terminals in the Czech Republic) and in Dresden.

In comparison to other regions in the Czech Republic, the Ústí Region has a relatively high level of intermodality. Its potential is however reduced by some deficiencies and bottlenecks of the infrastructure (see chapters below).

**Map 5: Intermodal terminals in and around the Ústí Region**



Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World

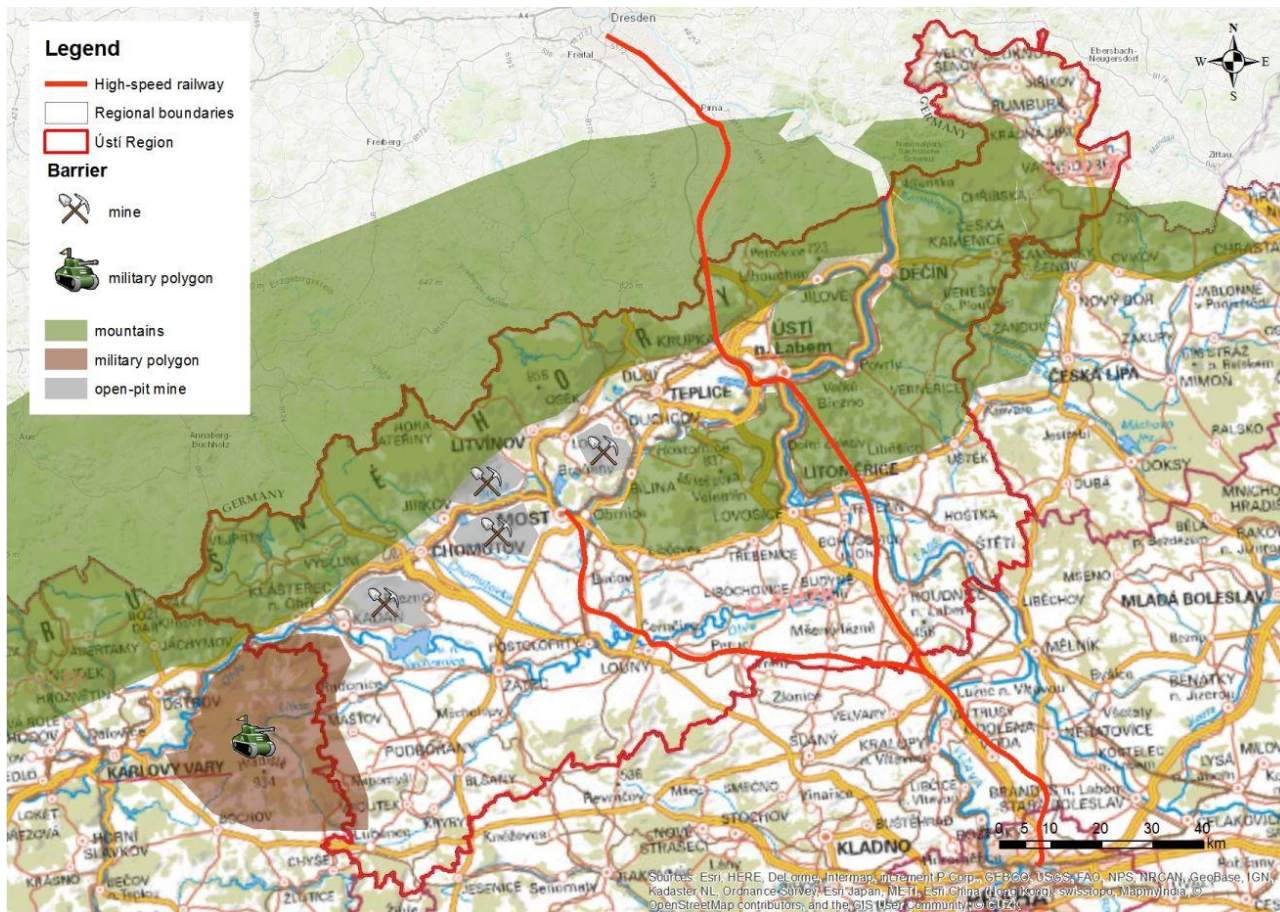
### 1.1.6. Bottlenecks, barriers

Since the Ústí Region is shaped by diverse terrain, the main barriers for transport and transport infrastructure are mountains, esp. those leading in SW-NE direction (Ore Mountains, Central Bohemian Uplands). Besides these barriers complicating connection in the TEN-T OEM direction, another significant barrier separating Ústí Region and Karlovy Vary Region is created by the Doupov mountains, which are also the location of the biggest Czech military polygon. Specific barriers are created by open-pit coal mines,



which complicate and prolong connections within Ústí-Chomutov Agglomeration and which also shape the TEN-T corridor.

**Map 6: Barriers to transport in and around the Ústí Region**



Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World

There are bottlenecks for every mode. The main bottleneck of the Elbe River waterway is between Ústí nad Labem and Dresden, where the river is regulated to an only limited extent and where the waterway is closed for transport up to six months a year. The main bottleneck of rail transport is between Děčín and Dresden, where there is the only double-track electrified railway between the Czech Republic and Germany. This rail connection is, therefore, the only wide-used connection for rail freight transport between the Czech Republic and Germany and its limited capacity (or rather lack of alternative connections) limits the extent of rail freight transport between both countries. The main bottlenecks of road infrastructure are on the road No. 13, which inter-connects the Ústí-Chomutov agglomeration and connects the Ústí Region with Liberec Region and Karlovy Vary Region. While this road is very important to both passenger and freight road transport (esp. within Ústí-Chomutov agglomeration), there are many bottlenecks consisted mainly of lack of bypasses of cities and settlements, insufficient capacity at some sections (two-lane sections within the agglomeration), dangerous and/or low capacity crossroads and/or unsuitable routing (low-diameter curves, steep grade of ascent/descent). The road mode of TEN-T OEM in the region is completed, the only potential bottleneck of this connection is in the section leading through the Central Bohemian Uplands, where slope instability endangers certain section of the motorway D8.



## 1.2. Presentation of the transport infrastructure system

### 1.2.1. Transport infrastructure characteristics (road, railways, waterways, airports)

The road network system consists of roads managed by the state (motorways and I. class roads), regional roads (II. and III. class roads) and local roads (managed by cities and municipalities). The core road network of the Ústí Region is based on motorways D8 and D7, connecting central (D8) and western (D7) parts of the Ústí Region to Prague and First class roads I/9, I/13, I/27, and I/15 inter-connecting different parts of the region and connecting the region to neighboring regions (Liberec Region, Karlovy Vary Region and Plzeň Region). The most important first-class road is road number I/13, which spreads in an East-West direction across the Northern part of the region and which inter-connects the Ústí-Chomutov agglomeration. There are also other motorways and first-class roads (namely D6, I/28, I/30, I/62, and I/63), which are serving just some tiny sections of the region, usually by inter-connecting other motorways and first-class roads. The state manages following motorways and roads in the Ústí Region:

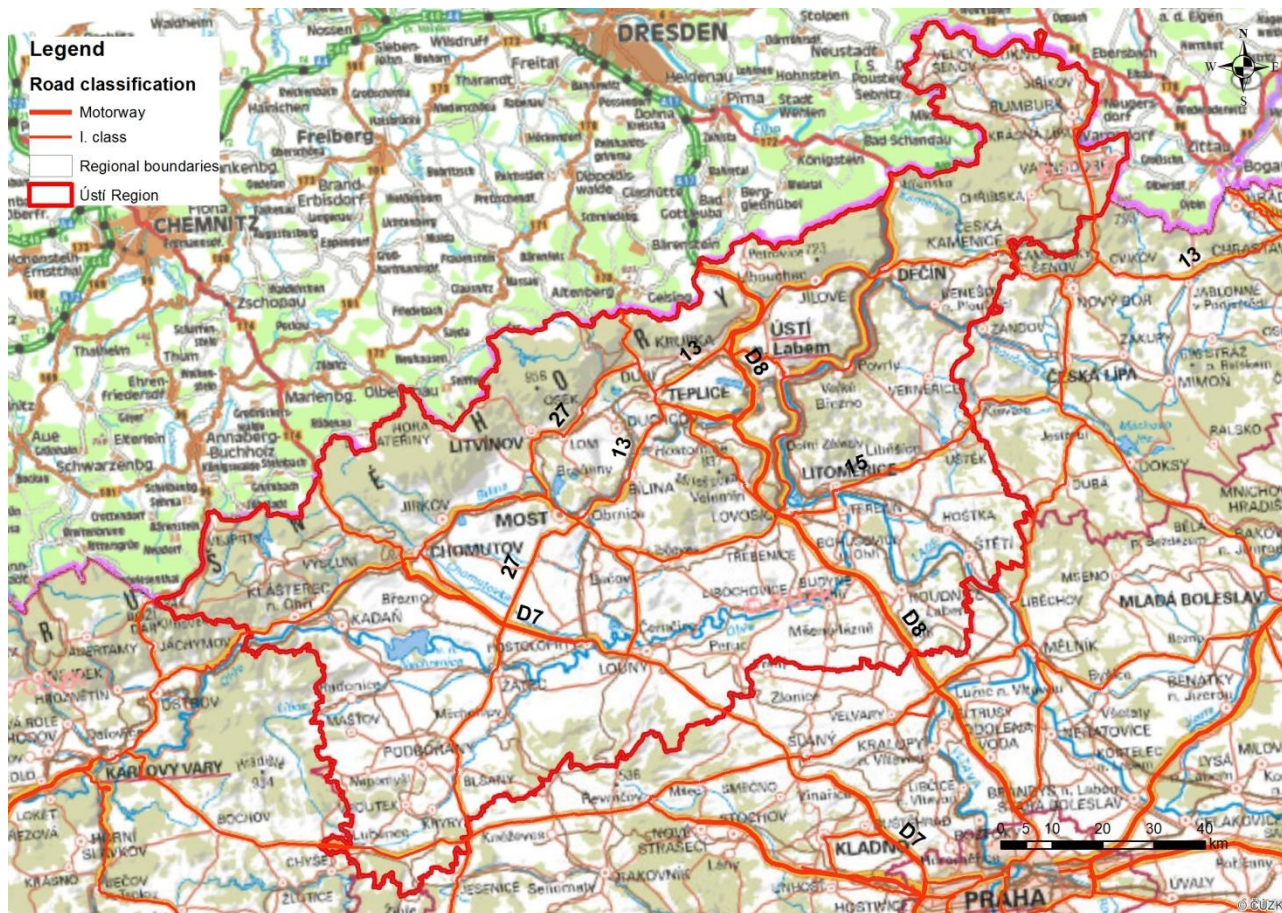
- D6 Praha - Karlovy Vary - Cheb (-Germany)
- D8 Prague - Ústí nad Labem (-Dresden)
- D7 (I/7) Prague - Chomutov (-Chemnitz)
- I/9 Prague - Rumburk - Neugersdorf (Sachsen)
- I/13 Liberec - Děčín - Chomutov - Karlovy Vary
- I/15 Most - Litoměřice - Zahradky u České Lípy
- I/27 Dubí - Litvínov - Most - Žatec - Plzeň
- I/28 Louny - Skršín
- I/30 Lovosice - Ústí nad Labem - Chlumec
- I/62 Ústí nad Labem - Děčín - SRN
- I/63 Bystřany - Řehlovice

The motorways and I. class roads play a crucial role in connecting the main road transport destinations within the region, however, some important connections are served by II. class (regional) roads.

Among important regional roads managed by the Regional Authority of Ústí nad Labem are the following:

- II/240

**Map 7: Road network system in the Ústí Region**



Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World

The quality of road network is limited by unfinished construction of motorways (esp. D7), lack of bypasses of cities and settlements (esp. on roads of the I. class), missing feeder roads connecting some cities (such as Děčín and Žatec) and motorways, insufficient capacity of certain sections of roads of the I. class (e.g. lack of four-lane sections on the road no. I/13) and local deficiencies - such as missing two-level traffic junctions at some dangerous crossroads and/or crossroads with insufficient capacity. The most notorious examples are the following:

- the missing section of motorway D7 between Slaný and Postoloprty, where there is so far only two-lane road of I. class - therefore the regions of Most, Chomutov and Louny have insufficient road connection to Prague
- lack of bypasses of following cities on roads with intensities exceeding 10 000 motor vehicles/day:
  - Teplice (I/13)
  - Bílina (I/13)
  - Klášterec nad Ohří (I/13)
  - Litoměřice (I/15)
  - Roudnice nad Labem (II/240)





- missing feeder roads:
  - feeder road between Děčín and motorway D8
  - feeder road between Žatec and motorway D7
- insufficient capacity of certain sections of roads of the I. class:
  - lack of four-lane sections / additional lanes on the road no. I/13:
    - > Chomutov - Klášterec nad Ohří
    - > Bílina
    - > Teplice
    - > Děčín - Ústí nad Labem
- local deficiencies
  - missing two-level traffic junctions and/or circular crossroads
    - > at road no. I/13 - between Chomutov and Klášterec nad Ohří and between Chlumeck and Teplice

## Railways

The most important railway lines in the Ústí Region are the following:

- 090 (and 098) Praha - Děčín (-Bad Schandau) - part of RFC7 corridor (ORIENT / EAST-MED) and a branch of RFC8 corridor (NORTH SEA - BALTIC) on the left bank of Labe river
  - the only completely upgraded railway in the region
  - electrified (3 kV DC)
  - double-track railway
  - allowed speed up to 160 km/h (between Mlčechvosty and Lovosice) but at sections between Lovosice and Bad Schandau less than 120 km/h (short sections with speed drop down to 80 km/h)
- 072 (and 073) Kolín - Ústí nad Labem (-Děčín) - mainline for freight trains on the right bank of Elbe river, alternative route for freight trains using RFC7 corridor
  - electrified (3 kV DC)
  - double-track railway
  - allowed speed up to 120 km/h, but mostly less than 100 km/h
- 130 (and 140) Ústí nad Labem - Chomutov (-Karlovy Vary) - important line inter-connecting the Ústí-Chomutov agglomeration and serving as a route for coal freight trains, and a possible route for the freight trains to Germany (using cross-border connection Cheb-Schirnding)
  - electrified (3 kV DC), from Kadaň to Karlovy Vary there is current 25 kV/50 Hz AC
  - double-track railway
  - allowed speed up to 120 km/h, but mostly less than 100 km/h



The other double-track and/or electrified railways (important for freight traffic):

- 131 Ústí nad Labem - Bílina - double-track electrified railway serving as an alternative route for coal freight trains to overburdened railway no. 130
- 123 Most - Žatec - electrified, partially double-track railway serving as a route for coal freight trains
- 124 Lužná u Rakovníka - Chomutov - the part between Březno u Chomutova and Žatec is electrified and serves for coal freight trains
- 134 Teplice - Litvínov - the part between Teplice and Louka u Litvínova is electrified and used by freight trains serving chemical plant in Záluží

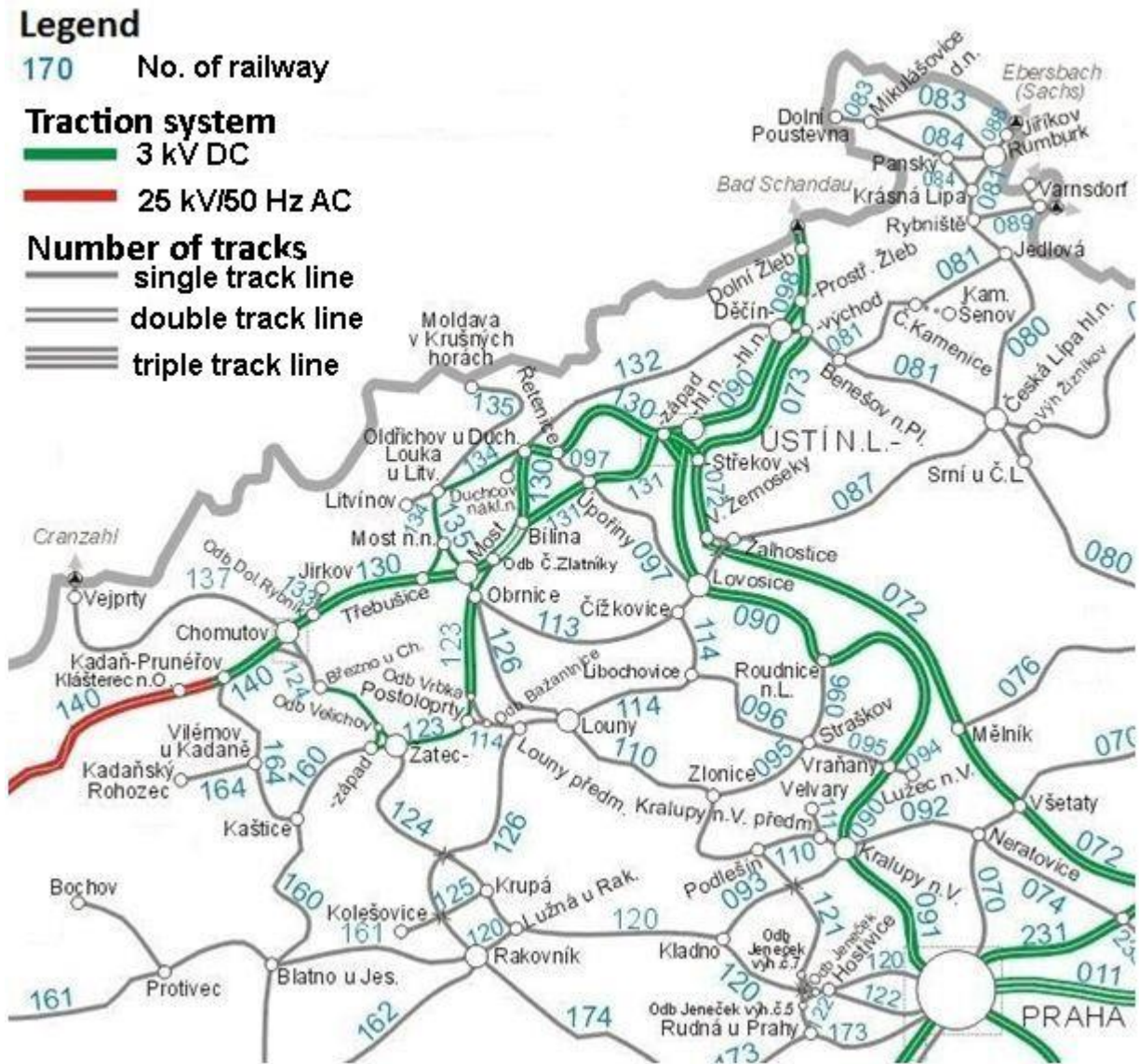
There are many other railways in the region, but their importance is generally lower (single-track, non-electrified):

- 135 Most - Moldava - the part between Most and Louka u Litvínova is electrified and serving chemical plant in Záluží
- 081 Děčín - Rumburk / Benešov nad Ploučnicí - Česká Lípa - the connection between Ústí and Liberec regions and connection to the Šluknov headland
- 088 Rumburk - Jiříkov (-Ebersbach / Sachs) - occasionally used as an alternative route for freight trains in the past
- 110 Kralupy nad Vltavou - Most (serving primarily as a connection between Most and Louny for passenger transport)
- 160 Plzeň - Žatec (serving as a connection between Ústí nad Plzeň region)

Beside abovementioned railways, there is a number regional railways which are rather serving tourist traffic and/or connection of rural areas to urban centres with low intensity of passenger traffic and which have usually very low potential for freight transport (due to routing through rural areas with low presence of industry, steep grade of many routes and poor condition of rail infrastructure).



Picture 3: Traction system and the number of tracks



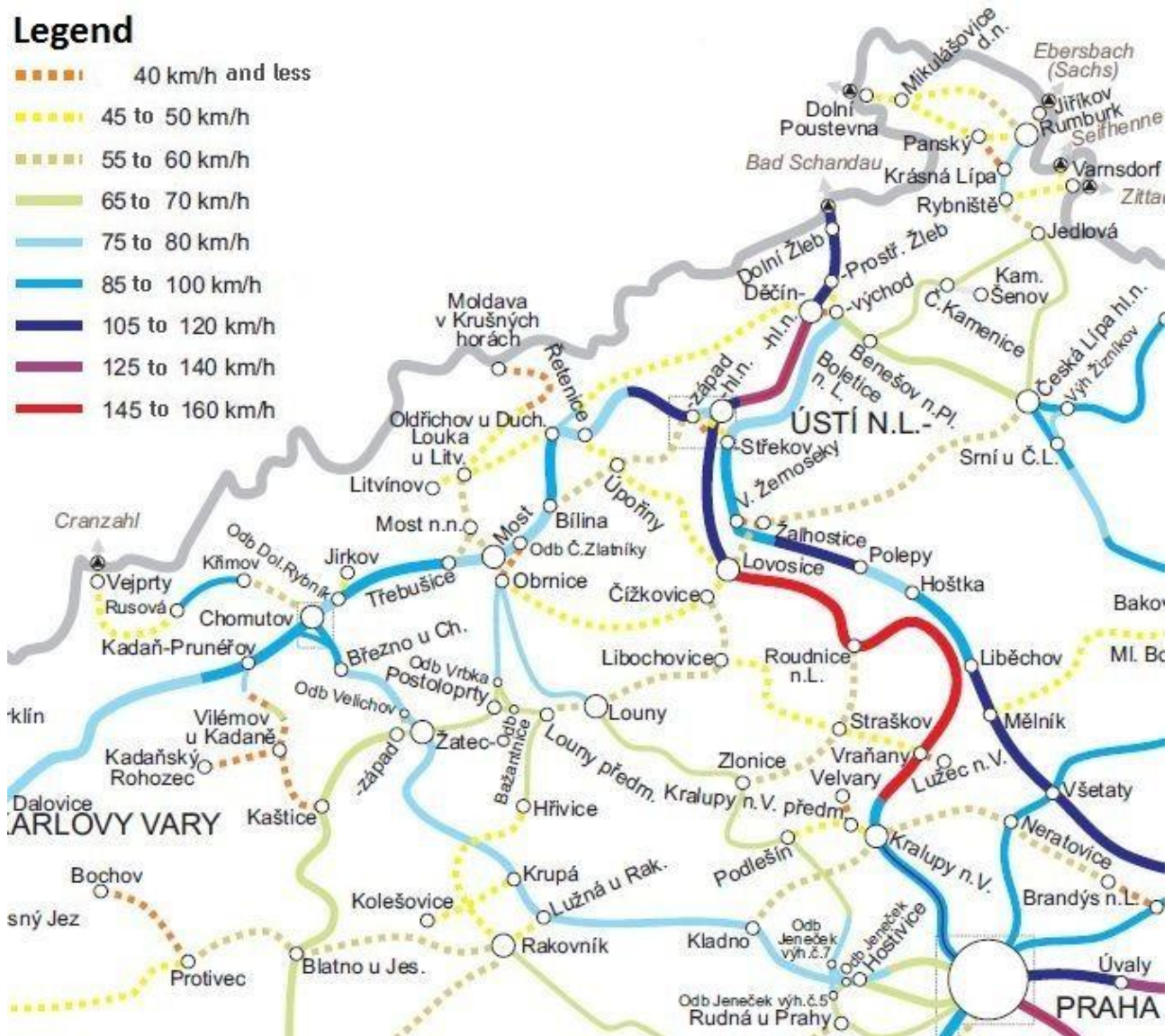
Source: SŽCZ (2019), adjusted by the author



**Map 8: Allowed speed on railway lines in Ústí Region**

**Legend**

-  40 km/h and less
-  45 to 50 km/h
-  55 to 60 km/h
-  65 to 70 km/h
-  75 to 80 km/h
-  85 to 100 km/h
-  105 to 120 km/h
-  125 to 140 km/h
-  145 to 160 km/h



Source: SŽCZ (2019), adjusted by the author

As mentioned above, the RFC7 corridor (ORIENT / EAST-MED) and a branch of RFC8 corridor (NORTH SEA - BALTIC) runs through the area using the railway no. 090 (and 098) for passenger and freight traffic and in case of international freight trains also railway no. 072 and 073.

For domestic routes, all the abovementioned railways are more or less important, since they serve as routes for either long-distance (“fast-train”) connections or connection of centres of the regional settlement system.

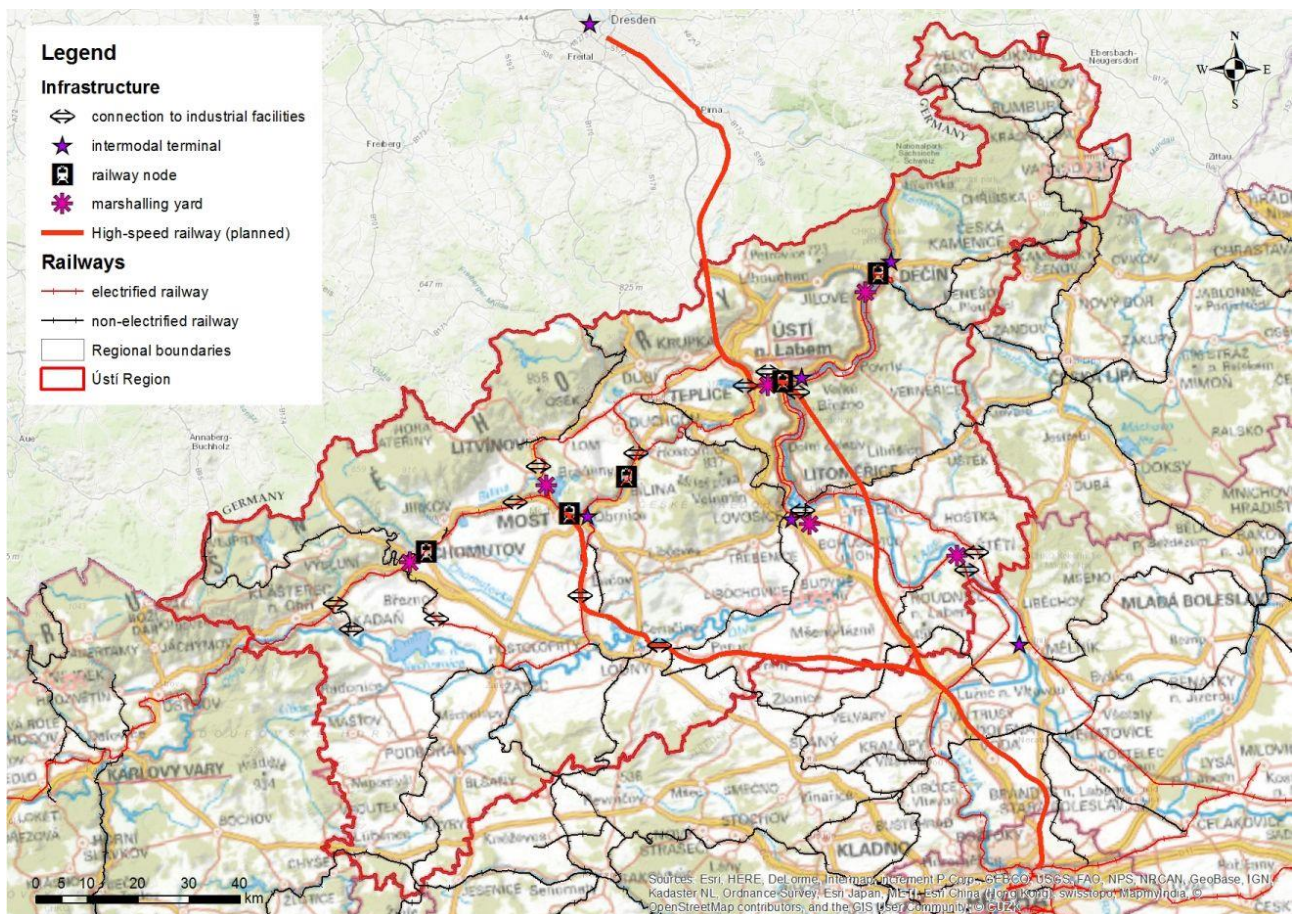
For freight traffic, basically all electrified railways are important (electrification has been carried out in the past because the intensity of freight traffic has made it cost-effective). Very high demand in freight traffic is connected to coal mining (coal is being transported by train to coal power plants outside the



region and other destinations), therefore all railways connecting coal mines to main destinations of coal are important for freight traffic (namely railways no. 130, 140, 131, 123, 124, 072 and 090).

Importance of railways for either passenger or freight traffic is however also influenced by the quality of rail infrastructure - there are certain connections with high transport demand, but lack of usable railways (e.g. connection between Prague and western parts of the region - such as Louny, Žatec, Most, Chomutov and Litvínov).

**Map 9: Rail infrastructure in the Ústí Region**



Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World

The main railway nodes (by the volume of rail traffic) are located in:

- Ústí nad Labem (connection of railways no. 090, 072, 073, 130 and 131, the primary node for passenger and freight traffic in the region)
- Děčín (connection of railways no. 090, 098, 073 and 081; main rail node on the way to Germany)
- Bílina (connection of railways no. 130 and 131 serving coal mines)
- Most (connection of railways no. 130, 123, 126, 113 and 135, serving coal mines and chemical plant)
- Chomutov (connection of railways no. 130, 140, 124 and 137)



Marshalling yards (operated by state company Správa železnic)<sup>1</sup>:

- Most nové nádraží (marshalling yard adjacent to a chemical plant in Záluží, 33 tracks)
- Děčín hl. n. (10 tracks)
- Hněvice (4 tracks, not intensively used)
- Chomutov seř. n. (10 tracks)
- Ústí nad Labem západ (10 tracks, not intensively used)
- Lovosice (marshalling yard connected to the intermodal terminal - road/rail where freight trains are being dispatched; 6 tracks; not intensively used)

Marshalling yards (state-owned) are located at important railway nodes and locations connected to the important departure/destination location of the rail freight. Marshalling yards in Ústí nad Labem západ, Hněvice and Lovosice does not operate regularly anymore.

There are following railway connections to major industrial facilities:

- Connections to coal mines:
  - Kadaň-Prunéřov
  - Březno u Chomutova
  - Most - Komořany
  - Bílina - Ledvice
- Connections to chemical plants:
  - Most - Záluží
  - Ústí nad Labem - západ
  - Lovosice
- Connections to power plants:
  - Kadaň-Prunéřov
  - Kadaň-Tušimice
  - Počerady
  - Bílina-Ledvice
  - Trmice
- Connections to other important industrial facilities (based on the volume of rail traffic):
  - Štětí (Paper works)
  - Louny (assembly of rail freight cars)
  - Ústí nad Labem - Střekov (production of vegetable oil and other products from plants and livestock)

---

<sup>1</sup> Source: SŽCZ (2018)



## Air transport

There are no public international airports in the Ústí Region. Furtherly, there is only one airport with a paved runway in the region - former military reserve airfield in Panenský Týnec. All other airports, or rather airfields have unpaved runways, usually not exceeding 1 km length. All airports in the region are rather used for sport flights, cruise flights and to a lesser extent for private domestic flights aboard small-scale aircraft. The airfields in the region do not usually have equipment for flights in worsened visibility conditions and do not allow air traffic in the night hours (after dark). So far, there is no potential for commercial international air passenger or cargo transport from/and to Ústí Region through local airfields.

**Map 10: Waterways and Airports in and around the Ústí Region**



Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World

There are following airfields in the Ústí Region (besides private sites for sport flying machines):

- Letiště Panenský Týnec (LKPC) - public domestic airport, former military reserve airfield with paved runway 2 500 m long
- Letiště Roudnice (LKRO) - public domestic airport / non-public international airport
- Letiště Chomutov (LKCH) - public domestic airport / non-public international airport
- Letiště Most (LKMO) - public domestic airport



- Letiště Raná (LKRA) - public domestic airport
- Letiště Žatec Macerka (LKZD) - non-public domestic airport
- Letiště Ústí nad Labem (LKUL) - non-public domestic airport

The Ústí Region is recently served mainly by the international airport of Václav Havel in Prague-Ruzyně, which is by far the biggest airport in the Czech Republic by volume of flights, passengers and by its capacity. Most of the Ústí Region (except Šluknov headland) has relatively good accessibility of the airport in Prague-Ruzyně, esp. by using car traffic.

Another widely used option by residents and entrepreneurs from the Ústí Region is the international airport in Dresden, which is relatively good accessible from northern and central parts of the Ústí Region.

Since there is no public air transport from and to airfields located in the region, there are also no data on air traffic in the region. The same applies to air freight traffic.

### **Waterborne transport**

There is just one waterway for motorized water traffic in the Ústí Region - Elbe river waterway. It spreads from port Hamburg up to Přelouč on the Elbe located in the Pardubice region. The Elbe river waterway is also connected to Prague by the Moldau river waterway, which spreads upstream from Prague to the Slapy water dam. The Elbe river waterway is regulated only between Ústí nad Labem and Přelouč. Its section between Dresden and Ústí nad Labem is not canalized and therefore the operation is not possible year-round. During dry periods of the year, the Elbe river waterway between Dresden and Ústí nad Labem (and especially between Děčín and Ústí nad Labem) is not navigable for vessels with draught over 1,4 m.

Other rivers in the Ústí Region are not navigable for motorboats. Therefore the only shipping route throughout the region is the Elbe river waterway. There is domestic and international water freight transport on the Elbe river waterway. The domestic transport usually comprises of shipping sand from sand open-pit mines along the Elbe river (recently near Záluží and Nučnický) to Prague. In the past, coal used to be transported between the port in Lovosice and Chvaletice power plant, but now, it is transported by train instead. The international transport includes occasional shipping of large-scale items, such as tanks for liquids, industrial equipment and ship trunks constructed at shipyards located along Elbe river (namely in Malé Žernoseky) for completion at ports in Germany and Netherlands and regular shipping of bulk cargo (e.g. grain, fertilizers, chemicals) between Elbe river ports in the Czech Republic and ports in Germany and Netherlands.

There are following ports on the Elbe river waterway in the Ústí Region:

- Děčín - Loubí (port with a mixture of loading equipment and relatively high capacity)
- Děčín - Rozbělesy (port basin for anchoring ships, e.g. during floods)
- Ústí nad Labem - Krásné Březno (port with a mixture of loading equipment and relatively high capacity and container terminal and two-port basins for anchoring ships, e.g. during floods)
- Ústí nad Labem - Vaňov
- Lovosice
- Štětí (occasionally used for transport of industrial equipment and raw material for the paper works)

Further, there is also loading equipment for shipping sand near sand open-pit mines at Hořín and Nučnice.

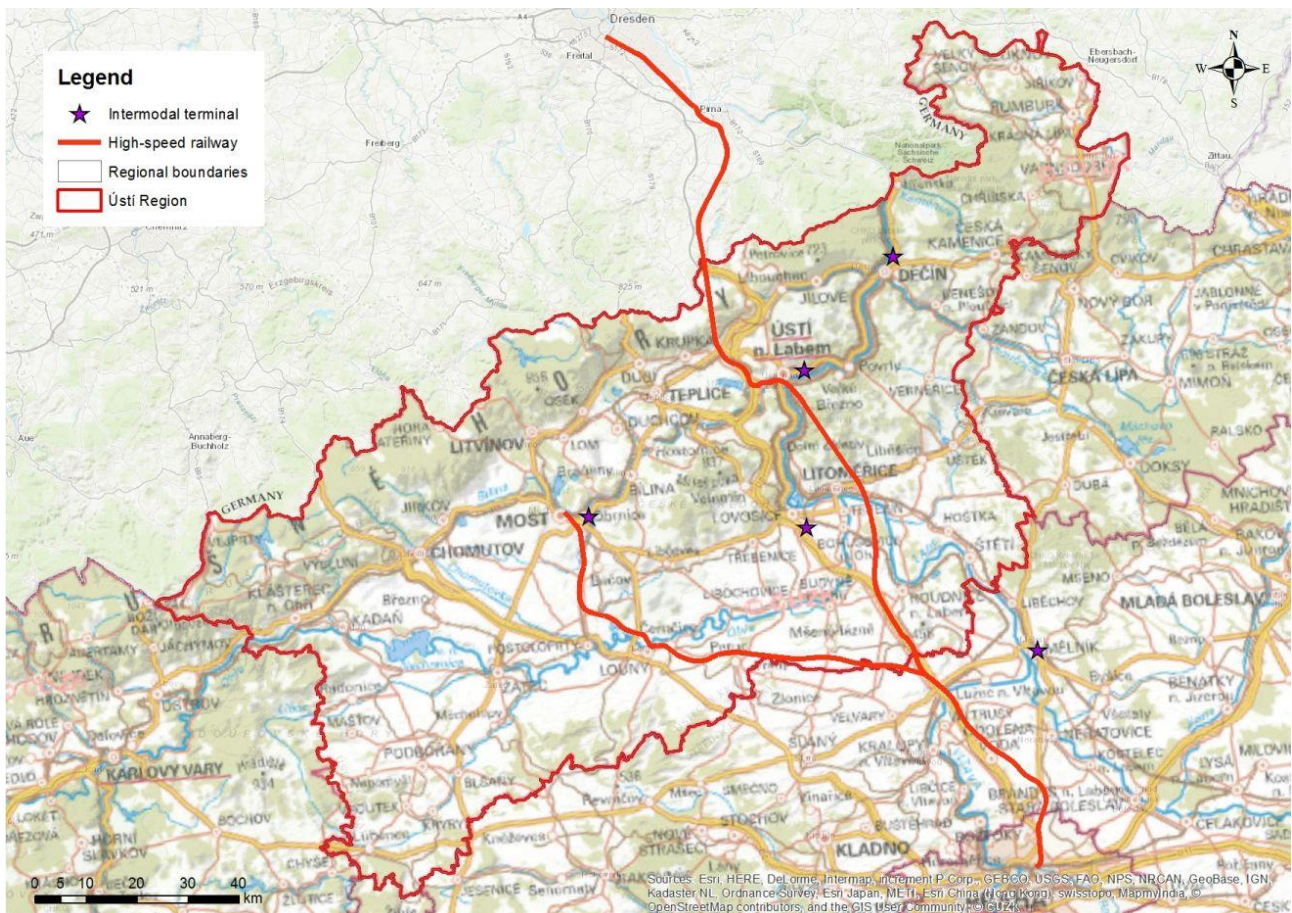


## 1.2.2. Multimodal interfaces

There are following multimodal terminals in the Ústí Region:

- Děčín - Loubí (port with rail connection)
- Ústí nad Labem - Krásné Březno (port with container terminal and rail connection)
- Lovosice (road/rail multimodal terminal)
- Obrnice (road/rail multimodal terminal)

**Map 11: Multimodal terminals in and around the Ústí Region**



Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČUZK, ESRI Topographic Map of the World

Děčín - Loubí is a relatively larger river port with infrastructure allowing loading and unloading of a variety of goods between ships, trains, and trucks. The port has a direct connection to a marshalling yard in Děčín and an important international rail freight route Děčín - Bad Schandau - Dresden.

Ústí nad Labem - Krásné Březno is a relatively larger river port with a variety of infrastructure including portal cranes, granaries and warehouses, where there is also a container terminal (Maersk) and where is a possibility of loading / unloading a variety of goods (including goods in containers) between ships, trains and trucks. The port has a relatively good connection to the road network (road no. 1/62 leads right next to the port), but colliding rail connection (there is rail crossing of intensively used road no 1/62).

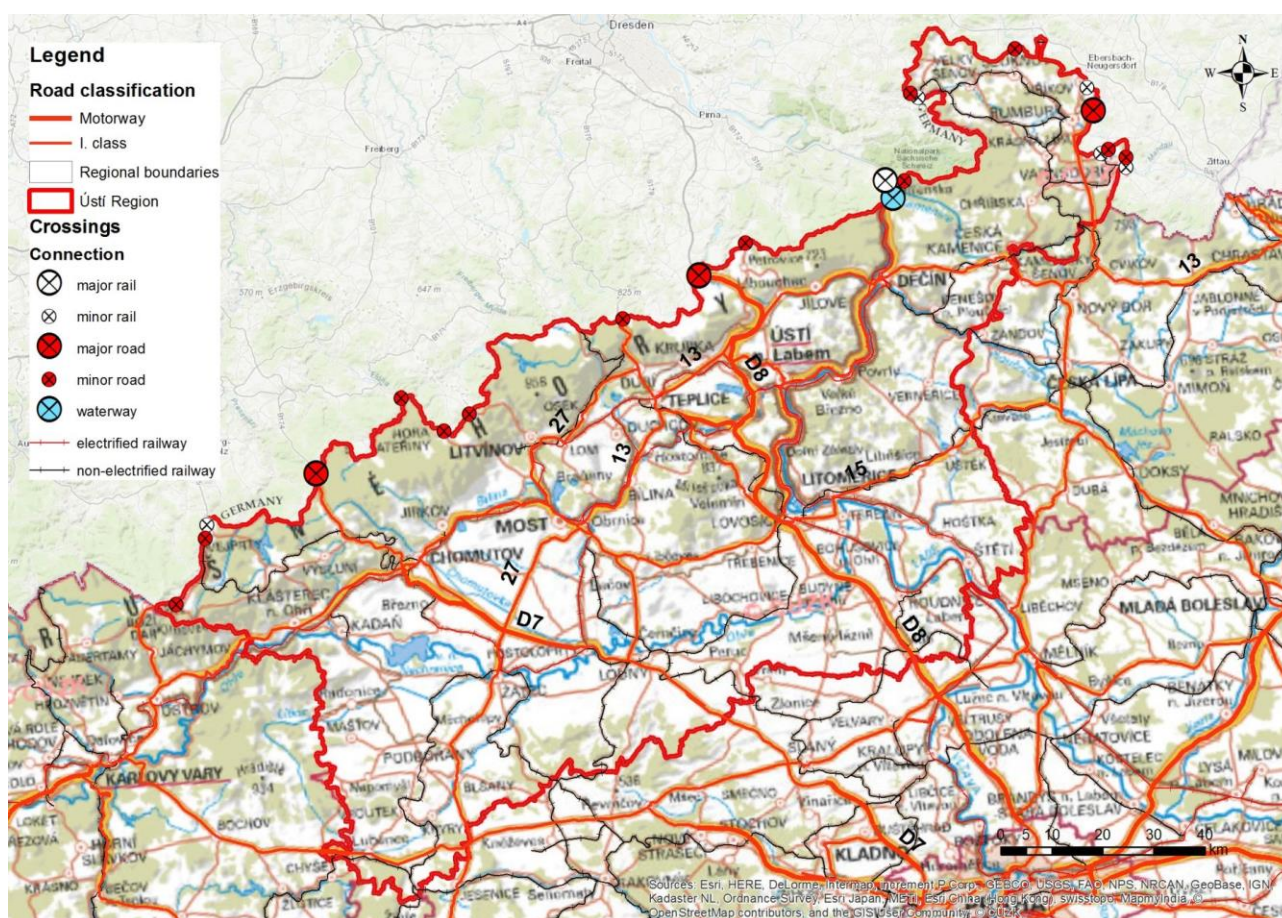


There is a traditional multimodal terminal in Lovosice, with railway marshalling yard and big-scale container terminal and warehousing facilities equipped esp. for loading/unloading and storing containers and other items transported by trains, and between trains and trucks. There is sufficient capacity of the rail infrastructure for the terminal (which is located right at the RFC7 and RFC8 corridor) and a relatively good connection to nearby passing motorway D8.

The other road/rail multimodal terminal is located in Obrnice, where there is a container terminal with warehousing facilities. The terminal is connected to the rail node Most and is a nearby road no. I/13.

### 1.2.3. Cross-border links

**Map 12: Border crossings between Ústí Region and Germany**



Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World  
 Note: Not all road border crossings are depicted on the Map.

The most important international routes are those, which comprise the TEN-T ORIENT / EAST-MED corridor. In the case of the road network, it is D8 / A17 motorway Prague - Dresden. In the case of a rail connection, it is railway Prague - Děčín - Dresden, which at its cross-border section carries all international long-distance passenger trains between the Czech Republic and Saxony and an overwhelming majority of international freight trains between the Czech Republic and Germany. In the case of waterways, it is the Elbe river waterway - the only waterway between the Czech Republic and Germany.



Therefore, a relatively narrow section of the Czech-German border leads three out of the four<sup>2</sup> most important connections between the Czech Republic and Germany (esp. for freight transport).

The other important road connections are the following:

- D7 / I/7 / B 174 Prague - Chomutov - Chemnitz
- I/9 / S 148 / B178 Prague - Rumburk - Löbau - A4

Both abovementioned connections are widely used by international road freight traffic. Other road cross-border connections are usually of local importance and serve mostly local traffic flows (esp. individual passenger traffic).

Beside rail connection Prague - Děčín - Dresden, there are further 5 rail cross-border connections between the Ústí Region and Germany, however, none of them is used by long-distance passenger trains, nor even by freight trains. In the last decades, the connection (Mladá Boleslav-) Rumburk - Jiříkov / Ebersbach (Sachs) has been occasionally used by freight trains, but there is no regular operation of passenger and freight trains as of now. Other rail cross-border connections are basically of no use for freight traffic since they are either located on railways leading in directions unfavorable for freight trains (e.g. directions connecting Šluknov headland to neighboring areas of Germany and the rest of the Czech Republic) or lie on railways with a steep grade, that are unfavorable for freight traffic (Chomutov - Vejprty / Bärenstein - Chemnitz). Therefore the cross-border rail connection Děčín - Bad Schandau - Dresden is the only connection between Ústí Region (and the whole Czech Republic) and Germany widely used by freight trains.

The only waterway connection between the Czech Republic and Germany is the Elbe river waterway, which is described in chapter 1.2.1.

## 1.3. Presentation of major economic activities and the settlement system

### 1.3.1. Description of the settlement system

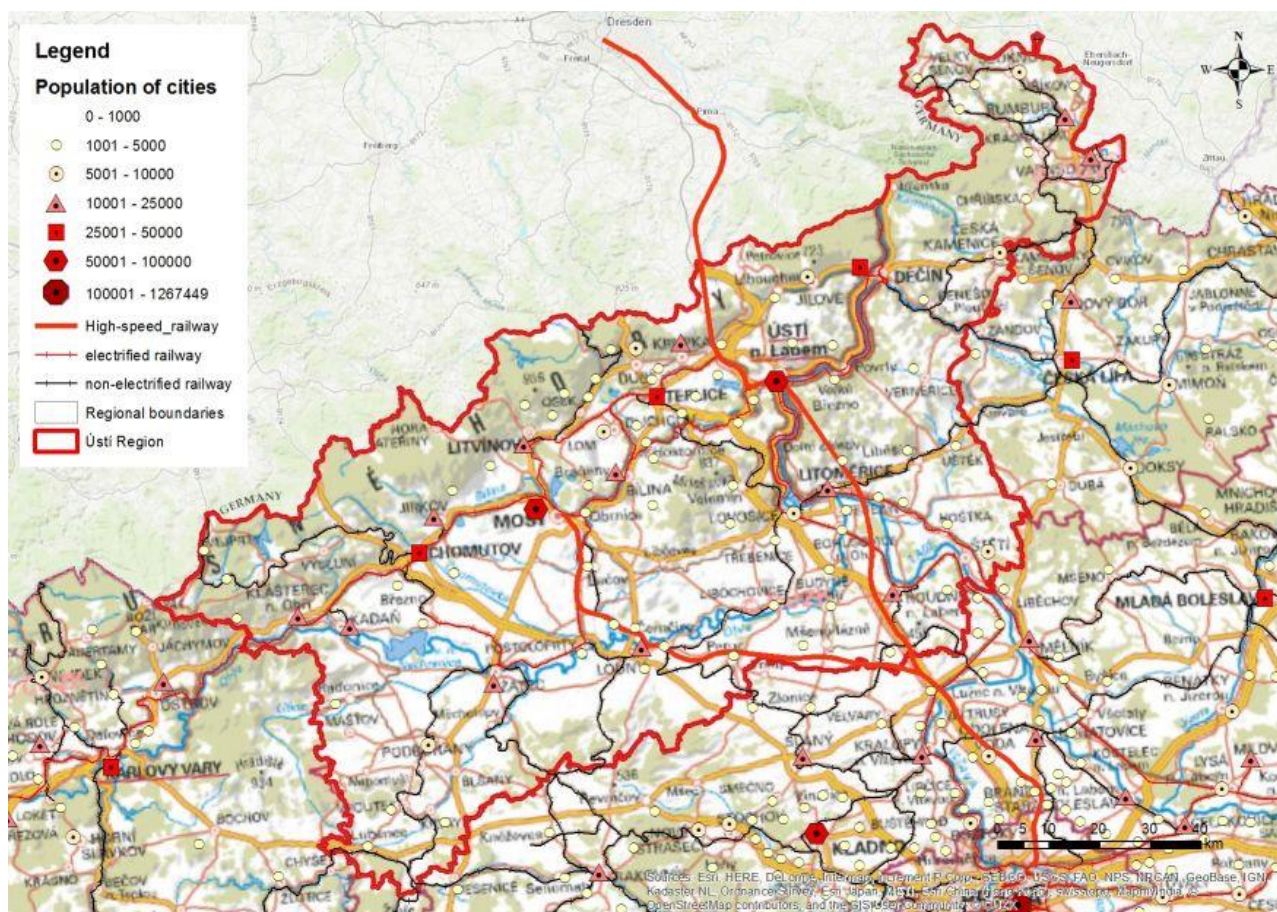
The Ústí Region has a polycentric settlement system. The urban core of the region is represented by the Ústí - Chomutov agglomeration consisting of five cities with a population of over 49 000 inhabitants and many smaller cities. The Ústí-Chomutov agglomeration is an old industrial region, whose past growth had been tied to coal mining. Since coal mining and some other traditional industries had undergone a rapid reduction of employment, the Ústí-Chomutov agglomeration and surrounding rural areas have a long-term shortage of jobs. Therefore, there is a high dependency of the local population on commuting to Prague agglomeration, where jobs are abundant, and/or on commuting to certain locations with a concentration of jobs (e.g. industrial zone Triangle near Žatec and remaining mines).

There are also urbanized axes along river Eger and river Elbe with micro-regional centres (Kláštorec nad Ohří, Kadaň, Žatec and Louny along Elbe river and Roudnice nad Labem, Litoměřice and Lovosice along Elbe river). Relatively urbanized is also Šluknov headland, where there are many smaller-scale cities and which population totals around 50 000 inhabitants.

---

<sup>2</sup> The other important connection is via the D5/A6 motorway (Prague - Pilsen - Nürnberg).

**Map 13: Settlement system**



Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World

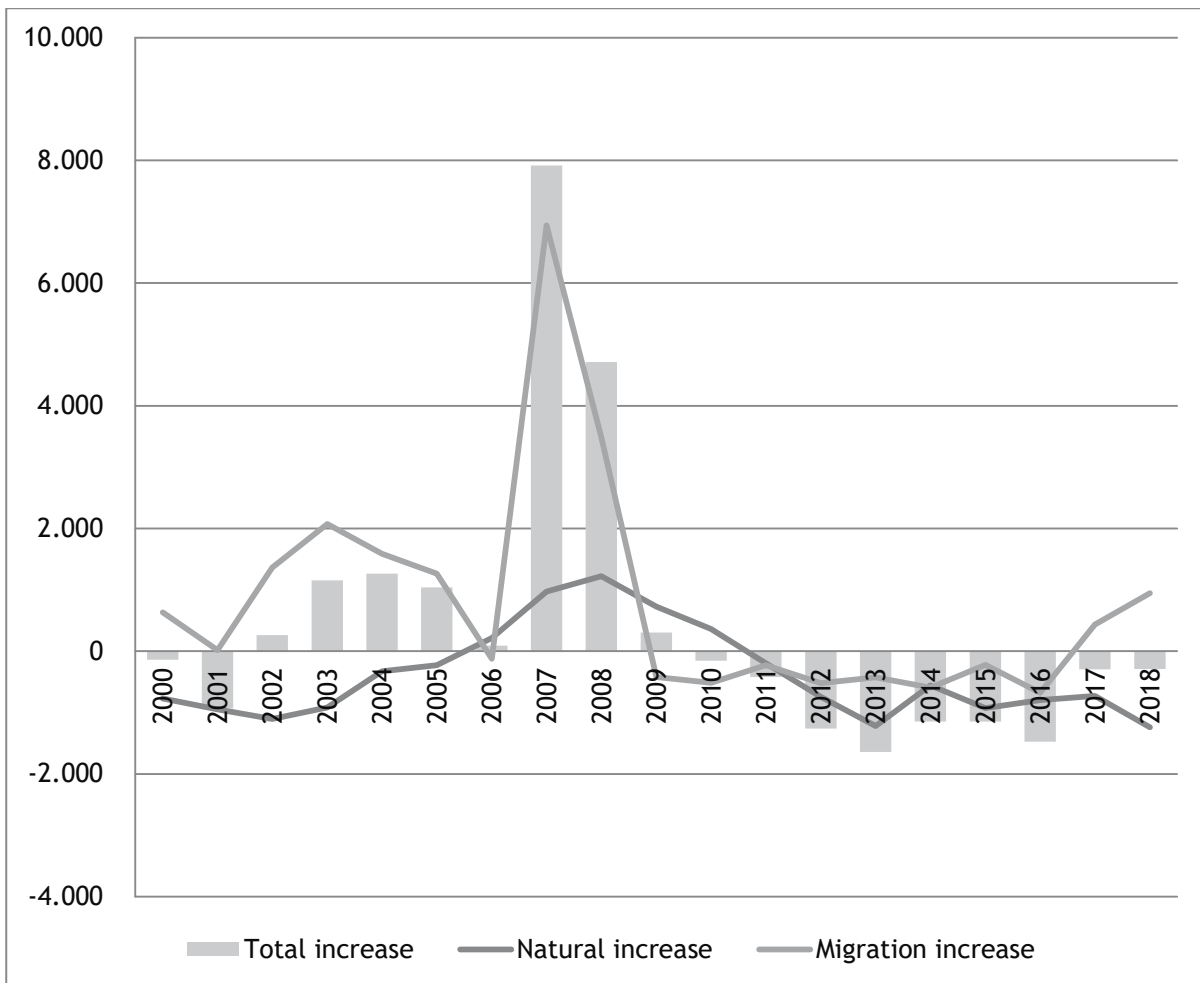
### 1.3.2. Demographical and socio-economic situation

The Ústí Region has a population of about 820 000 inhabitants. The regional population reached its peak in 2009 when there had been about 836 000 registered inhabitants. This was just a little less than during the 1980s when the socialist industrialization and urbanization of the region culminated. The peak in 2009 had been reached as a result of a relatively strong migration surplus (between 2002 and 2008) and the natural population increase (between 2006 and 2010), which compensated the loss of population recorded during the 1990s transformation. However, since 2010, there had been a steady loss of population due to both natural and migration decrease of population. Only since 2017, there had been slight migration decrease, which could be connected to economic boom, improving situation on the labour market and to some extent also by lack of housing in Prague metropolitan area.

From the spatial point of view, the population changes are influenced by two processes - suburbanization and metropolization. Suburbanization is visible around bigger cities, in the region, which loses its population in favour of municipalities and smaller cities within their commuting zone. Metropolization is, on one hand, happening on the inter-regional scale, by the migration of population from Ústí Region and other regions of Bohemia into the Prague metropolitan area. On the other hand, it is also visible within the Ústí Region, where smaller cities and municipalities in the Ústí-Chomutov agglomeration and cities and municipalities around important transport corridors are gaining population, while municipalities located in peripheral areas are losing it.



**Chart 1: Population increase of the Ústí Region since 2000**



Source: VDB CZSO (2019)

While there is the slightly more favourable age structure of the population of the Ústí Region in comparison to the whole Czech Republic, the population of Ústí Region is aging more rapidly in the last two decades. Therefore there has been a significant growth of the total population of elderly people and their share on the population as a whole. It has been on one side related to the aging of strong population groups of people born during baby-boom years after WWII to the other side to generally low birth rate since the early 1990s. We can expect, that the aging population would continue unless there would be a significant change in migration trends (what is more probable than a change in birth rate).

**Table 1: Population by age groups in 2018**

	Population	Population by age groups			Age index 2018	Age index 2001
		0-14	15-64	65+		
Czech Republic	10 649 800	1 693 060	6 870 123	2 086 617	123,2	87,2
<b>Ústí Region</b>	<b>820 789</b>	<b>131 642</b>	<b>531 098</b>	<b>158 049</b>	<b>120,1</b>	<b>72,1</b>

Source: VDB CZSO (2019)



The population of Ústí Region shows (along with Karlovy Vary region) the worst education structure in the whole country. It is influenced by a historically high concentration of low-skilled workforce in the region connected to traditional industries of the past (mining industry, textile industry) as well as the specifically high concentration of socially excluded Roma population. On the other hand, it is also connected to a traditionally low concentration of professional, economic and social elites in the region.

**Table 2: Population by gained education as of 2011**

Regions	Population 15+	Population 15+ by gained education level				
		primary and unfinished primary	secondary (without leaving exam)	complete secondary and higher	university	without education
ČR	9 034 544	17,4	32,8	30,9	12,4	0,5
Praha	1 110 428	10,3	20,5	34,4	22,5	0,3
Středočeský	1 075 773	16,9	33,6	32,2	11,2	0,5
Jihočeský	544 173	18,0	34,7	31,5	11,1	0,5
Plzeňský	493 343	18,0	34,5	30,8	10,4	0,5
Karlovarský	265 537	21,5	33,2	27,3	7,2	0,9
Ústecký	703 292	21,5	34,6	28,1	7,8	0,9
Liberecký kraj	372 757	18,5	35,7	29,7	9,8	0,6
Královéhradecký	474 739	17,4	35,2	31,6	10,4	0,5
Pardubický	441 842	17,6	36,3	31,1	10,2	0,5
Vysočina	437 721	18,2	37,1	31,2	10,0	0,5
Jihomoravský	1 003 708	17,6	32,3	30,7	14,3	0,4
Olomoucký	547 446	18,2	35,1	30,5	11,7	0,6
Zlínský	506 773	18,7	35,3	30,4	11,7	0,5
Moravskoslezský	1 057 012	19,3	34,7	29,3	11,4	0,6

Source: VDB CZSO (2019)

The Ústí Region is one of the old industrial regions of the Czech Republic negatively affected by the structural changes of the economy, which took place as a result of the transition of the economy from socialist to capitalist economy accompanied by privatization and liberalization. The structural changes have been characterized by the steep decline of production and employment in coal mining industry and textile manufacturing, collapse and/or steep decline of employment in numerous traditional industrial companies, but on the positive side, there has been the development of machinery industry (especially automotive industry) as numerous investment projects reached industrial zones built on greenfields.

The steep decline of employment in traditional industrial sectors highly affected especially the Ústí-Chomutov agglomeration, where unemployment figures remain among the highest levels recorded within regions of the Czech Republic since the mid-1990s. Further issue unfavourable qualification structure of the population and very high concentration of socially weak, and socially excluded people (esp. from



Roma minority). Therefore the Ústí Region did not only face structural unemployment of former employees from declining sectors of the industry, but also structural unemployment of people with low qualification and even low ability and/or willingness to find and sustain a job. Worsened social and qualification structure of the population along higher unemployment further undermines the regional economy, because of lower purchase power of the population, worsened entry (and leaving) level of pupils within the regional education system, (in general) lower ability of socially weak people to become entrepreneurs and in the general lower potential of the (socially weaker) population to contribute to / and participate on the development of the economy of the region.

On the other side of the social spectrum, there is to fewer inhabitants with higher (esp. university) qualifications, competences, and ability to boost the regional economy. It is partially a result of the historical development of the regional population but also influenced by ongoing brain drain. There are not enough jobs for high skilled people and the Ústí-Chomutov agglomeration is, in general, less attractive for living as a result of worsened environment, neglected urban-environment, the concentration of socially excluded and asocial people and of course the insufficient supply of jobs (including jobs for high-skilled people).

**Table 3: Unemployment figures**

	GDP (mil.CZK)	GDP per capita (EUR)	GDP incomparable prices		NDIH <sup>3</sup> (EUR mil.)	NDIH per capita (EUR)
			previous year=100	year 1995=100		
Czech Republic	5 047 267	18 105	104,4		92 614	8 746
Hlavní město Praha	1 283 415	37 893	104,7	212,0	15 019	11 674
Středočeský kraj	599 821	16 930	107,7	230,6	12 222	9 082
Jihočeský kraj	247 332	14 698	103,0	141,0	5 247	8 210
Plzeňský kraj	255 226	16 737	104,0	172,3	5 087	8 783
Karlovarský kraj	93 482	11 992	102,8	103,3	2 453	8 283
Ústecký kraj	283 381	13 112	101,2	122,3	6 229	7 588
Liberecký kraj	160 808	13 853	104,1	158,4	3 598	8 159
Královéhradecký kraj	243 500	16 791	110,2	180,3	4 723	8 574
Pardubický kraj	200 687	14 738	104,5	169,9	4 276	8 266
Kraj Vysočina	199 430	14 893	104,1	167,9	4 314	8 481
Jihomoravský kraj	531 374	17 098	101,8	172,9	10 257	8 689
Olomoucký kraj	236 619	14 196	104,5	159,8	4 981	7 866
Zlínský kraj	237 885	15 498	104,0	180,0	4 708	8 075
Moravskoslezský kraj	474 307	14 922	102,8	135,9	9 501	7 869

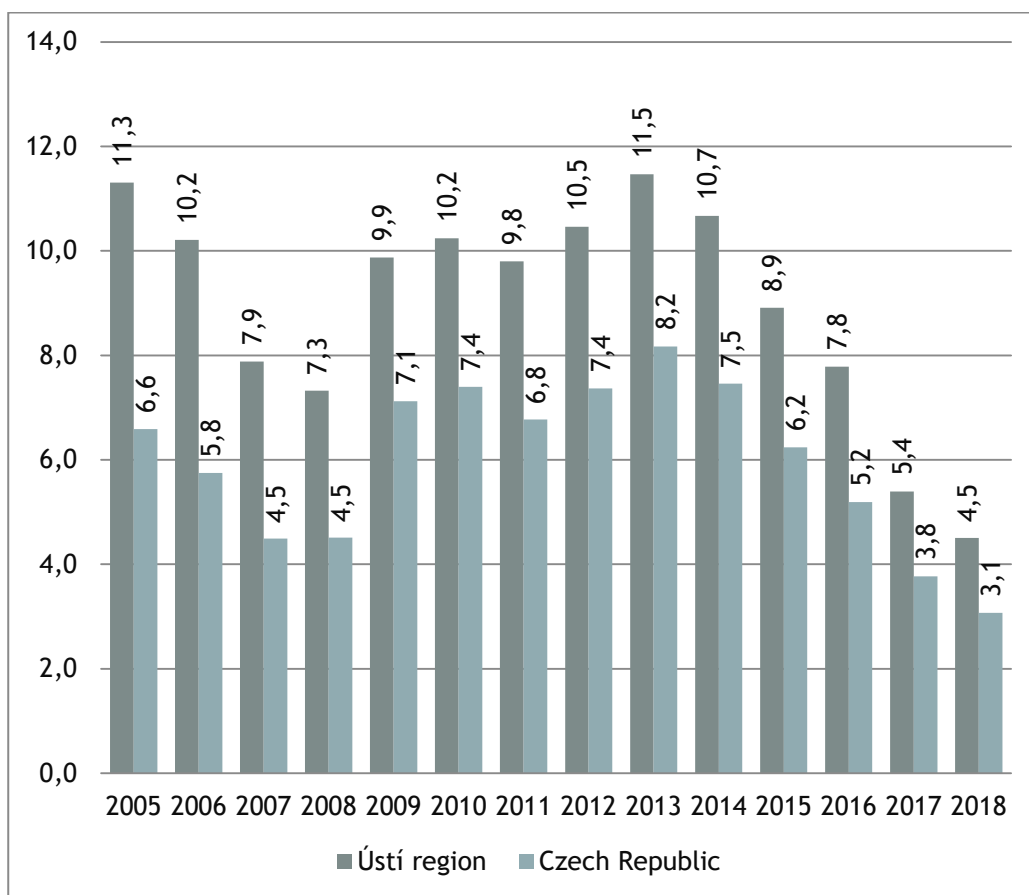
Source: VDB CZSO (2019)

<sup>3</sup> Note: NDIH = Net disposable income of households



As a result of structural changes in the economy, there has been a very high unemployment rate in Ústí Region since the mid-1990s (compared to the Czech Republic as a whole). It gradually declined over the 2000s booming years but went steep up as a result of the post-2008 crisis. Since 2013, there has been another gradual decline of the unemployment connected to economic conjuncture leading to recently very low figures. While there is currently an issue in low supply of workforce throughout most of the region, this has been to great part influenced by general high demand for workforce elsewhere (which attracted some of the workforces of the Ústí Region). Therefore there is a strong threat that the regional unemployment figures would go steeply up (and much higher than the national average) in case of another economic downturn.

**Table 4: Development of unemployment rate since 2005**

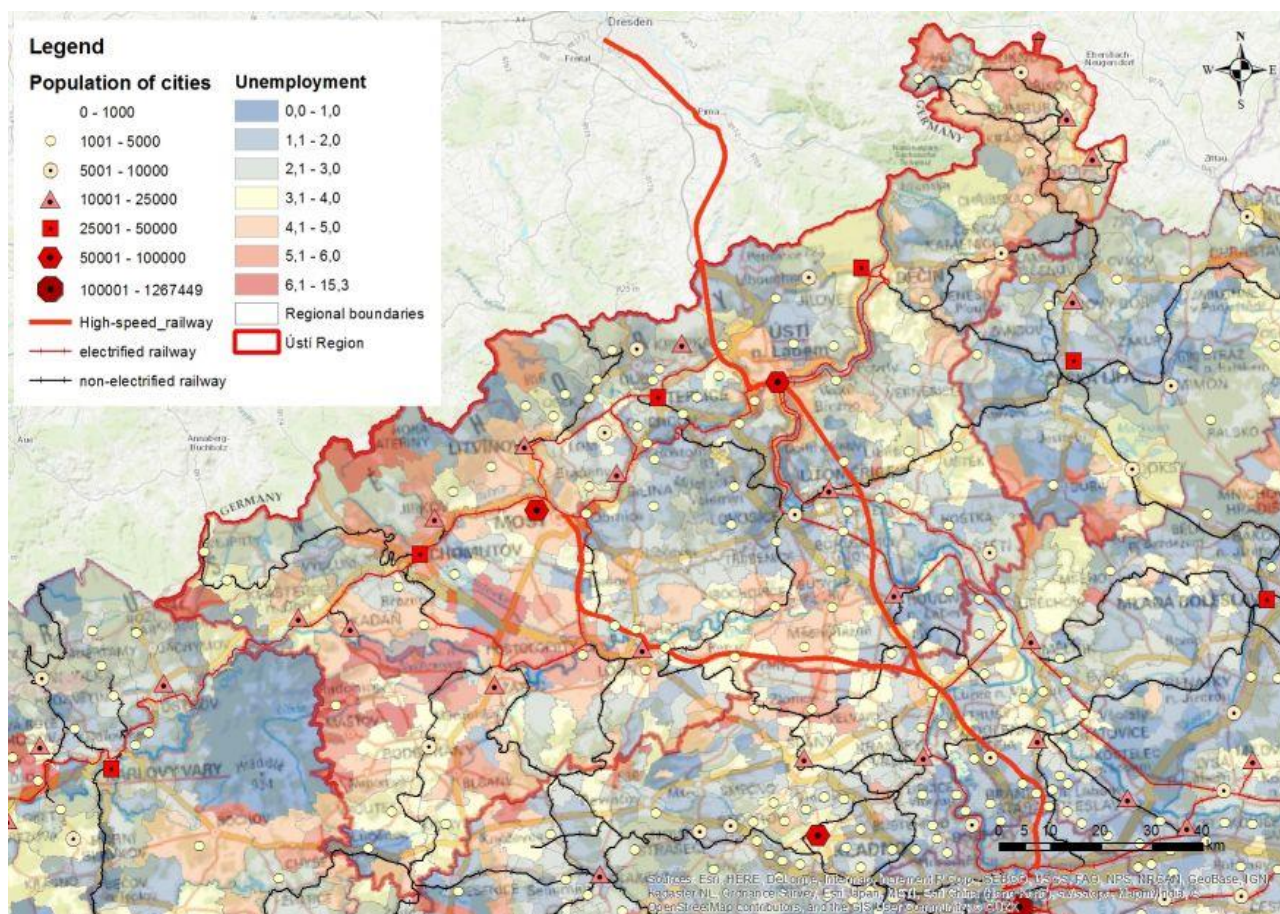


Source: VDB CZSO (2019)

The unemployment figures are generally higher in peripheral parts of the region - Šluknov headland, some municipalities in the Ore Mountains, and inner peripheries along western and south-western borders of the region. They are also higher in some cities of the Ústí-Chomutov agglomeration, which are still affected by structural changes of the economy and deindustrialization (Ústí nad Labem, Most, Chomutov). On the other hand, there are visibly lower unemployment figures in most municipalities around the ORIENT-EAST/MED corridor, where there is good accessibility to Prague and other job centres.



**Table 5: The unemployment rate in the municipalities of the Ústí Region in October 2019**



Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World

### 1.3.3. Description of cross-border relations

Cross-border relations are gradually being built since the end of communism. During communism rule, there had been limited economic relations - e.g. cooperation between chemical plants in Záluží and Böhlen, where there has been built ethylene pipeline, exchange of goods with GDR within the socialist block, and export of Czechoslovak products through GDR railways and Elbe waterway.

Since the 1990s, economic cooperation boomed, esp. in the relation of Czech accession into the EU and Schengen zone. The recent cross-border relations are significant in the following fields:

- production networks - many companies, esp. in the automotive industry are integrated into cross-border production networks, with just-in-time delivery of semi-products
- freight transport (road, rail, waterway) - while there is freedom of movement of passengers and goods, the cross-border rail freight transport is limited just to railway Děčín - Bad Schandau - Dresden and the Elbe river waterway transport suffers from non-navigable conditions during dry periods of the season.
- shared labour market - there are thousands of people commuting to work from Ústí Region to Saxony or providing services in Saxony



- cross-border retailing - people living within a short distance from the border commute for shopping and services to the other side of the border (Saxons are shopping and seeking cheaper services in Czech towns around borders, while Czechs are shopping in Germany for higher-quality goods or certain cheaper items).
  - cross-border tourism - there is an intensive cross-border tourism in and around National parks České Švýcarsko and Sächsische Schweiz and also between some mountain resorts in Ore mountains. The Ústí Region also lies along the route between Prague and Dresden, which is frequently used by individual tourists (which are usually just passing the region) and by organized tours (which are often stopping in Ústí Region overnight).
  - cross-border infrastructure - beside transport infrastructure mentioned in Chapter 1.2, there are also cross-border connections in technical infrastructure and shared networks and facilities of the technical infrastructure. Some examples follow:
    - technical infrastructure on a local level (shared sewer systems with water treatment facilities)
    - technical infrastructure on inter-regional level (electricity networks, natural gas pipelines, oil pipeline, ethylene pipeline Böhlen - Litvínov - Neratovice)
  - cross-border public transit service - cross border connections of public transit are ordered by the state (Euro-city trains) and by the Regional authority of Ústí nad Labem and Saxon organizers of public transport. There are public transit connections on following cross-border railways:
    - Prague - Děčín - Bad Schandau - Dresden
    - Děčín - Bad Schandau - Sebnitz - Dolní Poustevna - Rumburk
    - Chomutov - Vejprty - Bärenstein - Chemnitz (weekends only)
- Further, there are also bus-line connections between some neighboring municipalities and cities (usually by prolonging regional lines to the other side of the border to allow connections to the cross-border public transit system). There is also tourist transport cross-border lines ordered by the public transport organizers - such as ferry between Schöna rail station and Hřensko and some bus connections in tourist destinations. There are also private boat cross-border tours on the Elbe river waterway.
- cooperation of integrated emergency services:
    - fire brigades operate cross-border already since the 1990s, but the cross-border operation (and cooperation) intensifies
    - police also cooperate on dealing with cross-border crime (and are entitled to pursue criminals to the other side of the border)
    - health emergency services should be also provided on the cross-border basis, but it is still in an initial phase (health insurance issues concerning cross-border healthcare are not fully solved)



### 1.3.4. Presentation of companies in the area (manufactures, logistics, transport), identifying their activities

The Ústí Region is historically tied to coal mining, which has been declining over the past three decades. There are still three major coal-mining companies employing altogether about 7 000 people. The yearly production of coal mines in the Ústí Region is about 30M tons, from which a big part is being driven by trains to power plants and other destinations throughout the Czech Republic. The coal-mining industry is tied to the electricity industry. There are still 4 large-scale coal-burning power plants in the region, usually located within a short distance from coal mines, which are being supplied by coal via conveyor belts. Further, there are smaller power plants used primarily for heating of big cities (Most, Ústí nad Labem). The power plants employ over 1 000 people.

Another traditional industry of the Ústí Region is the chemical industry, which has been localized here as a result of sufficient supply of water (Elbe and Eger river), favourable location within transport system (Elbe river waterway) and coal mining (which used to be input into chemical production). There is a large-scale oil refinery in Záluží near Litvínov, a chemical plant in Ústí nad Labem producing various chemicals, a fertilizer plant in Lovosice and smaller chemical plants in Děčín and Úpořiny. The chemical industry still employs about 5 000 people in the region.

Besides the abovementioned industries, there is also a traditional glass industry in the Teplice region, which still employs over 5 000 people. A significant part of glass production is now tied to the automotive sector (glass for cars).

Since there is very fertile land throughout the Eger river and Labe river lowlands, there is also a traditional food processing industry. Among traditional larger-scale industrial estates generating high demand for freight transport, a paper mill in Štětí should be also mentioned.

Within the last decades, there had been an ongoing trend of development of the machinery (and in particular automotive) industry. There had been some tradition of the machinery industry in the region (e.g. shipbuilding along Elbe river), the ongoing trend is mainly tied to new investment directing into industrial zones on greenfields. These industrial zones helped to overcome the negative impacts of structural changes in the economy on the regional economy. There are following important industrial zones in the Ústí Region:

- Industrial zone Triangle near Žatec - the biggest zone built on the site of a former military airport just next to the D7 motorway, there is recently about 5 000 people employed
- Industrial zone Havraň (near Most)
- Industrial zone Verne (near Klášterec nad Ohří)
- Industrial zone Kadaň
- Industrial zone Teplice - Krupka
- Industrial zone Louny

There are also other industrial zones, but generally with a lower number of companies and/or lower employment than in the case of zones mentioned above.



**Table 6: Biggest employers in the industry sector as of 2017**

Name of the company	Sector/products	Location/locations	no. of employees
Severočeské doly	coal mining	Chomutov, Bílina	4901
AGC Flat Glass Czech	flat glass production	Teplíce, Bílina	4000
Skupina ČEZ	Prod. and distr. of electricity	Praha	2179
Unipetrol RPA	oil refinery	Litvínov	1522
Yanfeng Czechia A. I. S. s.r.o.	automotive	IZ Triangle	1300
KS Kolbenschmidt C. R., a. s.	automotive	Trmice, Chabařovice	1200
Toyota Gosei Czech, s.r.o.	automotive	Klášterec nad Ohří	1055
Hopi s.r.o.	logistics	Klášterec nad Ohří	1000-1499
Magna Automotive (CZ) s.r.o.	automotive	Chomutov, Chabařovice	1000-1499
Bilfinger Industrial Services Cz. s.r.o.	heavy machinery	Most	960
Johnson controls Aut. souč., k.s.	automotive	Roudnice nad Labem	958
Severní Energetická a.s.	coal mining	Most	946
TRCZ s. r. o.	automotive	Lovosice	900
Black&Decker (Czech) s.r.o.	electric tools	Trmice	900
Spolek pro chem. a hutní výrobu, a.s.	chemical production	Ústí nad Labem	870
KOITO CZECH s.r.o.	automotive	Žatec	815
FTE automotive Czechia s.r.o.	automotive	Podbořany	630
Parker Hannifin Industrial s.r.o.	machinery	Chomutov	600
Mondi Štětí a.s.	paper mill	Štětí	589
Vršanská uhelná a.s.	coal mining	Most	500-999
Coal Services a.s.	coal mining	Most	500-999
Czech Coal Power, s.r.o.	coal mining	Most	250-499
Sandvik Chomutov Prec. Tubes, s r.o.	metal tubes	Chomutov	500-999
Benteler Automotive Rumburk s.r.o.	automotive	Rumburk	500-999
TOS Varnsdorf a.s.	machinery	Varnsdorf	500-999
Aisan Industry Czech, s.r.o.	automotive	Louny	500-999
Constellium Extrusions Děčín s.r.o.	aluminium processing	Děčín	500-999
Chart Ferox, a.s.	metal tanks	Děčín	500-999
Ideal Standard s.r.o.	sanitary ceramics	Teplíce	500-999
Glanzstoff - Bohemia s.r.o.	tire cords	Lovosice	530
Lovochemie a.s.	fertilizer plant	Lovosice	646
Heavy Machinery Services a.s.	rail freight cars	Louny	387
Glencore Grain Czech s.r.o.	food processing	Ústí nad Labem	250-499
Nexen	car tires	PZ Triangle	1000 (2019)

Source: Upgraded from Strategy of development of the Ústí Region until 2027



### 1.3.5. Industrial production, major floater (origin) and destination points

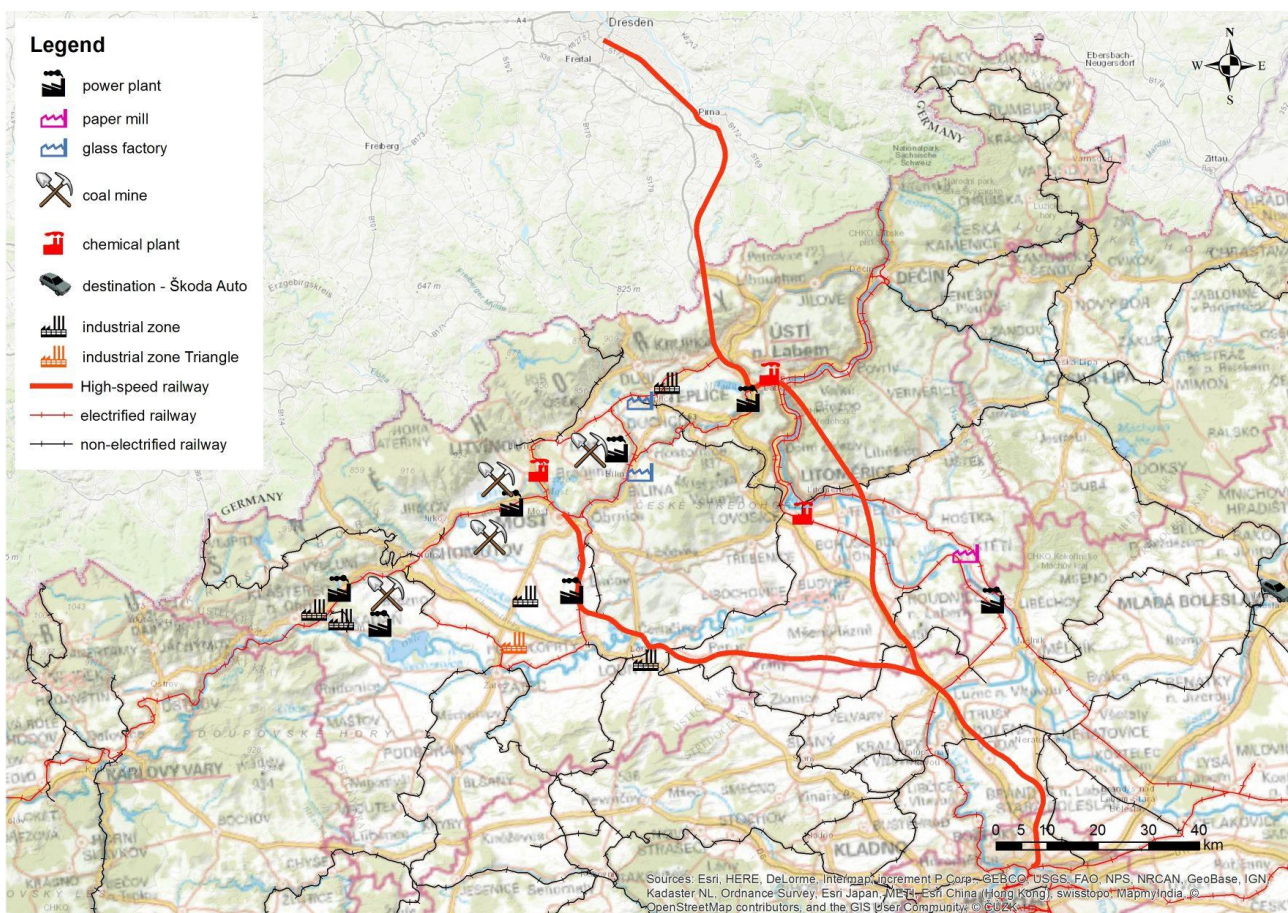
From the freight transport perspective, there are following routes, floater and destination points:

- coal mining - from every coal mine, there are several trains dispatched in a single day
  - floater points:
    - > mine Tušimice between Kadaň and Chomutov, mine Vršany near Most, mine ČSA between Jirkov and Litvínov and mine Bílina
  - destination points:
    - > power plants Tušimice, Prunéřov, Počerady, Ledvice and Komořany within the vicinity of mines (supplied via conveyor belts or mine railways)
    - > power plants Mělník in Central Bohemian region and Chvaletice in Pardubice region
    - > other power plants (esp. used for central heating in bigger cities)
    - > other destinations (wholesale facilities)
- chemical industry - has shipments of supplies and products
  - supply floater points
    - > seaports
    - > oil pipelines (Družba from Russia and TAL from Trieste)
    - > other chemical plants
  - production floater points
    - > Záluží near Litvínov
    - > Ústí nad Labem
    - > Lovosice
  - destination points for products
    - > other chemical plants (abovementioned and/or in Central Bohemian region and/or in Germany) - e.g. there is ethylene pipeline between Böhlen, Litvínov, and Neratovice
    - > wholesale facilities, distribution of propellants
- Automotive industry
  - floater points
    - > industrial zones (Žatec, Most, Kadaň, Klášterec nad Ohří, Louny, Lovosice)
    - > other automotive plants (Ústí nad Labem, Roudnice nad Labem, Podbořany, Rumburk, Bílina - car glass factory)
  - destination points
    - > some of the plants and industrial zones mentioned above
    - > Škoda Auto plants in Mladá Boleslav (Central Bohemian region) and Kvasiny (Hradec Králové region)
    - > TPCA plant in Kolín (Central Bohemian region)



- > automotive and car manufacturing plants in the Czech Republic and Germany
- Sand mining
  - floater points
    - > open pit sand mines in Záluží and Nučnický
  - destination points
    - > Prague (via Elbe river and Moldau river waterway)

**Map 14: Main floater and destination points**



Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World

### 1.3.6. Agriculture production, food processing

Significant parts of the Ústí Region - Eger river and Elbe river lowlands are renowned for fertile soil and there is a long tradition of intensive agriculture. The region of Central Bohemian Uplands is a traditional location for fruit planting, which was however strongly reduced over the last decades due to international competition. Southern slopes of Central Bohemian Uplands and slopes around the Elbe river near Roudnice nad Labem are also the locations for vineries of the northernmost Czech vine-producing region.



There is the relatively strong performance of the crop production, with an annual production of more than 500 thousand tonnes of cereals 10 thousand tonnes of potatoes and 70 thousand tonnes of rape (mainly for bio-fuel, which is produced in Lovosice chemical plant).

Livestock production is not as important since it is more common in less fertile regions and it is also subjected to strong international competition.

**Table 7: Agricultural production in the Ústí Region**

	2015	2016	2017
<b>Agricultural holdings</b>	2 128	2 141	2 180
with agricultural land up to 10 ha	1 110	1 118	1 137
<b>Utilized agricultural land (hectares)</b>	214 512	215 961	217 981
Arable land	151 454	151 712	151 725
Permanent grasslands	57 805	58 675	60 768
<b>The output of the agricultural industry (current prices)</b>			
<b>Total (CZK million)</b>	7 528	7 639	7 634
Crop output	5 550	5 731	5 542
Animal output	1 460	1 359	1 516
Agricultural services output	33	14	14
Per hectare of agricultural land (CZK/ha)	34 978	35 210	34 954
<b>Crop production</b>			
<b>Harvest (tons)</b>			
Cereals	593 277	615 977	542 181
Potatoes	10 208	14 012	12 896
Rape	79 897	85 506	72 997
<b>Animal production</b>			
<b>Livestock density</b>			
Cattle (per 100 hectares of cultivated agricultural land)	18,9	19,4	19,9
Pigs (per 100 hectares of arable land)	66,2	67,7	62,4
<b>Production of livestock for slaughter (tons of live weight)</b>			
Cattle	5 026	5 248	5 164
Pigs	20 516	19 562	18 458
Milk production (thous. litres)	57 609	62 895	57 043
Yield of eggs for consumption (thous. pcs)	1 970	4 523	3 057

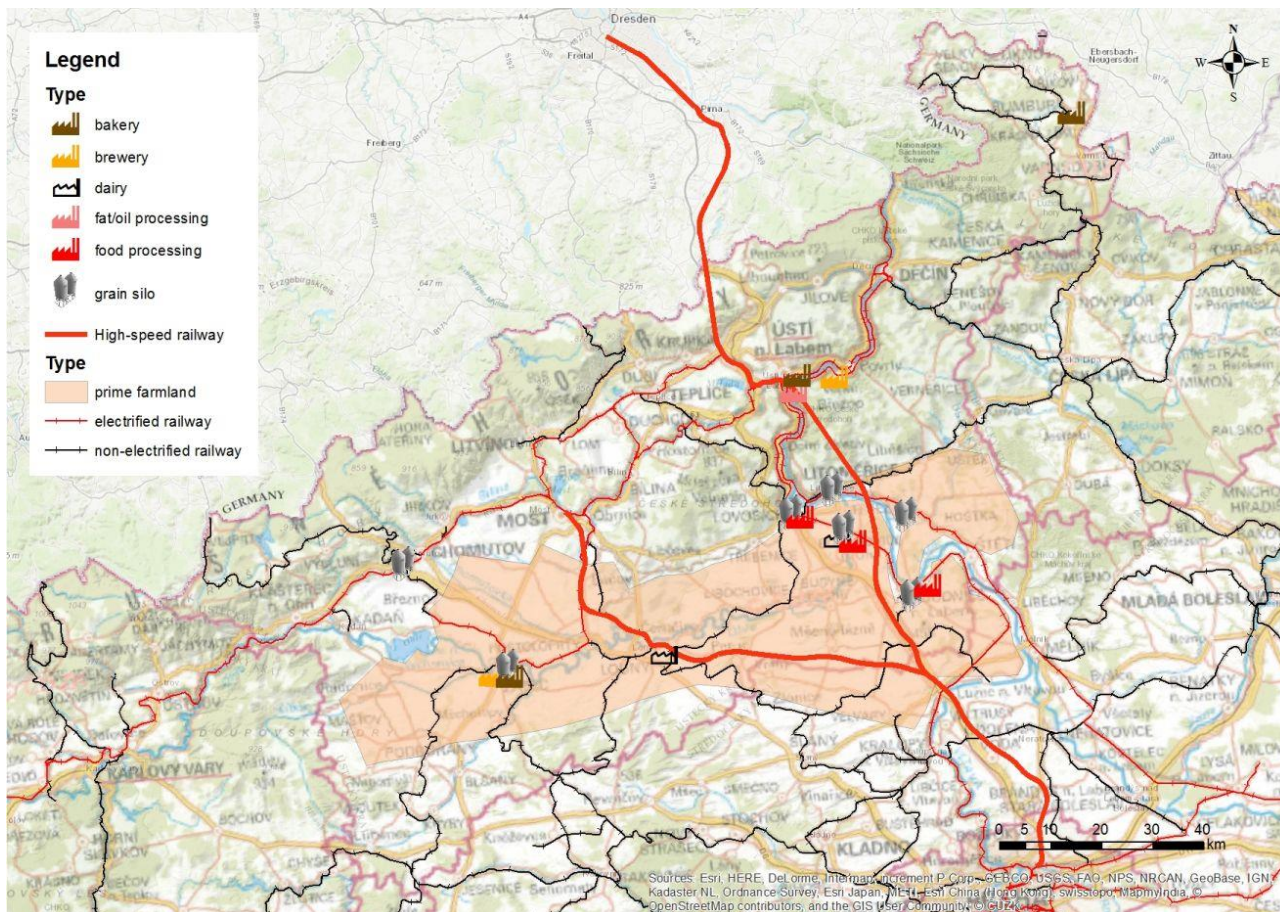
Source: Statistical yearbook of the Ústí Region 2018

Food processing facilities are scattered throughout the region, but generally more concentrated within fertile lowlands around river Eger and river Elbe. There are a higher number of grain silos, which are



processing grain harvested esp. within fertile lowlands. The region of Eger river lowlands is famous for planting hops, which is being processed at local malt houses and used for brewing beer in breweries around the Czech Republic and abroad. There are just a few remaining large-scale (industrial) breweries in the region, but a high number of small-scale breweries. Food processing plants are located esp. in cities around the Elbe river. There are several large-scale industrial bakeries, which equally cover the Ústí Region. There used to be a much higher number of industrial food-processing facilities, but most of them had been shut down as a result of structural changes in the economy and globalization. The food processing facilities now deliver their products to usually much greater areas than before, and therefore they are subjected to strong inter-regional and international competition. Among agricultural and food products produced within the region, grain products, hops, fruits, vegetables, food products, and milk products are being delivered to other regions. All of these items except grain products are delivered only by road freight transport. Grain products are being shipped to other regions and abroad also by train (the trains are being dispatched from grain silos, which are located along railways).

**Map 15: Agricultural industry in the Ústí Region**



Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World

There have been identified following larger-scale food-processing plants:

- breweries:
  - Velké Březno, Žatec





- grain silos:
  - Bohušovice nad Ohří, Lovosice, Litoměřice, Polepy, Roudnice nad Labem, Žatec
- food processing plants:
  - Vitana Roudnice n. L., Glencore Grain Czech Ústí nad Labem, Deli Lovosice, Emco Bohušovice nad Ohří
- diaries:
  - Bohušovice nad Ohří, Louny
- industrial (large-scale) bakeries:
  - Žatec, Ústí nad Labem, Rumburk

There are also a high number of smaller scale food-processing facilities, which have usually just local and regional importance and which therefore do not create strong cargo transport.

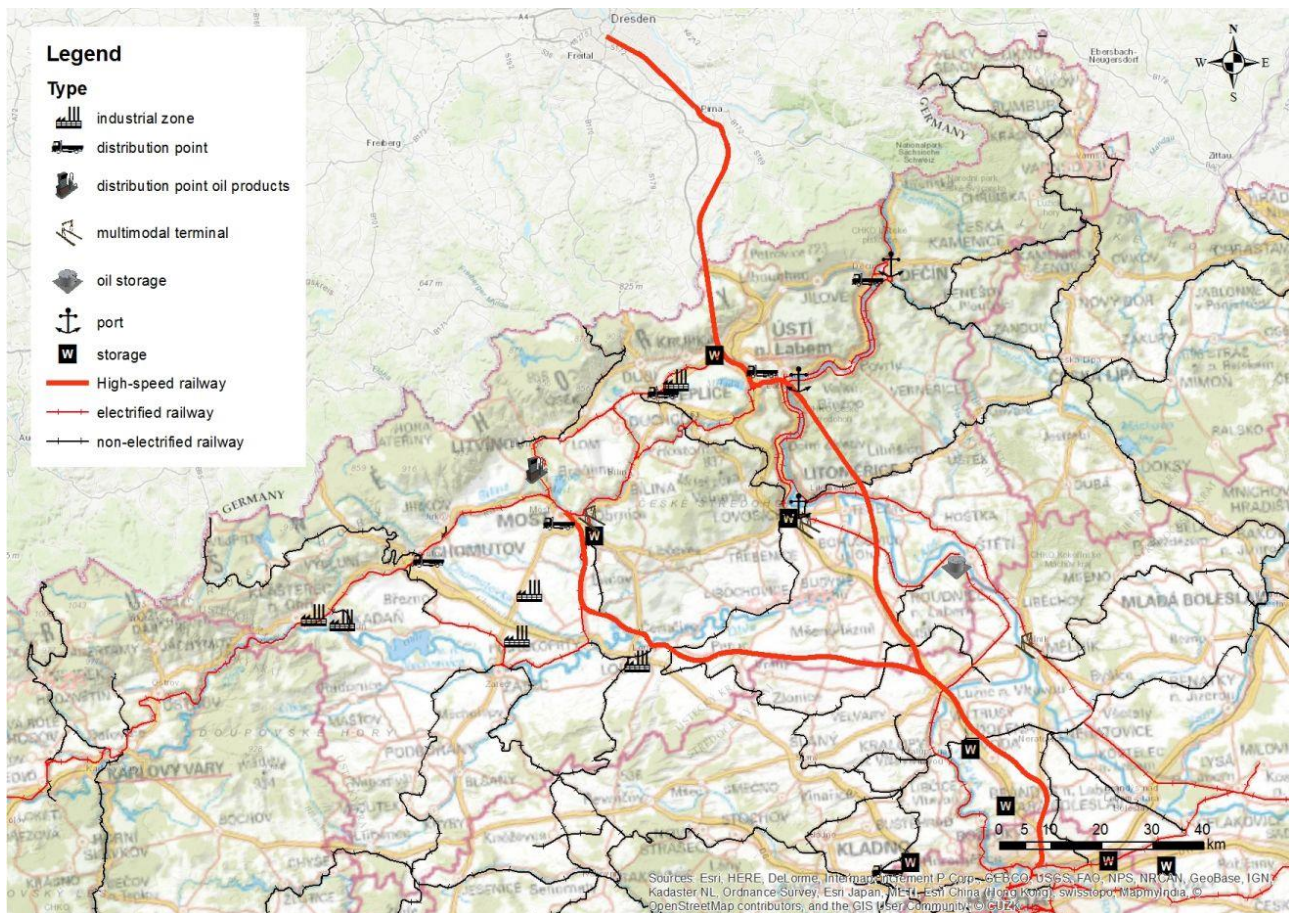
### 1.3.7. Logistic, storage and distribution points

Czech logistics, storage, and distribution system are centrally oriented towards Prague. There are numerous localization factors for localizing logistic facilities around Prague:

- Prague lies in the geographical centre of Bohemia and therefore is traditionally serving the rest of Bohemia
- Transport and in particular motorway system in Bohemia is radial with the centre in Prague
- Prague agglomeration is the prime market for all products

Therefore, there are only limited capacities of logistic facilities in the Ústí Region, which is too great extent served by logistic facilities located in and around Prague.

**Map 16: Logistic, storage and distribution points in and around the Ústí Region**



Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World

The main exception from general rule mentioned above is the distribution of regional products - esp. oil (distributed from the plant in Záluží near Litvínov and stored in an oil storage facility in Hněvice near Štětí) and coal (distributed from coal processing facilities near coal mines).

The main logistic points esp. for inter-national logistics are following ports and intermodal terminals:

- port Děčín-Loubí
- port and container terminal in Ústí nad Labem-Krásné Březno
- the intermodal terminal in Lovosice
- the intermodal terminal in Obrnice near Most

So far, there are not so much developed storage facilities, esp. those, which are traditionally located around motorways. It is influenced by the centralization of storage facilities to locations in and around Prague as well as by still-unfinished construction of the motorway system within the region. So far, there is just one larger-scale storage facility in Lovosice (near intermodal terminal). Further, there are numerous older storage facilities (e.g. facilities using sites which originally served for storage of strategic reserves such as food or using unused industrial buildings). These are located throughout all bigger cities. There is a stronger concentration of such storage facilities esp. between Ústí nad Labem and Teplice with



ties to both - motorway D8 and the core of Ústí-Chomutov agglomeration. During last years, there had been attempts on getting a spatial permit and/or construction permit for another large-scale storage facility on greenfields in an area between Ústí nad Labem and Teplice, but there is strong popular resistance to it (concerning the preservation of farmland).

The distribution points are also concentrated in and around Prague. More significant distribution points within the Ústí Region are located within larger cities (Ústí nad Labem, Teplice, Most, Chomutov, Děčín) from where various items and goods are distributed. The same applies also for shipments of retail products and other parcels by the Czech Post and other logistics companies - which have usually distribution depots located in and around bigger cities.

Specific logistic points are in industrial zones, where storage and distribution facilities are being built either to secure supplies to manufacturing plants located in the industrial zone or to secure distribution of products from the industrial zone.

## 1.4. Presentation of freight characteristics

### 1.4.1. Partners (market actors)

The statistics of logistic companies are available only for rail cargo companies operating on the rail network. Statistics for transport performance of road logistics companies are not published.

There are following important rail cargo companies operating in the Czech Republic:

- ČD Cargo, a.s. (state-owned so far dominant company, which as the only one is securing regular freight train connections even on less-important railways)
- METRANS Rail s.r.o. (mainly securing container transport)
- Advanced World Transport a.s./ PKP CARGO INTERNATIONAL a.s. (a subsidiary company of Polish state rail company)
- IDS CARGO a.s.
- UNIPETROL DOPRAVA, s.r.o. (mainly securing the transport of chemicals from and to Unipetrol chemical plants)

In particular, important rail cargo company from the perspective of the Ústí Region is also company SD - Kolejová doprava, a.s., which secures transport of coal from coal mines in the Ústí Region to power plants throughout the country and other destinations.

Although there are no data on road logistic companies, we can identify some companies, which are important actors in the Ústí Region based on the location of their depots.

- Rosner Spedition und Logistik s.r.o. (Ústí nad Labem)
- LANNUTTI CZECH, s.r.o. (specialized on transport of glass - e.g. products of AGC Flat Glass Czech, Teplice)
- ESA logistika s.r.o. (Málkov near Děčín)
- RTR - TRANSPORT A LOGISTIKA s.r.o. (Ústí nad Labem, Most)



**Table 8: Share of rail cargo companies on rail transport performance in the Czech Republic in 2019**

Rail cargo company	Share on total train-kilometers	Share on total ton-kilometers
ČD Cargo, a.s.	61,1%	60,2%
METRANS Rail s.r.o.	5,4%	8,4%
Advanced World Transport a.s./ PKP CARGO INTERNATIONAL a.s.	6,0%	7,2%
IDS CARGO a.s.	3,8%	3,9%
UNIPETROL DOPRAVA, s.r.o.	3,4%	4,3%
Rail Cargo Carrier - Czech Republic s.r.o.	2,4%	3,4%
CER Slovakia a. s.	1,4%	1,8%
SD - Kolejová doprava, a.s.	1,2%	1,7%
PKP CARGO SPÓŁKA AKCYJNA	1,1%	1,2%
Others	14,1%	8,0%

Data source: SŽCZ (2020)

There are also waterway logistic companies operating in the Ústí Region:

- ČSPL, a.s. (Děčín)
- České přístavy, a.s. (main operator of ports on river Elbe and Moldau)
- Evropská vodní doprava - Sped, s.r.o. (biggest ship-owner in the Czech Republic)

#### 1.4.2. Current major directions

There are three basic flows of freight traffic in the Ústí Region:

- transit flow (just passing across the region)
- inter-regional flow
- inner flow

The transit flows are represented esp. by freight traffic between other regions of the Czech Republic (and other countries located to the east and southeast) and Germany. This flow is divided among radial motorways and I. class roads (D8, D7, I/7, and I/9) and the OEM railway corridor (railways Prague - Děčín - Dresden, and Kolín - Litoměřice - Děčín (-Dresden)). There is also certain transit flow between Karlovy Vary region and other parts of the Czech Republic going through the Ústí Region - esp. coal freight trains delivering coal from Sokolov coal mine and deliveries (via road transport) of automotive products from Karlovy Vary region to car plants in central and eastern Bohemia.

Inter-regional flows consist to the great extent of coal train deliveries of coal from mines in the Ústí Region (Tušimice, Komořany, Vršany, Bílina) to power plants in other regions (Mělník in Central Bohemian Region, Chvaletice and Opatovice in Pardubice Region and Poříčí in Královéhradecký Region), heating



plants throughout the country and to other destinations. Other inter-regional rail freight flows are represented by deliveries of inputs into chemical production to chemical plants in the region (Litvínov, Ústí nad Labem, and Lovosice) and export of some bulk cargo products from these plants to other chemical plants or distribution points. Other bulk cargo rail inter-regional transport flows are represented by exports of grain from the region and exports of lumber from the region. The lumber is at the same time delivered to the paper mill in Štětí, where there is also large-scale lumber-processing operation.

While coal freight is predominantly secured by train, other strong inter-regional flows of freight traffic are usually done by truck transport. This is an example of automotive product flows, which are due to their just-in-time manner almost exclusively represented by road freight transport. The automotive freight flows usually connect new industrial zones in the Ústí Region with the area of Mladá Boleslav (Škoda Auto main plant) and other car plants or automotive plants on the higher level of the automotive production chain.

The inner flow of freight traffic is also represented by the deliveries of coal to power plants and heating plants in the region. While three out of four power plants (the other one being Počeradý) are supplied by coal directly by conveyor belts, some heating plants (such as the plant in Trmice near Ústí nad Labem) are supplied by coal freight trains. Some other inner flows of freight traffic are tied to deliveries of different chemicals between regional chemical plants. There is also an inner flow of oil/petrol between the chemical plant and oil refinery in Záluží near Litvínov and oil storage facilities in Záluží near Roudnice nad Labem. Other major inner flows are represented by delivery of regional agriculture products to food processing plants, delivery of lumber into Štětí paper mill, and deliveries between automotive plants.

### 1.4.3. Dimensions of the freight traffic

The statistics on the volume of freight traffic are available only for traffic within the Ústí Region and between the Ústí Region and other regions of the Czech Republic. Unfortunately, the statistics for inter-state freight traffic between the Ústí Region and regions abroad are not available.

The freight traffic flows mentioned in Chapter 1.4.2 are evident in tables 9 and 10. Rail inter-regional flows from Ústí Region have the highest volume to the Central Bohemian Region (coal to power plants and chemical products), Pardubice Region (coal to power plants, chemicals) and Hradec Králové Region (coal to power plants). The highest volume of rail freight traffic is however within the Ústí Region (coal to power plants, chemicals between chemical plants, lumber). The biggest rail freight traffic flows to the Ústí Region come from the Central Bohemian Region (chemicals) and Karlovy Vary Region (coal), followed by flow from Pardubice Region (chemicals). These freight flows are predominantly served by railways No. 140 (Karlovy Vary - Chomutov), 130 (Chomutov - Ústí nad Labem), 131 (Bílina - Ústí nad Labem), and from Ústí nad Labem by either railways No. 090 (Prague - Ústí nad Labem) or No. 072 (Kolín - Ústí nad Labem).



**Table 9: Inter-regional rail freight transport in 2018 (in thousands of tons)**

Region of loading		Region of unloading														Total loading
		CZ010	CZ020	CZ031	CZ032	CZ041	<b>CZ042</b>	CZ051	CZ052	CZ053	CZ063	CZ064	CZ071	CZ072	CZ080	
<b>CZ010</b>	Hl.m. Praha	2,6	14,1	0,0	67,0	9,1	<b>374,7</b>	0,3	3,8	122,6	0,3	5,3	42,7	4,8	59,4	706,6
<b>CZ020</b>	Středočeský kraj	254,8	346,8	9,3	45,7	109,2	<b>1 683,2</b>	57,2	27,4	69,1	17,3	34,2	37,2	27,2	180,6	2 899,1
<b>CZ031</b>	Jihočeský kraj	12,1	6,9	48,9	30,9	28,0	<b>80,2</b>	0,2	2,8	0,4	2,7	17,9	2,1	0,4	7,8	241,4
<b>CZ032</b>	Plzeňský kraj	89,3	26,6	6,6	158,9	53,7	<b>435,0</b>	0,0	0,1	0,0	8,2	0,5	3,0	0,0	6,5	788,5
<b>CZ041</b>	Karlovarský kraj	67,9	9,5	167,7	406,1	1 620,3	<b>1 544,0</b>	0,3	2,5	0,1	25,2	5,3	37,8	50,6	12,0	3 949,6
<b>CZ042</b>	Ústecký kraj	<b>299,7</b>	<b>3 936,1</b>	<b>396,9</b>	<b>278,0</b>	<b>52,7</b>	<b>5 763,7</b>	<b>29,6</b>	<b>552,4</b>	<b>1 774,9</b>	<b>75,6</b>	<b>105,7</b>	<b>276,0</b>	<b>381,6</b>	<b>446,4</b>	<b>14 369,3</b>
<b>CZ051</b>	Liberecký kraj	5,2	4,7	1,1	15,4	11,1	<b>39,5</b>	17,6	3,7	0,1	14,6	25,9	0,5	0,0	4,6	144,0
<b>CZ052</b>	Královéhradecký k.	67,9	7,7	2,8	52,4	28,6	<b>294,8</b>	5,7	79,7	136,8	45,7	0,8	12,4	0,4	41,7	777,3
<b>CZ053</b>	Pardubický kraj	146,8	34,8	0,6	35,4	12,0	<b>748,0</b>	1,3	28,5	25,4	8,1	26,0	9,5	150,3	222,1	1 448,7
<b>CZ063</b>	Kraj Vysočina	9,5	9,4	2,0	58,4	25,8	<b>311,9</b>	1,3	2,2	3,9	76,8	6,7	1,9	0,7	47,6	558,1
<b>CZ064</b>	Jihomoravský kraj	22,2	268,7	22,0	29,8	9,1	<b>116,3</b>	4,4	2,7	20,3	34,7	184,7	24,2	19,4	171,6	930,0
<b>CZ071</b>	Olomoucký kraj	132,2	70,1	8,6	57,4	22,1	<b>162,3</b>	1,6	11,7	11,8	62,2	151,3	137,8	18,0	416,9	1 264,0
<b>CZ072</b>	Zlínský kraj	32,6	10,8	12,6	18,0	21,8	<b>252,8</b>	4,7	2,3	88,0	22,6	8,8	9,4	25,2	161,2	670,7
<b>CZ080</b>	Moravskoslezský kraj	267,0	589,6	4,7	115,3	52,3	<b>442,0</b>	12,1	88,6	224,9	113,0	183,3	521,9	166,1	7 123,8	9 904,6
<b>Total unloading</b>		<b>1 409,6</b>	<b>5 335,9</b>	<b>683,6</b>	<b>1 368,8</b>	<b>2 055,9</b>	<b>12 248,5</b>	<b>136,4</b>	<b>808,3</b>	<b>2 478,3</b>	<b>506,9</b>	<b>756,5</b>	<b>1 116,4</b>	<b>844,8</b>	<b>8 901,9</b>	<b>38 651,8</b>

Source: MDČR (2020)



**Table 10: Inter-regional road freight transport in 2018 (in thousands of tons)**

Region of loading		Region of unloading														Total loading
		CZ010	CZ020	CZ031	CZ032	CZ041	<b>CZ042</b>	CZ051	CZ052	CZ053	CZ063	CZ064	CZ071	CZ072	CZ080	
<b>CZ010</b>	Hl.m. Praha	15 732,6	5 543,8	779,8	281,7	133,0	<b>760,5</b>	332,1	506,0	263,0	323,0	321,7	450,9	196,5	251,1	25 875,8
<b>CZ020</b>	Středočeský kraj	5 371,0	54 335,4	1 249,0	1 735,2	811,5	<b>3 036,4</b>	736,2	2 133,0	815,9	1 475,1	683,6	583,9	271,3	418,2	73 655,9
<b>CZ031</b>	Jihočeský kraj	522,0	1 085,1	31 787,5	550,1	383,8	<b>248,4</b>	54,4	78,4	139,8	665,6	381,4	169,8	65,9	80,1	36 212,2
<b>CZ032</b>	Plzeňský kraj	340,0	1 469,3	737,3	30 760,3	587,8	<b>424,9</b>	153,5	125,7	30,0	153,0	116,5	142,4	45,5	95,4	35 181,6
<b>CZ041</b>	Karlovarský kraj	95,3	505,2	99,3	606,5	8 826,8	<b>414,3</b>	0,0	5,7	57,9	30,6	107,8	12,8	3,7	3,8	10 769,7
<b>CZ042</b>	Ústecký kraj	<b>1 100,8</b>	<b>3 129,3</b>	<b>366,2</b>	<b>504,7</b>	<b>474,3</b>	<b>25 102,1</b>	<b>877,6</b>	<b>371,5</b>	<b>161,0</b>	<b>132,6</b>	<b>84,4</b>	<b>71,7</b>	<b>32,4</b>	<b>92,6</b>	<b>32 501,1</b>
<b>CZ051</b>	Liberecký kraj	188,2	1 109,4	37,5	84,7	85,8	<b>437,7</b>	12 251,8	973,5	132,9	75,0	94,5	94,3	66,8	80,3	15 712,3
<b>CZ052</b>	Královéhradecký kraj	450,3	2 476,3	154,4	219,4	7,2	<b>364,1</b>	939,4	16 139,7	1 223,4	282,7	397,5	277,3	139,5	268,5	23 339,7
<b>CZ053</b>	Pardubický kraj	408,2	1 392,5	195,3	46,0	59,8	<b>110,0</b>	288,6	3 255,5	11 691,6	897,7	591,7	891,8	58,2	346,5	20 233,5
<b>CZ063</b>	Kraj Vysočina	399,6	637,6	558,0	110,8	48,6	<b>132,4</b>	64,7	177,4	778,7	21 529,4	1 104,0	201,1	190,6	118,6	26 051,4
<b>CZ064</b>	Jihomoravský kraj	266,2	628,8	463,2	138,5	42,3	<b>116,0</b>	77,5	291,2	294,1	1 564,3	40 265,8	1 492,5	904,0	839,9	47 384,4
<b>CZ071</b>	Olomoucký kraj	289,4	670,0	77,9	143,9	15,7	<b>54,5</b>	30,1	491,6	394,6	303,8	1 642,7	26 944,9	1 506,4	2 079,2	34 644,5
<b>CZ072</b>	Zlínský kraj	181,0	294,8	46,5	78,7	16,2	<b>29,0</b>	65,0	140,2	59,0	143,2	1 030,1	951,7	16 458,5	904,2	20 398,0
<b>CZ080</b>	Moravskoslezský kraj	231,5	492,1	106,8	170,0	23,0	<b>35,7</b>	43,9	238,5	296,0	146,2	779,3	1 776,3	845,7	38 179,1	43 364,2
<b>Total unloading</b>		25 576,1	73 769,4	36 658,8	35 430,5	11 515,8	<b>31 266,0</b>	15 914,8	24 927,8	16 338,1	27 722,0	47 601,0	34 061,3	20 785,0	43 757,7	445 324,3

Source: MDČR (2020)



The highest volume of road freight traffic is by far within the Ústí Region (regional supply chains). Inter-regional road freight flows are strong between the Ústí Region and Central Bohemian Region (esp. automotive product deliveries to Mladá Boleslav and Kolín car assembly plants), Prague (deliveries of goods for Prague retail market and wholesale facilities) and Liberec Region (automotive). Inward road traffic flows are strong from the Central Bohemian Region (automotive supply chains, chemical products, distribution of goods from wholesale/storage facilities, etc.), and Prague (distribution of goods through Prague wholesale/storage facilities). These road freight flows are using motorways D8<sup>4</sup> and D7<sup>5</sup> (flows to Prague and Central Bohemian Region) and roads No. I/9<sup>6</sup>, I/15<sup>7</sup>, and I/13<sup>8</sup> (connection to Liberec Region). The most important inner-region traffic flow is via road No. I/13, which is inter-connecting the Ústí - Chomutov agglomeration.

The volume figures for waterway freight transport are about one hundred times smaller than the figures for rail and road freight transport. It is influenced by a relatively small extent of Czech waterways as well as low navigability of the Elbe River waterway connection to Germany. The strongest flow by the volume is between the Ústí Region and Prague (delivery of sand mined in the Ústí Region). There are also considerable flows from the Central Bohemian Region to the Ústí Region and within the Ústí Region itself. These flows have however such a low volume, that it might consist of just occasional transport of either large-scale items or bulk cargo (e.g. 22 400 tonnes of freight fits about 20-40 journeys of average-capacity domestic freight vessels).

**Table 11: Inter-regional waterway freight transport in 2018 (in thousands of tons)**

	Region of loading	Region of unloading			Total loading
		CZ010	CZ020	CZ042	
CZ010	Hl.m. Praha	9,0	79,6	0,0	88,6
CZ020	Středočeský kraj	0,6	64,8	22,4	87,8
CZ042	Ústecký kraj	126,5	0,0	12,1	138,5
	Total unloading	136,1	144,4	34,4	314,9

Source: MDČR (2020)

Since the statistics for inter-state freight traffic between the Ústí Region and regions abroad are not available, we can assume the importance of inbound and outbound inter-state traffic just based on statistics for the whole country. The biggest trade partner of the Czech Republic is by far Germany. Since the Ústí Region is located just next to Germany, we can assume that there are also significant freight traffic flows between the Ústí Region and Germany. Following the inner-state traffic flows, we could assume that the volume of freight exported from the Ústí Region would be near 1 M of tons annually. A similar amount could be assumed also in the case of imported freight. As it is mentioned in Chapter 1.2.3, almost all rail freight transport between the Ústí Region (and the whole Czech Republic) and Germany goes through cross-border rail Děčín - Dresden. Road cross-border transport uses mainly motorway

<sup>4</sup> Ca 8 000 freight trucks on an average day according to 2016 Traffic Census.

<sup>5</sup> Ca 2 900 freight trucks on an average day according to 2016 Traffic Census.

<sup>6</sup> Ca 1200 freight trucks on an average day according to 2016 Traffic Census - mostly automotive deliveries to Mladá Boleslav.

<sup>7</sup> Ca 760 freight trucks on an average day according to 2016 Traffic Census.

<sup>8</sup> Ca 960 freight trucks on an average day according to 2016 Traffic Census.





connection D8 / A17 Ústí nad Labem - Dresden (ca 7 300 freight trucks on an average day according to 2016 Traffic Census), followed by connection I/7 / B 174 Chomutov - Chemnitz (ca 1500 freight trucks on an average day in 2016), and I/9 / S 148 Rumburk - Neugersdorf (ca 430 trucks on an average day in 2016). Other important road freight traffic flow between the Ústí Region and Germany goes through the Karlovy Vary Region (via road No. I/13 and motorway D6). Waterway cross-border freight traffic is by the volume just marginal (due to low navigability of cross-border waterway connection).

**Table 12: Dimensions of freight traffic from the Czech Republic (export in thousands of tons)**

State	rail	road	waterway (inland)	total
<b>Total inter-state</b>	<b>20 324,5</b>	<b>17 076,7</b>	<b>57,7</b>	<b>37 458,9</b>
ITALY	745,2	732,1	0,0	1 477,3
HUNGARY	744,3	555,4	0,0	1 299,7
GERMANY	7 871,2	7 707,4	51,1	15 629,7
NETHERLANDS	1 043,0	212,8	0,0	1 255,7
POLAND	2 216,7	486,2	0,0	2 702,9
AUSTRIA	2 942,3	2 344,4	0,0	5 286,7
SLOVAKIA	2 860,0	3 263,6	0,0	6 123,6

Source: MDČR (2020)

**Table 13: Dimensions of freight traffic to the Czech Republic (import in thousands of tons)**

State	rail	road	waterway (inland)	total
<b>Total inter-state</b>	<b>30 373,3</b>	<b>12 560,7</b>	<b>17,2</b>	<b>42 951,2</b>
ITALY	310,3	784,0	0,0	1 094,3
HUNGARY	335,1	699,4	0,0	1 034,4
GERMANY	10 730,6	4 636,1	8,0	15 374,7
NETHERLANDS	1 370,4	330,2	6,1	1 706,6
POLAND	5 775,6	951,9	0,0	6 727,5
AUSTRIA	2 259,3	1 544,2	0,0	3 803,5
SLOVAKIA	8 403,3	1 972,3	0,0	10 375,6

Source: MDČR (2020)

#### 1.4.4. Presentation of loading devices

There are 3 intermodal terminals in operation in the Ústí Region:

- ČD-DUSS Lovosice
- Trimodal terminal Ústí nad Labem (Metrans)
- Intermodal terminal Obrnice

In chapter 1.2.2 there has been also identified port Děčín-Loubí as multimodal terminal based on its parameters, however, there is no intermodal operation as of now.

## ČD-DUSS Lovosice

The intermodal terminal in Lovosice is the longest-operating intermodal terminal in the Ústí Region. It is located just next to marshalling yard Lovosice between railway Prague - Ústí nad Labem and nearby motorway D8. It has also direct link through the side-track connection to the Port Lovosice on the Elbe river. Besides the operating area of the intermodal terminal, there is also a large-scale warehouse available, which is ramped for trucks and sheltered (inside) handling track for trains.

**Picture 4: ČD-DUSS Lovosice terminal**



Source: Created in ESRI ArcMap 10.4. Base Layer: Ortofotomapa ČÚZK

### Description:

- The overall size of the compound: 21 ha
- Terminal size 23 000 m<sup>2</sup> (in operation)
- Warehouse size: 42 000 m<sup>2</sup>
- Storage capacity: 1000 TEU
- Length of terminal railway tracks: 2 100 m
- Length of handling rail tracks: 1 000 m (3 tracks, 2 out of them serviceable by reach stacker)
- Loading machines - 2 reach stackers with lifting capacity 45 t
- Form of handling: containers, semi-trailers, tank containers, interchangeable trailers

### Trimodal terminal Ústí nad Labem (Metrans)

The Trimodal terminal in Ústí nad Labem operated by Metrans a.s. opened in 2015 at the site of port Ústí nad Labem - Krásné Březno. It is adjacent to the port warehouse and it is using rail-mounted gantry crane operating over 3 railway handling tracks. The terminal allows the handling of containers between trucks, trains, and ships (although ships are not widely used due to worsened navigability of Elbe river).

**Picture 5: Trimodal terminal Ústí nad Labem (Metrans)**



Source: Created in ESRI ArcMap 10.4. Base Layer: Ortofotomapa ČÚZK

#### Description:

- The overall size of the compound: 31,5 ha (entire port - surface areas)
- Terminal size 25 000 m<sup>2</sup> (stacking area)
- Storage capacity: 800 TEU
- Length of handling railway tracks: 505 m (3 tracks; 2 \* 160 m 1\* 185 m; all under rail mounted gantry crane)
- Loading machines - 1 rail-mounted gantry crane, 2 reach stackers with lifting capacity 45 t, 1 reach stacker with lifting capacity 12 t
- Form of handling: containers (mostly)

## Intermodal terminal Obrnice

The intermodal terminal in Obrnice opened in 2010 at the site of the unused terminal adjacent to railway station Obrnice. The terminal is located just next to the road no. I/13 and at rail crossroad of railways no. 130 Ústí nad Labem - Chomutov, 123 Most - Žatec, 126 Most - Louny and 113 Lovosice - Most. The terminal is continuously increasing its stacking and handling area and its capacity.

**Picture 6: Intermodal terminal Obrnice**



Source: Created in ESRI ArcMap 10.4. Base Layer: Ortofotomapa ČÚZK

### Description:

- The overall size of the compound: 12 ha
- Terminal size 35 000 m<sup>2</sup> (stacking area)
- Warehouse size: 5 000 m<sup>2</sup>
- Storage capacity: 1 700 TEU
- Length of handling railway tracks: 760 m (4 tracks; 2 \* 180 m 1\* 210 m, 1\* 190 m; there are two more tracks unused for intermodal handling)
- Loading machines - 3 \* reach stacker
- Form of handling: containers, bulk cargo (IBC containers)



### 1.4.5. Presentation of current technology (workflow and operation), capacity limits

#### Capacity limits:

- All intermodal terminals in the Ústí Region have continuous handling rail tracks with length not exceeding 200 m. Only one terminal - DUSS Lovosice has a longer continuous rail handling track usable for loading/unloading of containers/semitrailers with a length of 300 m. Therefore marshalling of trains with containers/semitrailers is less efficient.
- Intermodal terminals in Ústí nad Labem and Obrnice face spatial limits. These are obvious spatial limits esp. in Ústí nad Labem, where the terminal is located within flooding area on the site of the port in Krásné Březno between river Elbe and road no. I/62. Therefore, there is not much space for potential future development. Also, the terminal in Obrnice has limited options for future spatial growth because of the location between road no. I/13, river Srpina and railway station Obrnice. There are however still some spatial reserves in unused railway tracks and yards within the railway station area.
- Only the terminal in Lovosice has a potential for future more extensive growth of its area/capacity allowed by its location and also the potential for lengthening its handling tracks allowing loading/unloading trains with a length of 740 m.
- The intermodal terminal in Ústí nad Labem has rail side-track connection to the rail station Ústí nad Labem - Sever with railway level-crossing over road no. I/62. Therefore, this connection is colliding with intensive road traffic and together with insufficient length of rail marshalling tracks within the terminal leads to inefficient marshalling of trains dispatched to/from the intermodal terminal.
- Potential for trimodal operation (esp. of Trimodal terminal Ústí nad Labem) is reduced by low navigability of the Elbe river waterway. Therefore, intermodal transport is almost exclusively operated just through road and rail modes.



## 1.5. SWOT analysis

### SWOT analysis of the system of freight transport

<i>Strengths</i>	<i>Weaknesses</i>
<ol style="list-style-type: none"> <li>1. Elbe river waterway as a traditional corridor for water/rail/road freight transport between CZ and DE</li> <li>2. Relatively sufficient capacities of main railways within the region for the freight transport</li> <li>3. Existing multimodal terminals and Elbe river ports with a potential for further development</li> </ol>	<ol style="list-style-type: none"> <li>1. Limited quality of road and rail infrastructure (incomplete motorway network, missing road bypasses, the poor state of some main railways)</li> <li>2. The low cross-border capacity of the rail connection</li> <li>3. Elbe river waterway not navigable during the dry season between Ústí nad Labem and Dresden</li> </ol>
<i>Threats</i>	<i>Opportunities</i>
<ol style="list-style-type: none"> <li>1. Stagnation of rail/waterway infrastructure undermining the competitiveness of environment-friendly nodes</li> <li>2. Urban development undermining development of rail/port freight transport</li> <li>3. Noise pollution control measures reducing operation of rail freight during night hours</li> </ol>	<ol style="list-style-type: none"> <li>1. High-speed railway increasing capacity of the cross-border connection and clearing capacity of conventional railways for freight trains</li> <li>2. SMART technologies and new technologies improving the effectiveness of freight transport (and boosting multimodal transport)</li> <li>3. Improved navigability of Elbe river waterway boosting waterway and multimodal transport</li> </ol>

## 2. ANALYSIS OF FREIGHT TRENDS (TIME RANGE 2030 / 2050)

### 2.1. Possible directions of developments

#### 2030

##### Global trends (affecting the transport sector)

- Economic growth - we can expect that the economy of the Czech Republic would grow on a long-term basis, therefore contributing to higher production of certain items, the higher purchasing power of the population and higher consumption of households. Higher household consumption would affect logistics (higher volume of goods transported and distributed - also by distribution through e-shopping and parcel delivery companies).
- Changes of propulsion technologies - new propulsion technologies and measures on CO<sub>2</sub> efficiency of cars might make new cars significantly more expensive and therefore less available to (esp. low-to middle income) households - the car fleet used by households might be aging and shrinking. Changes in propulsion technologies would also affect the production and transport of oil, gas, hydrogen, etc.
- Changes in energy production - nuclear power plants in Germany would be out of service and coal power plants in Germany and the Czech Republic would be phasing out. Their place would be taken by sustainable energy sources and to some extent also by gas power plants. This would also affect transportation by the reduction of coal freight.
- Population aging - strong post-WW2 age groups would turn their 70s and 80s and there would be fewer people in economically active age. While in general, lower numbers of the domestic population in economically active age would be to some extent removed by immigrants, some (esp. peripheral rural) areas would be strongly affected by the aging of population accompanied by the emigration of the younger workforce (related to metropolization). This might affect the demand for passenger transport in certain areas of the country (there would be fewer commuters).
- EU policy goals concerning greenhouse gas emissions and higher energy efficiency - might further influence transport technologies - e.g. last-mile logistics, recuperation on railways, etc.

##### Trends affecting transport in the Ústí Region:

- Spreading of H<sub>2</sub> propulsion technologies - chemical plants in the region would produce H<sub>2</sub> for the propulsion of motor vehicles - what would increase the volume of distributed H<sub>2</sub> (at the beginning by road freight, but in the future, there might be possible transport of H<sub>2</sub> by rail freight or even via pipelines)
- A slight reduction of oil consumption by motor vehicles - reduction of oil products transport (pipelines, rail, road)
- A slight reduction of the use of coal for electricity generation - reduction of coal transport (conveyor belts, rail)
- We can expect, that a new (large-scale) strategic industrial zone would be opened in the Ústí Region as part of investments accompanying reduction of coal mining
- New mine for lithium would be opened in Cínovec. The lithium ore would be transported to the processing plant by train from railway station Dubí on railway no. 135 Most - Moldava. The processing plant would be probably at one of the chemical plants in the region (Záluží - right at the railway no. 135, or Ústí nad Labem or Lovosice).



- Exurban residential development (exurbanization of Prague) would take place in areas located close to Prague agglomeration (micro-regions Roudnice nad Labem, Litoměřice, Lovosice, Louny)
- Aging of population and shrinking of the population would affect certain parts of Ústí Region (e.g. peripheral regions like Šluknov headland and Podbořany region) and therefore demand in passenger traffic

## 2050

- End of coal mining and (to great extent) also the production of electricity by coal plants (termination of coal freight between mines in Ústí Region and Karlovy Vary region, power plants, heating plants and other destination within the Czech Republic)
- Production of electricity in gas power plants (supplied by pipelines)
- Significant reduction of oil consumption in the transport sector leading to reduction of oil production in Záluží plant and reduction of oil freight transport
- A significant share of new propulsion technologies in the transport sector - in case of H<sub>2</sub> technologies, it would lead into larger-scale production of H<sub>2</sub> in chemical plants in the Ústí Region and higher volume of H<sub>2</sub> transport (rail transport, road distribution and in case of much higher volume - pipelines)
- The digitalization of industry and service sector would significantly influence passenger transport flows (probably lower flows into traditional industrial centres, a higher share of home-office jobs)
- The potential outflow of some manufacturing plants and jobs (esp. those with higher demand for human work) would affect both passenger traffic flows and freight traffic flows
- Probable further aging of population and shrinking of population of certain areas affecting passenger flows and retail logistics
- Population scenarios:
  - The Ústí Region as a whole might get more attractive for living as a result of phased-out coal mining and coal power plants and therefore significantly improved quality of the environment, much more attractive landscape offering abundant opportunities for summer recreation (as a result of hydric recultivation) and much better accessibility of the region from Prague, Dresden and other metropolitan areas (finished construction of high-speed railways Prague - Ústí nad Labem - Dresden and Nová Ves - Most). Such development would influence passenger traffic flows and logistics (higher passenger flows between the region and Prague agglomeration and Dresden agglomeration, higher intensity of retail logistics).
  - The Ústí Region might be still affected by structural handicaps, such as the too high concentration of socially-excluded people and people with lower social status, and therefore by high unemployment, the low purchasing power of the population and the Ústí-Chomutov agglomeration might be shrinking as a result of these trends. Such development would limit the intensity of passenger traffic and retail logistics.
- We can assume that high-speed railways Prague - Ústí nad Labem - Dresden and Nová Ves - Most might be finished by 2050, therefore affecting passenger flows and capacity for freight trains (which would be increased also by the reduction of coal transport).





## 2.2. Possible new connections

### 2030

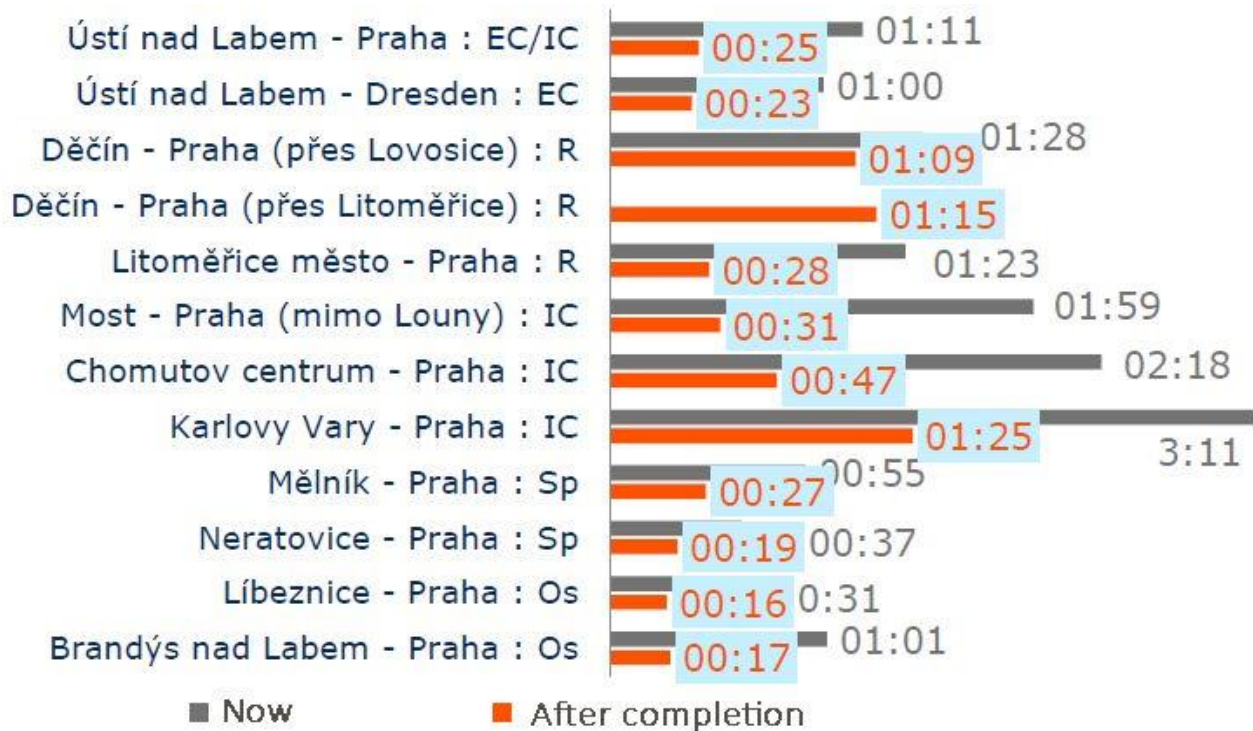
- Rail connection to Industrial zone Triangle near Žatec (side-track) from railway station Postoloprty on railway no. 123 Žatec - Obrnice. The connection might bring regular freight train service to and from the Industrial zone Triangle.
- High-speed connection Dresden - Ústí nad Labem would be probably under construction (also with connection Dresden - Teplice)

### 2050

- High-speed railways Prague - Ústí nad Labem - Dresden and Nová Ves - Most might be finished by 2050. It would encompass following new connections:
  - New connection Ústí nad Labem - Dresden (or more precisely Chlumeck - Heidenau) through Ore Mountains Base Tunnel (EGBT)
    - > along with the connection between Dresden and Teplice (there would be branch to Teplice turning off from southern portal of EGBT)
  - New connection Prague - Litoměřice (part of a high-speed railway between Prague and Ústí nad Labem) - so far, there is no direct passenger connection between Prague and Litoměřice
  - New connection Litoměřice - Ústí nad Labem (part of a high-speed railway between Prague and Ústí nad Labem)
  - New connection Nová Ves - Most (allowing high-speed connection Prague - Most)
  - All these new connection would mean an additional two tracks between Prague and Dresden, which would significantly increase capacity esp. for freight rail transport
  - These new connections would allow new direct (and fast) connections:
    - > Prague - Litoměřice
    - > Dresden - Teplice (-Most - Chomutov)
  - These new connections would allow faster passenger connections:
    - > Prague - Ústí nad Labem - Dresden (-Berlin)
    - > Prague - Ústí nad Labem - Teplice (-Litvínov)
    - > Prague - Ústí nad Labem - Děčín
    - > Prague - Most - Chomutov (- Karlovy Vary - Cheb)



**Picture 7: Projected travelling times now and after completion of the high-speed rail network**



Source: SŽCZ (2019)

### 2.3. Terminating links (if any)

#### 2030

- There is no clear indication of the potential terminating of current rail links by 2030. Potential termination might affect regional railways, which are usually not attractive for neither passenger nor freight transport (except tourist train service) nor which usage is therefore limited with a low volume of trains, passengers and freight. Maintaining these railways is still costly and these costs reduce eligible finances for maintenance and modernization of more important railways (including investment into high-speed rail network). Since there has been only a limited reduction of the rail network in the Czech Republic (contrary to most European states), it might happen in the future. As of now, the Regional Authority of Ústí nad Labem and/or regional stakeholders are opposing any reduction of the rail network and even putting up pressure on the State (and SŽCZ) to renew some interrupted connections (e.g. railway connection Lovosice - Teplice interrupted by a landslide and connection Moldava - Holzhaus interrupted after WW2).

#### 2050

- After completion of a high-speed railway between Ústí nad Labem and Dresden, passenger express connection Prague - Ústí nad Labem - Děčín - Dresden - Berlin will use the new connection instead of recent connection through Děčín and Bad Schandau. This would probably cause termination of direct express train service between Děčín and Prague (which would be probably served by regional-express connection stopping at some smaller towns) and even more probably along Děčín - Dresden - Berlin line. It would mean that The City of Děčín would lose direct connection to Berlin. Local representatives



complain, that such termination would reduce the attractiveness of Děčín and surrounding region (along with the prime tourist destination of Czech - Saxon Switzerland) which would be also affected by the fact, that tourists and other passengers using express connection Dresden - Prague would not be able to see beauties of the area from the train. This concern could be however coped with by the introduction of some “tourist express” train connection between Dresden and Prague.



### 3. PRESENTATION OF PLANNED DEVELOPMENTS (SCREENING OF DOCUMENTS)

#### 3.1. Identification and presentation of strategies and documents with relevance for spatial planning and infrastructure planning

The planning and investments in the field of the railway infrastructure, motorways, I. class roads, and waterways lie within the authority of the State administration or rather in hands of State infrastructure authorities. Such authorities are Správa železnic (SŽCZ, railway infrastructure owner and operator), Ředitelství silnic a dálnic (motorways and I. class roads owner and operator) and Ředitelství vodních cest (waterway operator). The planning and investments are conducted by these organizations, but based on requirements of the Government (and esp. Ministry of Transport) and the final approval is given by the Central Commission of the Ministry of Transport of the Czech Republic. Therefore only certain documents on the state level can be considered as relevant since many other documents have no legal authority behind them to enforce implementation of their proposed measures and activities concerning infrastructure mentioned above. There are several documents, which have relevance for decision making about investments into transport infrastructure. Among these documents, we can mention:

- The Transport Policy of the Czech Republic for 2014-2020 with the Prospect of 2050
- Transport Sector Strategies
- The strategy of freight transport for period 2017-2023
- The conception of conversion to a single power system to priorities of 2014-2020 period and requirements TSI ENE
- Program of development of fast railway connections in the Czech Republic
- The spatial development policy of the Czech Republic

The **Transport Policy of the Czech Republic** is a top-level strategic document of the Government of the Czech Republic for the transport sector and the Ministry of Transport is the institution responsible for its implementation. The document identifies the main challenges of the sector and proposes measures to tackle them. Given the scope of the matter, the proposed solutions cannot be designed in full detail. This is the task of further strategic documents related to the Transport Policy.

The **Transport Sector Strategies** is one of the follow-up strategies defined by the Transport Policy of the Czech Republic, which prioritizes projects in the field of transport infrastructure concerning financing. The Transport Sector Strategies represent the necessary condition for the approval of the Operational Programme for the transport sector for 2014 - 2020; their elaboration is therefore directly monitored by the European Commission.

The **Strategy of freight transport for the period 2017-2023** is another follow-up strategy defined by the Transport Policy of the Czech Republic, which focuses on the needs of freight transport. Introduction of this strategy among with creation of lobbyist groups of railway freight companies Žesnad CZ helped to change the perception of freight transport in the eyes of the Government, which used to prioritize the needs of passenger transport over needs of freight transport when planning investments.

The railway network of the Czech Republic has historically two main power systems:

- 3 kV DC (north-eastern part of the country, e.g. entire RFC 9 and most of RFC 7)
- 25 kV/50 Hz AC (south-western part of the country)



The **Conception of conversion to a single power system** proposes the conversion of the power system from DC 3 kV to 25 kV/50 Hz AC, based on the following reasons:

- Much lower losses of electric power in 25 kV/50 Hz AC electrification system
- Not sufficient capacity of DC to power strong locomotives (the 3 kV DC system was projected for locomotives with 2 000 kW power output)
- The higher capacity of railways electrified by 25 kV/50 Hz AC (shorter intervals between trains are needed)
- A lower number of transformer stations (AC) needed than converter stations (DC)
- Conversion is necessary to allow smooth integration of high-speed railways into railway nodes (high-speed railways need higher-voltage AC electrification system to ensure sufficient power capacity)
- The single power system is more convenient for railway operators

The **Program of development of fast railway connections in the Czech Republic (2017)** is basic conceptual material for the decision of the Government of the Czech Republic on the future of long-distance fast passenger transport. The Program analyses different options (high-speed railway, Hyperloop, Maglev) and recommends the most effective solution for the Czech Republic.

The **Spatial development policy of the Czech Republic** is the state-level (highest level) spatial plan which defines priorities and principles, which must be adopted by regional spatial development principles and Spatial plans on the municipal level. From the transport planning point of view, it is important by setting up requirements for spatial development principles to determine (planned) transport infrastructure corridors and zones.

There are many other documents with relevance for spatial planning and infrastructure planning but they have no real influence on final decisions about planned developments. Such documents are for example:

- Spatial development principles on the regional level (for the Ústí Region, Prague, and Central Bohemian region) - they have to adapt principles from the Spatial development policy of the Czech Republic
- Spatial (master) plans of municipalities - they have to adapt zones, corridors, and principles from (regional) Spatial development principles
- The strategic development plan of the Ústí Region - although the plan encompasses plans for infrastructure development, the Regional Authority does not have the authority to realize and/or enforce these plans. The Regional Authority is only in charge of securing II. and III. class roads and bikeways.

On the level of the individual project proposal, the most important document is the feasibility study. The project proposals are approved by the Central Commission of the Ministry of Transport based on a recommendation from the feasibility study. The feasibility study has therefore great importance not only for the approval of the project proposal but also for choosing the variant of project proposal for realization. In our case, the most important document would be therefore the Feasibility study of the new railway connection Dresden - Prague. This study is still in preparation and would not be finished until mid-2020. Once it will be available, we will present its results in this chapter.

## 3.2. Analysis of contents of identified strategies and documents

### The Transport Policy of the Czech Republic for 2014-2020 with the Prospect of 2050

The Transport Policy is relatively general and encompasses a wide variety of targets (from infrastructural targets across financial targets to legislative targets). Therefore it is beneficial to present just those specific for railway infrastructure, high-speed railways and freight transport.

Among these Priorities, specific targets and measures, we should mention the following:

- **Creating Conditions for the Competitiveness of the Czech Republic**
  - Modernize and complete the transport infrastructure in the international context (the TEN-T network as a priority), having regard to the competitiveness of the Czech Republic and the needs of industry, development of tourism and other sectors of the economy. The Czech Republic must not become a periphery in the centre of Europe.
- **Creating Conditions for the Cohesion of Regions**
  - Modernize the transport infrastructure, having regard to securing good-quality access for all regions and having regard to the support of regions defined in the Strategy of Regional Development. The condition of the transport infrastructure must not be the cause of growing disparities in regional economic performance.
- **Freight Transport as Part of the Logistics Process**
  - Seek effective and sustainable logistics solutions using the principle of co-modality with the view to supporting multimodal nature of transport, optimize the capacity of the transport infrastructure and use of energy and also make logistics services available to small and middle-sized businesses in the industry, trade, and agriculture
  - Create access to competitive multimodal transport chains for companies, using the railway and possibly waterborne transport with the objectives of:
    - > improving capacity utilization of the means of transport and reducing empty rides
    - > reduction of heavy road transport (in the form of service for road operators)
    - > better cooperation and coordination among companies in the area of transport
    - > support of small and middle-sized enterprises
    - > reduction of negative impacts on the environment, public health and transport safety
- **Reducing the Impact of Traffic Irregularities**
  - Introduce measures aiming at a higher use of the rail and waterborne transport; increase, by measures less demanding in terms of investment, regular as well as track possession capacity of rail infrastructure (passing bays, rail crossovers), optimization of the utilization of available inland waterway capacities in the form of the River information services.
- **Freight Transport in Line with the Co-modality Principle**
  - In coordination with the adopted Strategy for the support of logistics from public funds and the preparation of the Transport Sector Strategies create a methodological, financial and legal framework for the public support of logistics with clearly defined roles of the national and regional authorities and the private sector incorporated into amendment proposals. Define public terminals



as part of the public transport infrastructure and provide for their financing through the State Transport Infrastructure Fund.

- Concerning the preparation of the Operational Programme for the Transport sector for 2014 - 2020 with the prospect to 2030, compile a proposal for concrete localization of public multimodal terminals, possibly with connections to logistics centres.
- Build public multimodal terminals in accordance with AGTC parameters, to be included in the TEN-T network and defined as part of Rail Freight Corridors in accordance with Regulation (EU) 913/2010.
- Create conditions for the development of rapid rail freight transport between the main points of transshipment and hubs of economic activity, together with the application of the just-in-time principle.
- Initiate work to examine the scope of the current network of railway stations with dispatching authorization, lay down conditions for non-discriminatory access of local road transport operators and entrepreneurs and create conditions for the implementation of suitable logistics solutions (hub + spoke structure).
- Create a programme for the support of an expansion of the fleet of transport units and means for combined transport and operating subsidies in the initial stage of operation of regular multimodal transport lines.
- Support new concepts of city distribution based on the principles of City Logistics; in case of some cities located on important waterways, use the waterborne transport as an alternative means of supply (e.g., to provide for the supplies of construction materials and disposal of building and communal waste).
- Set lower rates on the charges for the use of the transport route for single wagon consignments and in case of combined transport only for intra-continental lines.
- Create conditions for the development of air freight transport, which can support the development and creation of jobs, at least by introducing the related ground services, in particular at regional airports, which due to utilization of free capacities can contribute to reducing overload and overcrowding at TEN-T airports and to minimizing the impact on the environment.
- Ensure the operation of the Rail Freight Corridors on the territory of the Czech Republic within the meaning of Regulation (EU) 913/2010 and connect Freight Corridor No 7 with Freight Corridor No 8. Provide for sufficient freight capacity in the freight corridors by ensuring sufficient capacity of the relevant track sections. Where the capacity of the transport infrastructure in the freight corridors is insufficient, introduce temporarily appropriate measures not only in freight but also in passenger transport, until it improves.
- Ensure passage through large railway junctions by segregating passenger and freight transport
- Create suitable conditions for the utilization of waterborne transport. Permanently create conditions for the possibility to apply support of waterborne transport (modernization of ships for freight and passenger inland waterway transport) within the framework of the NAIADES (Navigation and Inland Waterway Action and Development in Europe) and NAIADES II Programmes as well as follow-up programmes of similar nature.
- With the view to reducing the impact of transport on public health, differentiate the rates of distance-based charging during night hours, in accordance with Directive 1999/62 EU, as amended by Directive 2011/76/EU of the European Parliament and the Council of 27 September 2011, and



support extension of the network of regular lines of multimodal transport for long-distance freight transport.

- Create conditions for the development of air freight transport, which can support the development and creation of jobs, at least by introducing the related ground services, in particular at regional airports, which due to utilization of free capacities can contribute to reducing overload and overcrowding at TEN-T airports and to minimizing the impact on the environment.
- **Development of the Transport Infrastructure**
  - Update in regular five-year intervals the follow-up document Transport Sector Strategies, including a multimodal transport model.
  - Through the Regional Development Policy of the Czech Republic and territorial planning, documents ensure territorial protection of corridors and sites earmarked for the transport infrastructure development.
- **Advanced Technologies, Research, Development and Innovation**
  - Create conditions for easier cooperation between different modes of transport (support of research and deployment of efficient transshipment facilities, including multimodal terminals).
  - Support the deployment and development of ITS systems for freight transport in public logistics, including optimization of city distribution (city logistics).
  - Create conditions for the continuation of ITS services on trans-European transport networks, in the area of traffic control and freight transport on European transport corridors and conurbations.
  - Introduce advanced technologies in the rail transport (e.g., rationalization of track control, modern barrier-free vehicles, fast and barrier-free clearance in stations and stops, a combination of light rail systems with classical railway). Gradually deploy ERTMS systems in accordance with the approved timetable and install remote control systems of rail transport on tracks outside the TEN-T network, including rail radio connection, deploy interlocking equipment on tracks where it has not been installed yet.
  - Ensure interoperability and remote traffic control as a form of development of technologies for safe control of train transport in line with Europe-wide trends on selected national railway lines, with links to EU and neighbouring regions.

### Transport Sector Strategies

The last actualization of Transport Sector Strategies had been made in 2017, but it encompassed only evaluation of the implementation of projects, which had been foreseen for the 2014-2020 funding period by the version of the document approved in 2013. Transport Sector Strategies, therefore, does not precisely define projects for the period 2021-2027. Since many projects, which should have been realized through 2014-2020 have still not been realized, we can assume, that they would be realized in the following funding period. The Transport Sector Strategies does not fully encompass high-speed railway projects since they had not been approved for preparation in 2013. Transport Sector Strategies propose the realization of following projects and activities relevant for transport in the Ústí Region (realized projects or projects in realization are highlighted in *italics*):





## Road projects

Substitute projects (in case of funding left-over)

- *D6 motorway by-pass of Lubenec - I. Phase*

Other projects (principles of preparation)

- D6 Nové Strašecí - Karlovy Vary - suitable for realization in case of spare funding with the priority of section between Lubenec and Krupá (*section Nové Strašecí - Krupá is under construction*)
- D7 Slaný - Bitozveves - suitable for realization in case of spare funding, with the priority of section of Slaný by-pass

## Railway projects

Modernization of safety and communication equipment of railways

- ETCS on TEN-T railways
- GSM-R on TEN-T railways

Measures proposed for funding from OP Transport 2014-2020

- Railway Ústí nad Labem - Chomutov - Cheb (no. 130 and 140) - Securing TSI parameters

Substitute measures (in case of funding left-over)

- Optimization of railway Děčín - Všetaty - Kolín (no. 073 and 072)

Measures with realization horizon after 2020

- New (high-speed) railway Praha - Lovosice (first section of high-speed railway Prague - Dresden)
- Optimization of railway Děčín - Všetaty - Kolín

## Waterway projects

- Lower Elbe (Mělník - border CZ/DE) - securing stable navigability for vessels matching classification class Va during as many days year-round as possible

## The strategy of freight transport for period 2017-2023

The Strategy of freight transport defines more measures and/or specifies measures on top of Transport Sector Strategies. Therefore there are not proposed measures/projects, which are already proposed in Transport Sector Strategies (such as Optimization of railway Děčín - Všetaty - Kolín). The Strategy of freight transport proposes the following measures, which are relevant for freight transport in the Ústí Region:

### Transport infrastructure

- With adding second rail track on railway Velký Osek - Hradec Králové - Choceň increase capacity of rail section Choceň - Ústí nad Orlicí by keeping recent railway for the needs of freight transport and regional passenger train service and constructing new railway connection for long-distance passenger transport in variant MAX (this measure means, that there would be four railway tracks suited for freight transport between Česká Třebová (where railways from Brno and Ostrava connect) and Děčín).



- Increase capacity and attractiveness of proposed variant of modernization of railway Plzeň - Domažlice state border (this measure would lead to the creation of electrified double-track connection for freight transport between the Czech Republic and Germany alternative to connection Děčín - Bad Schandau)
- Examine project proposal for connection of railways on the left (090) and right (072) bank of Elbe river within the area between Mělník and Litoměřice.
- Examine project proposal for adding a second track on railway Praha-Satalice - Všetaty (another possible connection to Prague for freight transport).
- Taking care of the capacity of transit through important railway nodes (e.g. by two-level intersections).
- Ensuring non-reduction or even increasing the capacity of station throats in feasibility studies by proposing such layout of track switches, which enables a maximum number of parallel trips.
- In compliance with Directive no. 1315/2013/EU on infrastructure parameters for operating trains with a length of 740 m discuss with rail freight operators their needs. Based on that a with modernized railways realize construction measures to ensure adequate operation of trains with a length of 740 m on remaining RFC network railways and prospective connecting railways.
- Electrification of railways and conversion of 3kV DC network - Measure regarding this field are dealt with in Document Transport Sector Strategies and Study "Conception of conversion to a single power system concerning priorities of 2014-2020 period and requirements TSI ENE".
- Finishing construction of motorway D7

#### City logistic

- In the framework of sustainable urban mobility plans of selected cities arrange supplying of the city through the distribution centre connected to rail and eventually also water transport.

#### Road transport

- Determine and realize routes for heavy and oversized freight for the needs of heavy industry, selected machinery industry plants, defense, and energy sector and for connecting to important inland ports (esp. Lovosice and Mělník). On this route preferentially secure reconstruction of bridges and other infrastructure to secure adequate load capacity.

#### Rail transport

- On railways which are part of RFCs respect Directive No. 913/2010/EU and construct corridor routes of long-distance freight transport (PaP) with preference over other transport segments.
- On railways of main TEN-T network for freight transport determine continuous relations of international long-distance freight and determine procedures of implementation of the operation of longer trains: in the first phase determine the maximal possible length of the train by adapting operational measures; in second phase coordinate construction measures on newly modernized railways (Děčín - Kolín, Velký Osek - Choceň) with operational measures on other sections of corridors for securing the operation of trains with a length of at least 740 m.
- The secure function of RFCs on the territory of the Czech Republic according to Directive No. 913/2010/EU and connect RFC 7 to RFC 8. Secure adequate capacity for freight transport on freight



corridors by securing sufficient capacity of respective rail sections. In case of insufficient capacity of transport infrastructure on freight corridors temporarily until its increase solves the problem with organizational measures not only in freight but also in passenger transport.

### Ports

- In strategic locations of the network security in compliance with the Conception of water transport construction of new ports or reconstruction of existing ports.
- Ports, which are included in the TEN-T network, develop as tri-modal terminals of freight transport allowing connection of road, rail and waterway transport.

### Intermodal terminals

- Support investment into intermodal terminals with public access with support from programme using Cohesion fund through OP Transport.
- Analyse opportunities for complementing network of public intermodal terminals by constructing terminals in ownership of SŽCZ on sites of unused areas (brownfields) of former rail freight transport yards.
- Realize a programme “Support of modernization and construction of intermodal terminals” (including technical equipment) - 2,5 billion CZK.
- Prepare a programme of support to the acquirement of freight equipment for continental intermodal transport - 180 million CZK.

### The conception of conversion to a single power system concerning priorities of 2014-2020 period and requirements TSI ENE

The Conception proposes the conversion of all 3 kV DC railways to 25 kV/50 Hz AC power systems. The conversion should take place during the next two decades - until 2040. The conversion is proposed in the following time-frame:

- until 2026 - conversion of railway Kutná Hora - Kolín - Ústí nad Labem - Děčín - Germany (incl. railway no. 072 so when finished, there would be continuous AC-powered railway corridor in direction of RFC 7 across the Czech Republic - but using the railway Brno - Havlíčkův Brod - Kolín where there is a steep grade)
- until 2027 - conversion of railway Děčín - Ústí nad Labem (no. 90)
- until 2032 - conversion of railway Ústí nad Labem - Kadaň (- Karlovy Vary - Cheb - Marktredwitz)
- until 2033 - conversion of railway Ústí nad Labem - Kralupy nad Vltavou
- until 2033 - conversion of railways (Slovakia-) Ostrava - Olomouc - Česká Třebová - Kolín (there would be continuous RFC 7 across the Czech Republic under AC)
- conversion of Prague railway node should be the last one - conducted until 2040

The conversion should be taken into account in case of all modernization projects on railways with DC electrification system and in projects of electrification of non-electrified railways to secure effective preparation for conversion (railway technologies should be made ready for conversion).



### Program of development of fast railway connections in the Czech Republic

The Program proposes following fast railway connections:

- Dresden - Praha - Brno - Wien / Bratislava, Budapest - main direction allowing connection of the territory of the Czech Republic onto European high-speed railway network. In most of its length, it should have a form of the newly constructed high-speed railway line.
- Brno - Ostrava - Katowice - would secure finishing of high-speed core-line of the Czech Republic. In section Přerov - Ostrava, it would consist of a newly constructed high-speed railway, because the recent railway has not sufficient capacity. Section Brno - Přerov would be constructed as a conventional railway for all railway traffic segments (regional passenger trains, long-distance express trains, freight trains).
- Praha - Plzeň - Domažlice - Bayern is another important direction, in this case, it should be constructed as a mostly conventional railway with higher-speed parameters.
- Praha - Wrocław - is the last long-distance section of the proposed fast railway network, which potential is so far not adequately examined, while it proved to be the least perspective.
- An important part of the proposal is the solution of main railway nodes (esp. Praha, Brno, and also Ostrava and Ústí nad Labem). The capacity of railway nodes might be an important limitation of the system of fast connections, while its solution is very costly.

### The spatial development policy of the Czech Republic

The Spatial development policy of the Czech Republic specifies republic-wide priorities for spatial planning, and principles for spatial planning within determined development axes, development areas and specific areas. Further, the spatial development policy determines requirements regarding corridors and areas of transport and technical infrastructure. Concerning transport infrastructure on the territory of the Ústí Region, the spatial development policy sets up the following requirements:

- OS7 Development axis Ústí nad Labem - Chomutov - Karlovy Vary - Cheb - borders CZ/DE (-Bayreuth)
  - Create spatial conditions for the solution of the rebuilding of the Road no. I/13 between Ostrov and Chomutov.
- Corridors and areas of transport infrastructure
  - Corridors of high-speed transport
    - > VR1 - (Dresden-) border CZ/DE - Lovosice/Litoměřice - Praha
    - > Examine spatial conditions for locating this infrastructure and based on the result of examination secure spatial protection of these proposals by determining spatial reserves or corridors for this infrastructure.
  - Corridors of conventional railways
    - > C-E61 Děčín - Nymburk - Kolín (no. 073 and 072)
    - > Prepare materials for spatial changes necessary for the realization of proposed construction projects
  - Road transport
    - > D6



- > D7
- > S10 Ostrov - Chomutov
- > S11 D8 - Děčín - Česká Lípa - Liberec
- Waterway transport
  - > VD 1 Elbe: Pardubice - border CZ/DE
- Intermodal transport
  - > Public intermodal terminals: Děčín, Ústí nad Labem, Lovosice
  - > Examine spatial conditions for localization of proposed terminals and on the ground of that determine the area or secure the area by determining spatial reserves for ports of Děčín, Ústí nad Labem and Lovosice.

### 3.3. Presentation of completed and ongoing projects and actions

#### Rail projects

- Completed optimization/modernization of the railway corridor Prague - Ústí nad Labem - CZ-DE (- Dresden - no. 090 and 098) - complete reconstruction of railway infrastructure and railway stations (excluding railway station Kralupy nad Vltavou and two sections with tunnels near Kralupy nad Vltavou and in Děčín) during the 1990s and 2000s.
- Completed reconstruction/renewal of railway no. 113 Lovosice - Most - beside renewed passenger transport the renewal of this railway might allow occasional operation of freight trains between railway no. 090 and Most (e.g. coal trains) e.g. in case of some unexpected events on recent routes
- Completed reconstruction of railway no. 114 Lovosice - Louny - brought shorter travelling times and potential for future use in connection with high-speed train service (transport of passengers to high-speed train stops in Lovosice and Louny)
- Ongoing reconstruction/modernization railway section Teplice-Řetenice - Bílina on the railway no. 130 (Ústí nad Labem - Chomutov)
- The ongoing reconstruction of railway Oldřichov u Duchcova - Litvínov (no. 134) with the electrification of its section Louka u Litvínova - Litvínov - the project would allow direct passenger train service between Litvínov and Ústí nad Labem in electric traction
- Ongoing electrification of railway Kadaň-Prunéřov - Kadaň (no. 164) - the project would allow direct passenger train service between Kadaň and Ústí nad Labem in electric traction

#### Road projects

- D7 - 43 km completed, 3 km under construction (Panenský Týnec - by-pass), 33 km to be constructed
- I/13 intersection Třebušice - under construction

#### Intermodal terminals

- ČD-DUSS Lovosice - terminal opened in 2006 and large-scale warehouse have been built



- 
- Trimodal terminal Ústí nad Labem (Metrans) - Terminal opened in 2015 and from that time, it has increased its capacity
  - Intermodal terminal Obrnice - terminal opened in 2010 and from that time, its capacity had been increased several times.



## 4. SPATIAL ASPECTS OF NODES IN TRANSNATIONAL TRANSPORT

### 4.1. Needs and requirements for improvement of node functions

The main node on planned high-speed railway Prague - Dresden on the territory of the Ústí Region is the railway node Ústí nad Labem. Its final shape is not yet determined (the Feasibility study for the high-speed railway Dresden - Prague had not been finished not approved by the Ministry of Transport). Therefore we do not know its proposed parameters, so we can only establish principles aimed at the improvement of node functions without regard to up-to-date plans.

The recent plans propose an underground high-speed railway station under the historical centre of Ústí nad Labem, while the high-speed railway would underpass the entire inner-city in a tunnel, which would be a part of Central Bohemian Upland Base tunnel (which should lead from an area east of Litoměřice to the area of district Předlice in Ústí nad Labem with a total length of about 18 km). The original plan was that the high-speed railway would leave the Central Bohemian Upland Base tunnel on the territory of Střekov municipal district (on the right bank of Elbe river), cross the Elbe river on a new bridge and the high-speed railway station would be located on the site of the eastern throat of recent railway station Ústí nad Labem-západ and continue on the surface in the corridor of recent railway no. 130 Ústí nad Labem - Chomutov up to Ore Mountains Base Tunnel (EGBT). The plan had been changed esp. concerning the hazardous area of the chemical plant Spolchemie a.s., which is located just next to the railway station Ústí nad Labem-západ and which poses a potential danger of chlorine leak, which might cause an immediate threat to life in low-lying parts of Ústí nad Labem (including areas of all railway stations in Ústí nad Labem). The recent proposal counts with an underground high-speed railway station protected by gastight doors which should in case of a chlorine leak protect passengers and users of the railway station. The recent proposal has, therefore, a few disadvantages:

- The underground arrangement of high-speed railway in Ústí nad Labem does not allow full integration of the high-speed railway into the rail node Ústí nad Labem (without further costly investments)
- There cannot be a platform to platform transfer between trains using the high-speed railway and trains using conventional railways (passengers have to transfer between ground-level conventional-railway station and underground high-speed station)
- The underground high-speed railway station can be built only as a part of the Central Bohemian Upland Base tunnel - which would be constructed as the last section of the high-speed railway on the Czech side (the timing of realization might depend on the availability of funding and therefore it might be even delayed decades after the completion of construction of other sections). Therefore there would be needed a provisional solution - e.g. reconstruction of the railway station Ústí nad Labem-západ, which would serve as the station for high-speed trains until the Central Bohemian Upland Base tunnel with underground railway station would be completed.
- The underground arrangement of high-speed railway in Ústí nad Labem would have significantly higher costs and would be more technically complicated (e.g. the digging/drilling works would be endangered by undetonated bombs from WWII bombardment).
- In case of malfunction of the anti-gas protection system of the underground railway station, the consequences would be much more devastating, than in case of location of the station on the ground, since the chlorine is higher than air and therefore tends to concentrate in lowest layers of the atmosphere (including underground facilities).

The underground arrangement would have also positive impacts:



- The underground station would be favourably located in the historical and administrative centre of Ústí nad Labem
- The high-speed railway operation would cause no noise pollution to the inner city of Ústí nad Labem

To improve node function it would be beneficial to:

- Examine potential connections of the proposed underground section of high-speed railway in Ústí nad Labem to other railways and in case of its feasibility - realize these connections, for example:
  - Direct connection to Děčín:
    - > Either through railway no. 090 - probably connected to the underground railway station allowing transfer between regional trains and long-distance trains in the underground station, but not allowing direct connection of Děčín and Prague through the Central Bohemian Upland Base tunnel without changing the direction of the train in the underground station;
    - > Or through railway no. 073 - on the right bank of Elbe river - so without connection to the Ústí nad Labem underground station. This connection would allow the potential use of the Central Bohemian Upland Base tunnel by freight trains using the route through Děčín (e.g. in case of EGBT closure).
- Secure as convenient transfer between trains using the high-speed railway and trains on the conventional railway as possible (e.g. by direct access from platforms of the underground high-speed railway station to recent station Ústí nad Labem hl.n., which would remain a node for regional trains).
- Upgrade city infrastructure in the vicinity of a proposed underground high-speed railway station, e.g. by:
  - Creating public transit terminal - terminal of city and regional public transit
  - Building high-capacity P+R parking garages
  - Effectively redeveloping the entire area in the vicinity of the proposed station - esp. by using Transit-oriented development principles - by channelling high-intensity poly-functional development (offices, services, housing) into the vicinity of the proposed station and securing optimal accessibility of the railway station for all groups of users (drivers, public transit passengers, pedestrians, cyclists, handicapped people). The redevelopment could use vacant land and brownfields in the area and perhaps even sites of public institutions in the area (e.g. the public buildings could be redeveloped to provide more floor space for more intensive use).
- Deal with conflict of interests between spatial development in Ústí nad Labem and the hazardous area of the chemical plant Spolchemie a.s.
- Examine the need for modernization of marshalling yard in Ústí nad Labem and in case of positive results realization of modernization
- Examine the need for new road/rail intermodal terminal in Ústí nad Labem in connection to EGBT or further development (increasing of capacity) of the recent tri-modal terminal in port Ústí nad Labem and in positive case - realize it (and in any case secure space for potential future development of intermodal operation in Ústí nad Labem)
- Ensure sufficient capacity for freight trains in railway node Ústí nad Labem (not to be limited by passenger traffic)
- Ensure sufficient capacity for waiting of freight trains on the Czech side of EGBT





One of the crucial problems of the future development of the railway node Ústí nad Labem is dealing with hazards connected to the operation of the chemical plant Spolchemie a.s., which is located within inner-city of Ústí nad Labem and just a few hundred meters from the city centre. As mentioned above, the recent plan is to build the high-speed railway station underground. This solution would create higher investment and operating costs, than in the case of a ground-level station.

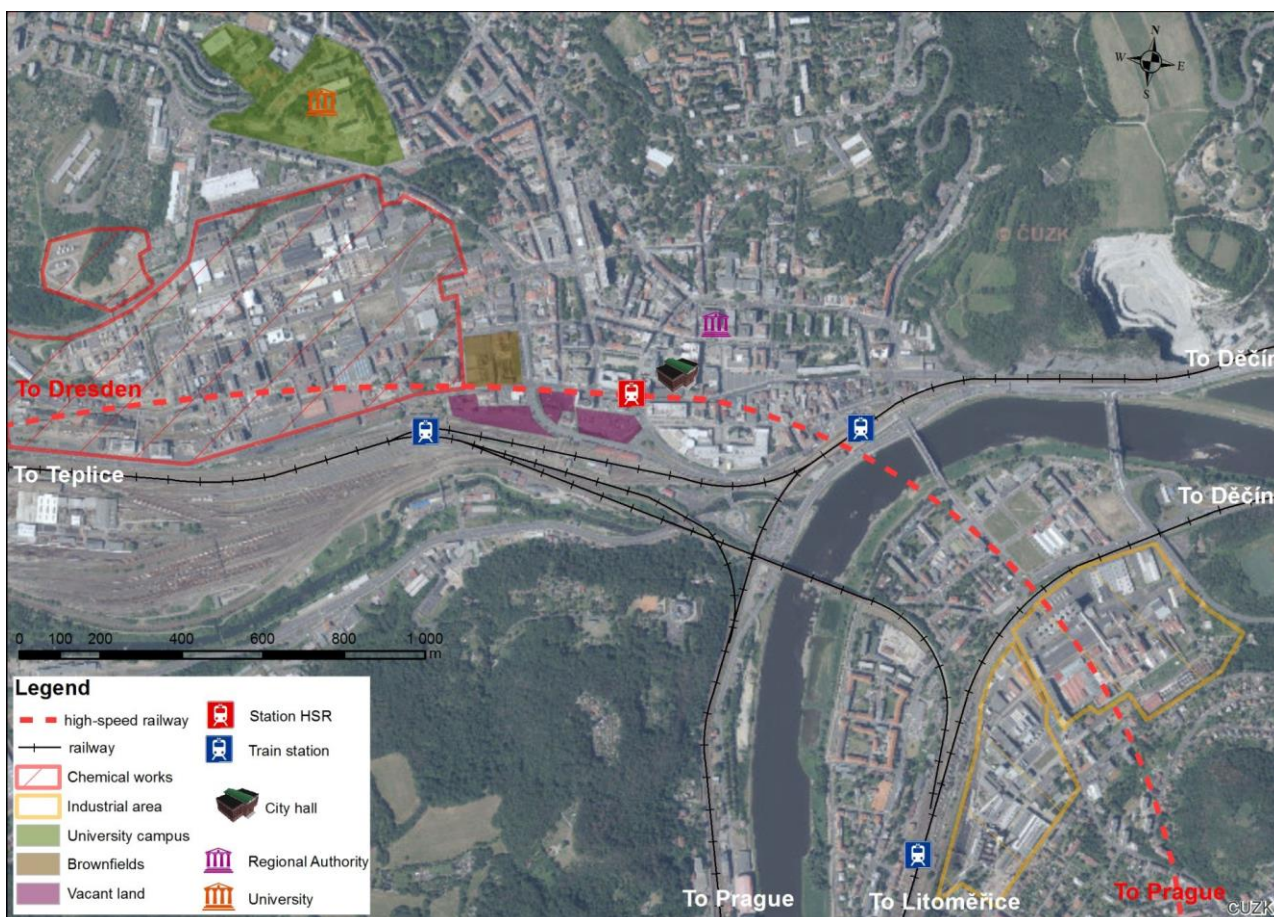
The main concern about conflict of interests with chemical production is, however, undermining of potential positive effects of high-speed railway service for the city of Ústí nad Labem by limitations created by the chemical production in the inner city. As mentioned above, great areas of Ústí nad Labem are endangered by a potential leak of chlorine. Such danger might hold back potential investments, which could follow completion of the high-speed railway - esp. in office and housing real estate. These investments would be also reduced by the fact that home-seekers, as well as companies looking for representative locations for their offices, do not want to move to a place next to disturbing heavy-industry areas. Therefore, it is needed to examine, whether the potential costs of moving the chemical plant to a less conflicting location would not be lower than the direct and hidden costs of keeping the chemical plant in the inner-city. We must also take into account that the commercial value of the site of the chemical plant for redevelopment will multiply once the high-speed railway with a station nearby to this site will be opened.

The city of Ústí nad Labem is more affected by structural problems than any other city of similar size in the whole Czech Republic. It has undergone strong deindustrialization, which led to a loss of more than 10 000 jobs in traditional industrial enterprises throughout the city and the creation of a huge number of brownfields. It has some of the biggest socially excluded localities and some of the highest numbers of socially excluded (esp. Roma) people among Czech cities with unprecedented physical and social deprivation. And it suffers from poor quality of the environment, esp. by a high level of air pollution, unprecedented industrial odour from chemical and (plant and animal) fat/oil processing, high level of noise pollution, high level of soil and soil-water contamination in old industrial areas and pollution of rivers (esp. of Bílina river). Unlike in other similar cities, there has been no major investment in the industrial sector, which would create more than 1 000 jobs throughout the last three decades. Therefore, Ústí nad Labem is one of the least attractive cities in the Czech Republic for living and business. High-speed railway is a great opportunity to change housing and business climate in Ústí nad Labem and reduce structural problems affecting the city, but its full potential might be used only when the industrial burden on the city environment would be significantly reduced.

The other important measure aimed at improvement of node functions is to ensure efficient development in the vicinity of the future high-speed railway station as possible. There are relatively extensive vacant lots and brownfields in the vicinity of future stations, which can be used for intensive redevelopment. Further, there are several public buildings (where different public services reside), which (or whose sites) can also be used for redevelopment and intensification of use (e.g. by replacing some buildings by buildings with bigger floor-space). Such redevelopment must allow convenient use of the railway node by different groups of users, such as motorists (by creating sufficient capacities of P+R in the vicinity of the station), public transit passengers (by securing as a convenient transfer from vehicles of city and regional public transit as possible), pedestrians (securing maximal walkability), cyclists (creating biking infrastructure and B+R facilities) and handicapped people (barrier-free design). For the attractiveness of public transit, it is necessary to secure the supply of services useful for passengers within a short distance from the station (so passengers can get what they need when walking from/to high-speed rail station). The redevelopment should in any case respect local dominants and avoid tearing-down buildings valuable from the architectural point of view (the built-up environment of Ústí nad Labem has been negatively influenced by extensive destruction of old buildings - either by WWII bombing or by communist rebuilding program).

To ensure maximal convenience of the Ústí nad Labem railway node, it is needed to assess the condition of the marshalling yard in station Ústí nad Labem-západ and future demand for marshalling in Ústí nad Labem railway node and the case of a need secure modernization of recently unused marshalling yard. Further, it is needed to assess capacity needs of rail freight transport in the node and remove potential bottlenecks, secure sufficient capacities for waiting of freight trains on the Czech side of the EGBT (for the case when the freight trains would have to give the capacity to passenger expresses or for the case of short-term closure or reduction of capacity of the tunnel). In case of intermodal transport, we can assume that the increasing of capacity for freight trains through high-speed railway could lead to higher demand for intermodal operation in Ústí nad Labem and therefore it should be assessed how this demand could be satisfied (by increasing of the capacity of the recent tri-modal terminal and/or by building brand new road/rail terminal on a suitable location - e.g. in the area of the railway station Ústí nad Labem-západ.

**Map 17: Railway node Ústí nad Labem**



Source: Created in ESRI ArcMap 10.4. Base Map: Ortofotomapa ČÚZK

#### 4.2. Process of node development (analysis of the processual dimension)

The process of node development can be divided into two basic steps:

- planning of high-speed railway
- planning of complementary measures



The process of planning of high-speed railway is very complex and time-demanding. In recent practice in the Czech Republic, it needs to undergo with next steps:

- Feasibility study of the high-speed railway Dresden - Prague
- Approval of the investment project of the high-speed railway Dresden - Prague (based on the feasibility study) by the Central Commission of the Ministry of Transport
- EIA assessment
- Spatial Permit
- Construction Permit

The basis for real preparation is the approval of the investment project by the Ministry of Transport (where the Central Commission is in charge of such approval), after which is SŽCZ entitled to pay for documentation and surveys (such as a geological survey) for EIA process and process of obtaining Spatial Permit. In case of the project of High-speed railway between Dresden and Prague, the Ministry of Transport has approved, that the preparation steps for the EIA process and process of obtaining Spatial Permit can start before approval of the investment project by the Ministry (to speed-up preparation processes).

Another crucial step in the EIA process are appeals and objections, in which the investment project can be altered (e.g. to prevent damage to the natural habitat or environmental stress on settlements). This can also happen in the process of obtaining the spatial permit when other stakeholders (such as different state institutions, municipalities, private companies, and the general public) can claim their objections against proposed investment (e.g. against its corridor) so the project can be significantly altered even in this process. Once the proposed project gets a spatial permit, SŽCZ can start with acquiring of land necessary for the realization of the project. When the land is acquired the investor can apply for the construction permit. We must also bear in mind, that all construction-related official approvals have a limited time frame - so when the project is not realized on time, the investor has either to apply for the pro-longing of the approval, or the approval is terminated.

All the steps mentioned above can take even more than 10 years in recent Czech practice. Even in case of smooth process of preparation without any obstructions on any side usually does not take less than 7 years from approval of the project by the Ministry to beginning of construction of the main objects (EIA process usually takes up to 2 years, spatial permit process at least another year (when it starts before the end of EIA process), acquiring land can take not less than 2 years and construction permit process and public procurement for the builder another two years). On top of all time-demanding processes burdened by bureaucracy, the investor has also to conduct a high number of public procurements (for project design, feasibility study, preparation of documentation for EIA process, EIA assessor, preparation of documentation for spatial permit process, the realization of geological survey, preparation of documentation for construction permit process, preparation for the acquisition of land, documentation for realization of construction, procurement for the builder, procurement for technical overseeing of construction and even procurement for the supervision of the project). Some of these services might be procured as part of one procurement, and some can be delivered by contractors, who deliver them for more projects (e.g. supervision). But the high number of necessary public procurement processes further complicates the preparation and over-burdens SŽCZ with bureaucracy and also endangers timing of preparation since there can be appeals against the results of the procurement, which significantly prolongs the procurement process. Unless there would be conducted significant changes of the building law (and consecutive laws) and in the efficiency of the process and of work of relevant public officials, we



cannot expect, that the approval process for construction of any section of the high-speed railway would take from now less than ten years before the start of construction.

Potential significant changes of the building law and related legislation might however also endanger the efficiency and speed of preparation of the project and approval processes because it would take some time until the public officials and other relevant stakeholders would learn how to work under new legislation and until bugs of upgraded processes would be dealt with. We must, therefore, bear in mind, that the process of preparation of high-speed railway would be very complex, time-demanding and would require a maximum concentration of all relevant stakeholders and would probably take more time than anticipated.

While preparation of high-speed railway construction is mainly in hands of SŽCZ as an investor, it is crucial to ensure the cooperation of other relevant stakeholders - and in case of the railway node Ústí nad Labem especially The City of Ústí nad Labem and the Ústí Region. Their involvement is crucial esp. in case of spatial planning (Development principles of the Ústí Region and Spatial plan of Ústí nad Labem) and in some administrative steps regarding obtaining EIA, spatial permit and construction permit (although officials of both the city hall and the regional authority in charge of these administrative processes are under the jurisdiction of the state). It is also essential to include other stakeholders and the general public and into the planning process to reduce the risk of obstructions from their side.

The planning of complementary measures in railway node of Ústí nad Labem includes different sorts of actions, which have different investors. In all railway-related measures, the investor should be SŽCZ, so it will be primary in hands of state level. The City of Ústí nad Labem along with the Ústí Region should take a primary role in building public transit terminal in connection to the high-speed railway station and building P+R parking facilities (although private investors might take part on it). The private sector would have the main role in the redevelopment of the area in the vicinity of the station, but the City of Ústí nad Labem should ensure principles of this development, esp. through spatial planning and negotiating with developers. The potential removal of disturbing chemical production would be in hands of the owner of the chemical plant, but it would be feasible only if the public sector (esp. the State) would finance it.

Further planning steps complementary to the preparation of high-speed railway construction should include:

- Feasibility study of potential connections of the high-speed railway and conventional railways in the railway node Ústí nad Labem (SŽCZ)
- Study of needs of freight transport in connection to high-speed railway construction (SŽCZ)
- Spatial plan of the City of Ústí nad Labem (City of Ústí nad Labem)
- Sustainable urban mobility plan of the City of Ústí nad Labem (City of Ústí nad Labem) - for the horizon after 2030
- Spatial study for the redevelopment area of high-speed railway Station Ústí nad Labem (based on principles of Transit Oriented Development)
- Feasibility study for moving of hazardous chemical production out of inner-city (The City of Ústí nad Labem)



**Table 14: Stakeholders of activities connected to the development of Ústí railway node**

Activity / Stakeholder	SŽCZ	Ministry of Transport	City of Ústí nad Labem	Ústí Region	Developers	State institutions	Private investors
High-speed railway	Investor	Approval / Overseeing	Partner	Partner			
Railway connections	Investor	Approval / Overseeing	Partner	Partner			
Station accessibility	Investor	Approval / Overseeing	Co-financing		Partners / co-financing		
Public transit terminal	Partner		Co-financing	Investor			
P+R parking garages	Partner		Co-financing	Co-financing	Co-financing		
Transit-oriented re-development			Planning/city infrastructure	Partner	Private infrastructure	Redevelopment of buildings	
Reduction of chemical industry disturbance			Partner	Partner			
Modernization of marshalling yard	Investor	Approval / Overseeing	Partner				
Development of intermodal terminal	Partner		Partner				Investor

In connection with planning processes related to the preparation of high-speed railway construction and improving node functions, there is also a crucial need for securing sufficient capacities of competent representatives of relevant stakeholders (not only at SŽCZ, but also the Regional Authority of Ústí nad Labem, City of Ústí nad Labem, and relevant authorities for EIA, spatial permit and construction permit processes). Without skilled planners and administrators, with sufficient personal capacities could be the whole planning process less efficient, longer and its results might not fulfil the potential arising from bringing high-speed railway into Ústí nad Labem railway node.



### 4.3. Networking activities

The preparation of high-speed railway Dresden - Prague is connected to intensive cooperation between public authorities and institutions on both sides. The official cooperation between most important stakeholders (e.g. DB Netz and SŽCZ) on the preparation of the new railway line and EGBT is intensive in about last 4 years, during which, several cross-border planning projects have been realized. The last project “Grenzüberschreitende Zusammenarbeit zur Entwicklung des Eisenbahnverkehrs Sachsen - Tschechien“ had been finished by the end of 2019, and another Memorandum on cooperation on the preparation of the new railway line had been signed in March 2020. The cooperation on the planning of the new line focuses on creating a final proposal of parameters of the high-speed line (route, travelling time, technology), project preparation of EGBT and partially also on the transfer of know-how from the German side. The cross-border section with EGBT must be prepared in close cooperation and through co-financing of both sides. Therefore, it should be ensured, that also stakeholders concerned about the development of Ústí nad Labem railway node would benefit from the transfer of know-how from the German side.

We can expect, that the redevelopment of the vicinity of the future high-speed railway station in Ústí nad Labem might attract some developers, who have already experienced in station-area development (e.g. from projects in Prague or abroad). They might also contribute to the transfer of know-how, however, there should be always a concern for the quality of development (and its poly-function character) to prevent unwanted forms of development.

Practices connected to the development of high-speed railway nodes can be transferable even within the Ústí Region. Apart from Ústí nad Labem railway node, there would be another 3 nodes or stops connected to the high-speed railway:

- Roudnice nad Labem (railway stop serving the region of Roudnice nad Labem)
- Litoměřice (connection to the Litoměřice allowing high-speed railway service from recent railway station Litoměřice-město to Prague)
- Most (branch of the high-speed railway)

Further, there will be many other railway nodes and cities on railways benefiting from the high-speed railway, where passenger trains using high-speed railway would potentially stop:

- Teplice
- Děčín
- Litvínov
- Chomutov

Therefore good practices from one node (within or outside the region) can be transferred to other nodes not only through SŽCZ but also through the Regional Authority of Ústí Region (who can be in charge of building terminals for regional public transit in the vicinity of railway stations), developers (one developer might participate on projects around more nodes), architects and other stakeholders. We can expect, that significant improvement of accessibility of Prague (and/or Dresden) might boost the redevelopment of many railway nodes and their surroundings, which might get much more attractive for investment into office space, housing, retail space, and other functions.



## 5. PRESENTATION OF NECESSARY ADDITIONAL DEVELOPMENTS

### 5.1. Identification of regional challenges and regional needs

There had been identified following regional challenges and needs:

- Securing faster (passenger) train connection to Prague from regional centres, such as:
  - Ústí nad Labem
  - Děčín
  - Teplice
  - Most
  - Litvínov
  - Chomutov
  - Litoměřice
  - Louny
  - Žatec
  - Kadaň
  
- Securing faster and/or direct (passenger) train connection to Dresden from main regional centres, such as:
  - Ústí nad Labem
  - Děčín
  - Teplice
  - Most
  - Chomutov
  
- Increasing capacity of RFC 7 for freight trains, esp. of:
  - The cross-border connection between Ústí nad Labem and Dresden
  - Railway no. 090 Prague - Dresden
  
- Improving the quality of infrastructure of railways:
  - 072 / 073 Kolín - Ústí nad Labem - Děčín (core network, neglected state)
  - 130 / 140 Ústí nad Labem - Chomutov - Cheb (comprehensive network, obsolete)
  
- Securing operability of railway no. 090 / 098 Prague - Ústí nad Labem - Děčín (the railway had been modernized in the 1990s and early 2000s and would need another larger-scale reconstruction in 2030s)
  
- Securing operation of freight trains with a length of at least 740 m (following Regulation No 1315/2013/EC) at following railways:



- 072 / 073 Kolín - Ústí nad Labem - Děčín
- 130 / 140 Ústí nad Labem - Chomutov - Cheb
- 090 / 098 Prague - Ústí nad Labem - Děčín - Bad Schandau
- 131 Ústí nad Labem - Bílina
- Switch 3 kV DC on railways to 25 kV/50 Hz AC power supply - to secure enough capacity of power supply for operation of stronger locomotives, reduce power loss in the power supply system, and allow smooth integration of high-speed railway into railway nodes in the region - the power supply system should be switched concerning putting high-speed railway into operation
- Secure sufficient capacities of intermodal terminals with proposed improvements of railway infrastructure and spatial reserves for their future development
- Secure redevelopment of the vicinity of railway stations in regional centres to capitalize the potential of faster train connection, such as in:
  - Ústí nad Labem
  - Děčín
  - Teplice
  - Most
  - Chomutov
  - Litvínov
  - Litoměřice
  - Louny

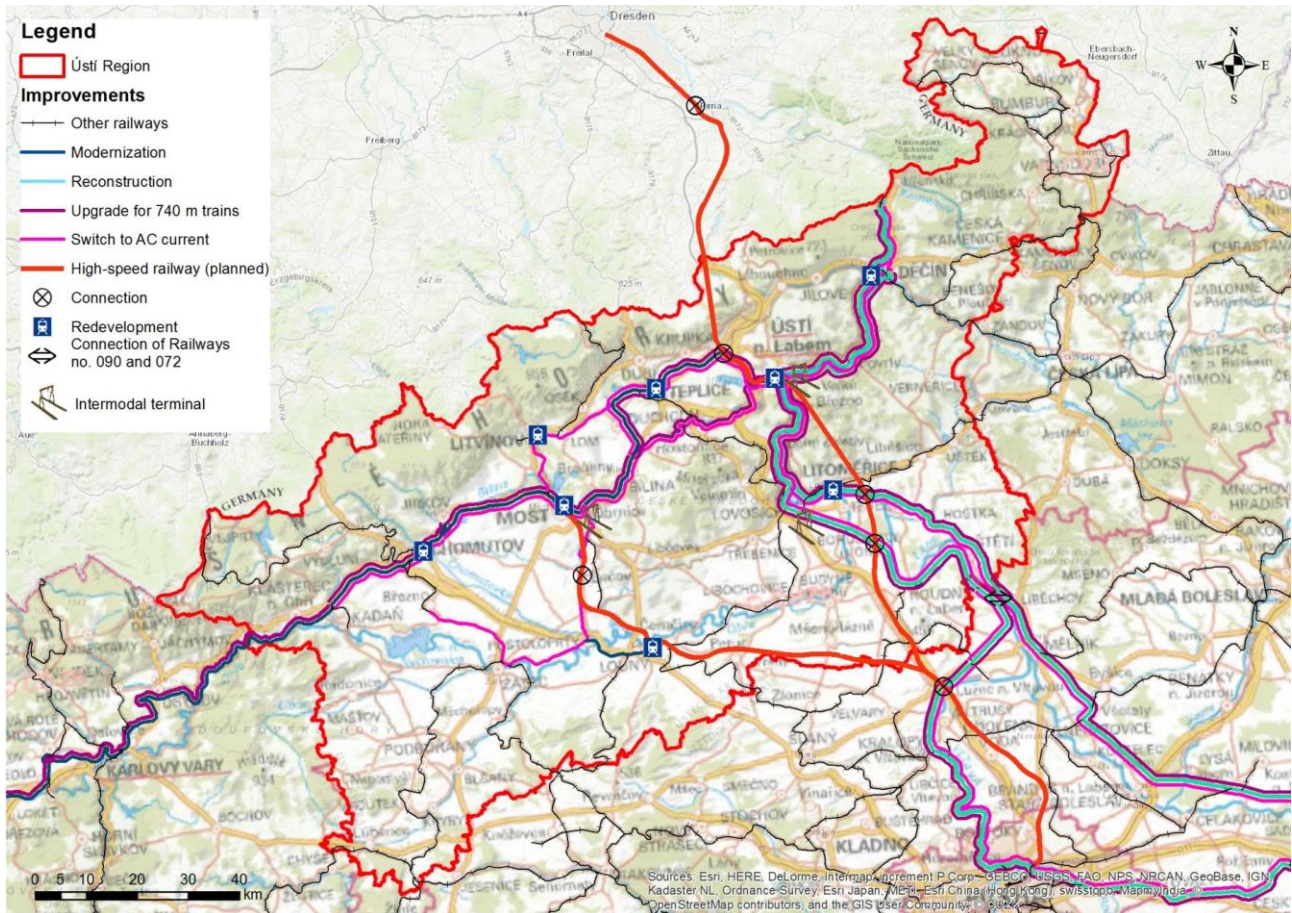
There is also a state-wide challenge regarding the overall capacities of RFC 7 in the Czech Republic:

- Completion of high-speed railway Prague-Brno-Ostrava, or increasing capacity of the recent corridor between Prague, Brno, and Ostrava for freight trains (otherwise the additional capacity created by EGBT and/or high-speed railway Prague - Ústí nad Labem could not be fully used).



## 5.2. Maps with possible improvements

**Map 18: Proposed improvements**



Source: Created in ESRI ArcMap 10.4. Base Map: Základní mapa ČÚZK, ESRI Topographic Map of the World

Possible improvements include the following actions:

- Construction of high-speed railway Prague - Ústí nad Labem - Dresden and its branch - new fast railway Nová Ves - Most
- Construction of connections of the high-speed railway Prague - Ústí nad Labem - Dresden to conventional railways:
  - connection to railway no. 090 near Mlčechvosty
  - connection to railway no. 090 near Bohušovice nad Ohří
  - connection to railway no. 072 near Litoměřice
  - connection to railway node Ústí nad Labem
  - connection to railway no. 130 near Přestanov (to allow direct connection Dresden - Teplice)
- Construction of connections of the fast railway Nová Ves - Most to conventional railways:
  - connection to railway node Louny



- connection to railway no. 123 near Počerady
- connection to railway node Most
- Modernization of railway no. 130 and 140 Ústí nad Labem - Cheb to allow shorter travelling times (concerning future high-speed lines serving Teplice, Chomutov, Karlovy Vary, and other destinations through high-speed railway and railway no. 130 and 140), the secure optimal technical condition of the railway and allow operation of freight trains with length up to 740 m
- Reconstruction of railway no. 072 and 073 Kolín - Ústí nad Labem - Děčín to secure the optimal technical condition of the railway and allow operation of freight trains with length up to 740 m
- Reconstruction of railway no. 090 and 098 Praha - Ústí nad Labem - Děčín - Bad Schandau to secure the optimal technical condition of the railway and allow operation of freight trains with length up to 740 m (larger-scale reconstruction should be done after 2030)
- Conversion from 3 kV DC on railways to 25 kV/50 Hz AC (should be prepared or realized as part of modernization and reconstruction projects) on all railways with 3 kV DC:
  - 130 Ústí nad Labem - Kadaň
  - 090, 098 Prague - Ústí nad Labem - Děčín - Bad Schandau
  - 072, 073 Kolín - Ústí nad Labem - Děčín
  - 123 Most - Žatec
  - 124 Žatec - Březno u Chomutova
  - 134 Oldřichov u Duchcova - Litvínov
  - 135 Most - Louka u Litvínova
- Connection of railways no. 090 and 072 near Mělník
- Redevelopment of railway nodes and urban areas in the vicinity of railway stations (based on principles of Transit Oriented Development) at least in:
  - Ústí nad Labem
  - Teplice
  - Most
  - Chomutov
  - Děčín
  - Litoměřice
  - Louny
  - Litvínov
- Modernization and electrification (AC 25 kV/50 Hz) of railway no. 114 Louny - Postoloprty
- Increasing capacity of intermodal terminals in Ústí nad Labem, Lovosice and Obrnice with development of railway infrastructure and growth of demand for intermodal transport.



### 5.3. High-speed lines for freight trains

Freight trains will use high-speed railway section between Ústí nad Labem and Heidenau (or Chlumec - Heidenau in the case when freight trains would use conventional railway no. 130 to approach EGBT), which purpose is beside high-speed connection for passenger traffic also in increasing capacity of cross-border railway connection for freight trains. While this section of high-speed railway is being designed for a maximum speed of 200 km/h, freight trains should have a maximum speed of 120 km/h.

Apart above-mentioned cross-border section, other sections of high-speed railway Prague - Dresden should be predominantly used by passenger trains. Its importance for freight traffic would lie in the relief of conventional railways from long-distance trains (expresses and fast trains) and therefore by increasing the capacity of conventional railways (esp. railway no. 090 Prague - Ústí nad Labem) for freight trains. Since there would be more connections of the high-speed railway with conventional railways (e.g. connection to railway no. 090 near Bohušovice nad Ohří and connection to railway no. 072 near Litoměřice), we can assume, that other sections of high-speed railway might be occasionally used by freight trains. Since we have no up-to-date information from a feasibility study of high-speed railway Prague - Dresden, we do not know, whether the high-speed railway would be designed for freight trains on other sections, then the cross-border section and whether it would be suitable for them (e.g. whether there would be not to high grade, sufficient axle load, etc.), but we see an opportunity in the proposed high-speed railway to be occasionally used by freight trains.

Freight trains could potentially use other sections of the high-speed railway in case of capacity shortage on conventional railways, and/or during night hours, when there would be limited passenger trains operation and when it would be beneficial to relieve Moldau river valley and Elbe river valley from noise pollution created by freight trains. Freight trains could also potentially use a section of the high-speed railway between Hrobce and Litoměřice for connection between railways 090 and 072.

In general, we can assume, that freight trains would use high-speed railway section Ústí nad Labem - Heidenau, and potentially (but too a limited extent) also other sections (esp. during night hours). Benefits of the high-speed railway between Prague and Ústí nad Labem for freight transport would be represented esp. by relieving the capacity of conventional railways from passenger traffic, but limited use of this high-speed route by freight trains might increase benefits of its construction.

### 5.4. Presentation of future capacity utilization and modal shift

The use of high-speed railway Prague - Dresden for long-distance passenger traffic would relieve the capacities of conventional railway no. 090 Prague - Ústí nad Labem - Děčín and following railway Děčín - Bad Schandau - Dresden. These capacities could be used by freight trains to secure the capacity needs of freight transport. Further, the use of the cross-border section of high-speed railway Ústí nad Labem - Heidenau by freight trains would increase the capacity of cross-border connection for freight trains, which is limited not only by passenger train traffic on recent connection but also by the availability of only one suitable connection between the Czech Republic and Germany for freight trains.

We can assume that the increase in capacity of the railway no. 090 for freight trains would be at least equivalent to the number of long-distance passenger trains that would relocate to the high-speed railway. As of now (timetable 2019/2020), there are 14 pairs of express trains in a day on the railway no. 090, which will certainly use high-speed railway once, it would be put in use. Therefore we can assume that there would be additional capacity for at least 14 pairs of freight trains a day on the railway Prague - Ústí nad Labem.



The most obvious bottleneck of RFC 7 in the Ústí Region is the cross-border connection between the Czech Republic and Germany. By opening EGBT, there would be not only created additional capacity for freight trains, which could use EGBT (up to 150 freight trains a day), but also additional capacity by switching express passenger trains from the old route (7 pairs a day). On the other side, there is a threat of reducing the capacity of the old route during night hours, where the recent operation conflicts with noise protection measures (60 freight trains between 22.00 and 6.00 according to GVD 2018/19). Therefore, opening EGBT might not mean a day-round increase of capacities, while freight train operation during night-hours might just move from a recent route to EGBT. That would mean that hypothetical capacity of cross-border connection might increase by about 104 freight trains a day.

Additional capacity for freight trains for connection between the Czech Republic and Germany might bring not only an absolute growth of transport performance of rail freight traffic but also the growth of the share of rail freight traffic on modal split (and slight reduction of the share of road freight traffic - if the overall performance would not significantly increase).

## 5.5. The business model of new lines/developments

Planned developments would rely on financing from the public sector and esp. by co-financing from ESIF. Concerning the current financial situation, it is certain, that the Czech state itself would not be able to secure financing of proposed developments. The co-financing from ERDF, CF, CEF and even other funds and/or through other instruments is, therefore, a necessity for realizing proposed developments.

The proposed development would also bring the greater extent of rail infrastructure (high-speed railway Prague - Dresden, new fast connection Nová Ves - Most, longer station tracks on railways no. 072, 073, 090, 098, 130 and 140, etc.), therefore also increase of costs of operation of railway infrastructure. Modernization and reconstruction of railways no. 072, 073, 130, 140, 090, 098 and other ones would, on the contrary, reduce costs of thorough renewal and maintenance of these railways for some time. Combined costs of operation of railway infrastructure would in any case grow.

Also, the costs of operation of passenger train service would significantly grow since the proposed development would lead to an introduction of many new railway lines and in general to the growth of passenger train service performance (train km). The number of transported passengers would also significantly grow, what would higher revenues from the fare. Since the vast majority of train service lines would be ordered as public transit service by the state or by the regional authorities, we can assume, that the growth of costs of passenger transit service operation could be higher than the growth of revenues (so there might be overall higher financial losses of the passenger train service operation than now).

Revenues from payments for the use of rail infrastructure would on the other hand increase. It would increase by payments from the operation of new railway lines as well as from payments of a higher number of freight trains, which would use the railway infrastructure in the region. We can assume, that the performance of rail freight transport would increase - if the capacity of entire RFC 7 and other freight corridors in the Czech Republic would increase, but there is a question of how strong will be the increase of the intensity of rail freight traffic. If the payments for the use of rail infrastructure would provide sufficient revenues for rail infrastructure operation and renewal (or would not be too much behind these costs), we can assume, and that the higher performance of rail freight traffic - the better for the business model of railway operation.

There would be also significant side and hidden benefits of the proposed development. The upgrading or rail infrastructure and increase of its capacity might also boost the performance of intermodal transport and boost the future development of intermodal terminals in the region. It might even bring new direct investments into industries needing a high volume of freight transport. The redevelopment of areas within

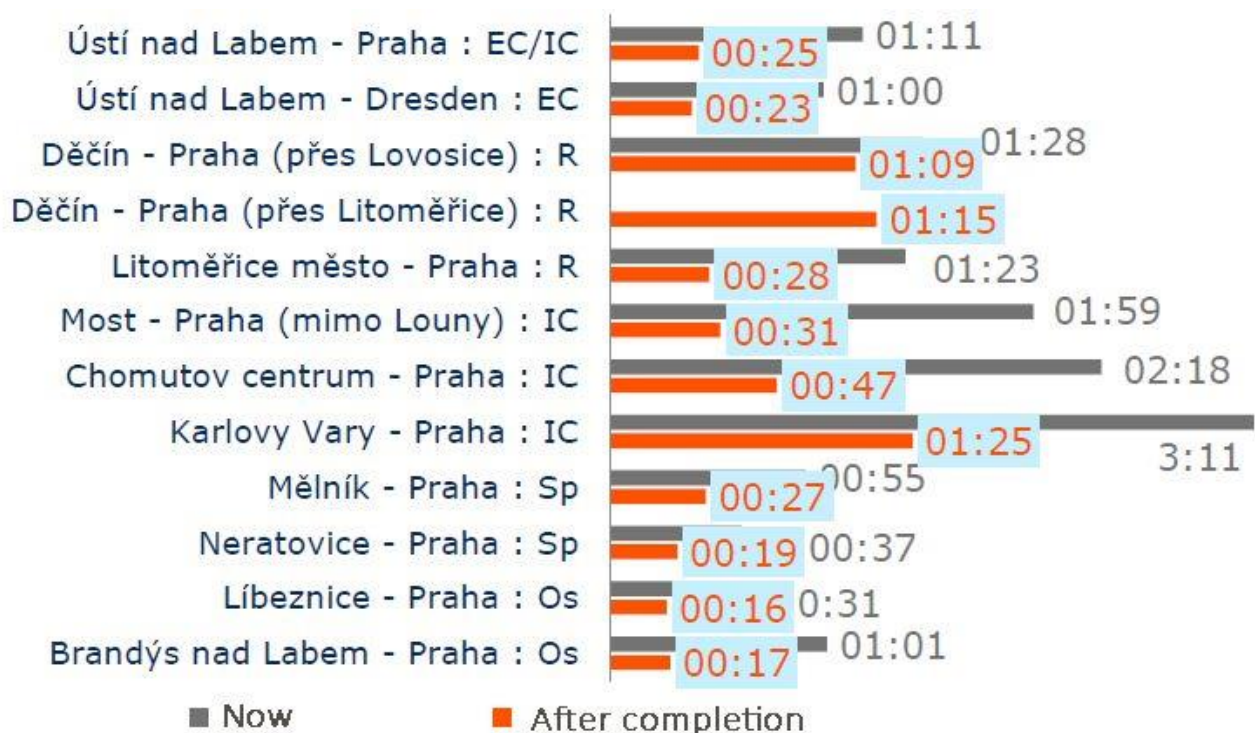


the vicinity of railway stations, which would benefit from faster train connection to Prague, Dresden and other capitals would also contribute to the side and hidden benefits of upgraded railway infrastructure. Such new investments might contribute to goals of the regional policy of the Czech Republic (esp. concerning regions affected by structural changes of the economy and phasing-out of the coal mining industry) and replace other costly interventions, which would be otherwise carried out from taxpayer's money to boost local and regional development. It might bring new jobs (even desirable white-collar jobs), increase the performance of the local and regional economy, reduce unemployment and increase tax-base and tax revenues in certain cities.

### 5.6. Improvement of regional and cross-border accessibility (opportunities provided by the rail sector)

Regional accessibility would be significantly improved by the construction of high-speed railway Prague - Ústí nad Labem - Dresden and associated fast railway connection Nová Ves - Most. The improvement of time-accessibility is illustrated in Picture 8.

**Picture 8: Projected travelling times now and after completion of the high-speed rail network**



Source: SŽCZ (2019)

On top of that, there would be also a significant improvement of time-accessibility of Dresden from several cities in the Ústí Region, such as:

- Teplice - no direct connection by now, fastest connection travelling time - 89 minutes, travelling time 29 minutes after completion of EGBT



- Most - no direct connection by now, fastest connection travelling time - 124 minutes, travelling time 54 minutes after completion of EGBT
- Chomutov no direct connection by now, fastest connection travelling time - 144 minutes, travelling time 70 minutes after completion of EGBT

As a result of the completion of high-speed railway and proposed upgrading of infrastructure of conventional railways, the vast majority of the Ústí Region would have a faster train connection to Dresden and some other relevant targets in Germany (Berlin, Leipzig, etc.).

Further opportunities arise from the potential of the direct connection of EGBT to the railway no. 130 in Teplice direction. This connection could be used by freight trains, e.g. for export of coal (until the coal mining would be phased out), transport of chemical inputs and products to and from the chemical plant in Záluží and for the transport of other cargo processed or produced in western parts of the Ústí Region. Such a connection might dramatically shorten travelling time of rail freight trains from western parts of the Ústí Region, which would not have to use a recent longer route where the trains have to wait for an appropriate train slot.

## 5.7. Possible chronology of developments

The chronology of developments is just a prediction, which might not be exactly fulfilled. The planning practice in the Czech Republic is very complicated and examples of investment projects, which are being prepared and carried out in line with the original time-plan, are very rare.

Many investment projects depicted in Table Table 15 have chronology based on a recent estimation of SŽCZ (2020). The chronology of other investment projects is based on an estimate of the author. In the case of high-speed railway sections, the timing of certain planning steps had been also estimated for a better understanding of the planning process on the Czech side.

Since the Feasibility study of the High-speed railway Prague - Dresden (with a branch to Most) is supposed to be finished by mid-2020, we can expect that the proposal for high-speed railway construction might be approved by the Central Commission of the Ministry of Transport by late 2020. In this case, the Ministry of Transport has approved, that the preparation steps for the EIA process and process of obtaining Spatial Permit can start before approval of the investment project by the Ministry (to speed-up preparation processes). Therefore we can expect that works on documentation needed for EIA assessment and spatial permit might start already during 2020. Since the project of high-speed railway construction is new in the Czech planning process, we might expect that preparation steps would take probably more time than usual. Therefore, it is not realistic to expect, that the EIA approval would be given to respective project proposals sooner than two years after the beginning of the EAI assessment process. We can assume the same for the spatial permit process.

The construction permit process is further complicated by the fact, that the investor must acquire land needed for construction. It might not be so serious obstacle in the case of sections with base tunnels, but it would probably delay preparation of the section between Prague and Litoměřice, which is dominantly planned on the surface and which leads through valuable land of Prague suburbs.

The high-speed railway Prague - Dresden is planned in three phases on the Czech side. While there is recently a plan, that the cross-border section should be constructed as the first section, its technical difficulty and high investment costs, might lead to contemporary construction with section Prague - Litoměřice, which has only shorter tunnel sections and which would be technically less complicated and less expensive. In any case, certainly, the section Litoměřice - Ústí nad Labem with Central Bohemian Uplands base tunnel would be the last one between Prague and Dresden to be constructed and put into



use and it might even follow after a longer pause (depending on the eligibility of funds). The branch Nová Ves - Most would also follow later, after completion of section Prague - Litoměřice (and modernization of railway Louny - Postoloprty should follow this project to allow competitive connection to Žatec).

The reconstruction of railway Kolín - Ústí nad Labem - Děčín would be carried out throughout the 2020s, but since its final shape had been so far not decided (the decision on feasibility study had been revoked and it is being actualized by now), the exact chronology is not yet determined. Since the reconstruction would not be as demanding for the planning phase, as the construction of new sections, we can expect that some construction works might already start within a few years. The conversion of this railway from 3 kV DC to 25 kV/50 Hz AC would be already prepared during reconstruction (traction system and safety equipment) and the conversion itself would be undertaken after completion of transforming stations, which would follow the finishing of reconstruction of the entire railway.

The modernization of railway Ústí nad Labem - Cheb had already started by certain projects (Reconstruction of railway station Řetenice, increasing of railway speed on railway section Oldřichov u Duchcova - Bílina) and it would also follow during the 2020s. All projects have already designed a timeline by SŽCZ, but we can expect that there would be some delays. Also, these projects should allow later conversion from 3 kV DC to 25 kV/50 Hz AC, which would probably commence in the early 2030s concerning the reconstruction of railway Prague - Ústí nad Labem - Děčín.

The reconstruction of railway Prague - Ústí nad Labem - Děčín - CZ/DE does not have a clear timeline. We can expect that the full-scale reconstruction would take part during the 2030s when it would be already 30 years since the last complex reconstruction and a lot of railway infrastructure would need to be renewed. In particular, section Děčín - CZ/DE (-Bad Schandau) should be probably reconstructed after EGBT would be opened to do not affect the capacity of this bottleneck section by reconstruction. The conversion to 25 kV/50 Hz AC would also relate to the reconstruction and would be done by the end of reconstruction.

Conversion of other electrified railways in the Ústí Region to 25 kV/50 Hz AC power system would not be such a great priority since the priority would be in creating continuous corridors with 25 kV/50 Hz AC power system at most important directions, while some other railways could remain under 3 kV DC power system until their planned reconstruction (if their converter stations would not be shut down as part of the conversion of other railways). The conversion might be later and at some industrial railways serving coal mines, the conversion would probably not happen since these industrial railways would be abolished along with phasing-out of coal mines (e.g. industrial railway to coal mine Tušimice, which should be shut down in 2040).

Redevelopment of urban areas in the vicinity of the railway station would be boosted by the completion of relevant sections of high-speed railway and by related projects on conventional railways. Therefore it would be attractive to the private sector and developers no earlier than in the 2030s. While there is enough time to start the redevelopment, it is already on time to acquire land in these areas, and the public sector needs to be in control of as much land as possible (to prevent potential negative impacts of speculative investment).



**Table 15: Chronology of developments**

Project / timeline	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031-35	2035-40	2041-45
High speed railway Prague - Litoměřice	✓	EIA	SP		CP									
High speed railway Ústí nad Labem - Heidenau		✓	EIA	SP		CP								
High speed railway Litoměřice - Ústí nad Labem	✓					EIA	SP		CP					
New fast connection Nová Ves - Most	✓													
<b>Reconstruction of railway Kolín - Ústí nad Labem - Děčín</b>														
Optimalization of railway s. Děčín východ - Děčín-Prostřední Žleb														
Reconstruction of railway station Děčín východ dolní nádraží														
Optimalization of rail. s. Ústí nad Labem-Střekov - Děčín východ														
Optimalization of rail. s. Litoměřice d. nádr. - Ústí n. L.-Střekov														
Optimalization of railway s. Mělník - Litoměřice dolní nádraží														
<b>Modernization of railway Ústí nad Labem - Cheb</b>														
Reconstruction of railway s. Ústí nad Labem západ - Chabařovice														
Reconstruction of railway station Bohosudov														
Reconstruction of railway station Řetenice														
Increasing of rail. speed on rail. s. Oldřichov u Duchcova - Bílina														
Reconstruction of railway section Bílina - Most														
Reconstruction of railway station Most														
Reconstruction of railway section Most - Kyjice														
Reconstruction of railway section Kyjice - Chomutov														
Reconstruction / relocation of railway station Chomutov														
Reconstruction of railway section Chomutov - Kadaň-Pruněřov														
Reconstruction of railway section Kadaň-Pruněřov - Perštejn														
Reconstruction of railway section Perštejn - Stráž nad Ohří														
Reconstruction of railway Prague - Ústí nad Labem - Děčín														
Reconstruction of railway Děčín - CZ/DE														
Conversion from 3 kV DC current to 25 kV/50 Hz AC														
Railway section Stará Boleslav - Děčín - CZ/DE														
Railway section Kutná Hora - Stará Boleslav														
Railway section Ústí nad Labem - Děčín - CZ/DE														
Railway section Ústí nad Labem - Kadaň														
Railway section Ústí nad Labem - Kralupy														
Other electrified railways in Ústí region														
Connection of railways no. 090 and 072 near Mělník														
Redevelopment of urban areas in vicinity of railway stations														
Modernization of railway no. 114 Louny - Postoloprty														

Source of data: SŽCZ (2020). Some timelines had been taken over from SŽCZ, others estimated.





*Explanation:*

✓	approval of the investment project
EIA	EIA assessment
SP	spatial permit process
CP	construction permit process & acquisition of land
	construction works

## 5.8. Possible pilot projects

A Future layout of the railway system in the Ústí Region is being designed in Feasibility study of the High-speed railway Prague - Dresden, which designs not only proposed high-speed railway, but also its relations to conventional railways. To maximize synergies and complementarities, we should build on what we would know about the shape of high-speed railways in the region and make sure, that all future investments into railway infrastructure and infrastructure of public transit in the region would be in line with the proposed high-speed railway projects. This concerns also development in the vicinity of railway stations, which would benefit from faster connections through high-speed railways. It encompasses also the potential future development of rail freight transport and intermodal transport, which could be boosted by the increased capacity of the railway network for rail freight transport by finishing the high-speed railway network. Therefore, one direction of pilot projects should include **follow-up studies** that would design the development of conventional railways, freight transport infrastructure and urban development concerning planned high-speed railway projects. We should avoid a situation, that future steps might undermine potential for synergies and complementarities arising from actions related to high-speed railway projects (e.g. by preserving unattractive travel times between centres which should benefit from connection to the high-speed railway, reducing the capacity of rail yards, which might be needed after completion of high-speed railways, low-rise development in the vicinity of railway stations, etc.).

Follow-up studies should cover the following topics:

- Network relation within the railway system in connection to the high-speed railway - optimizing travel time (securing optimal future travel time of all lines within the railway system)
- Capacities for development of rail freight transport and intermodal transport with high-speed railway (securing sufficient capacities of passing tracks and sidetracks, securing suitable areas for the future development of intermodal terminals)
- Spatial development studies and regulation plans for the redevelopment of the vicinity of railway stations
- Optimization of the regional public transit system to the high-speed railway
- Feasibility study of moving hazardous and disturbing chemical production out of the Ústí nad Labem inner-city
- Feasibility study of the connection of City of Děčín to high-speed railway Prague - Ústí nad Labem - Dresden (examining opportunities for direct express train line using Central Bohemian Uplands Base Tunnel)

Another field of pilot activities would be a **public acquisition of land** to get in control over the development of the vicinity of railway stations and/or land necessary for the construction of the high-speed railway and its facilities.



Investment pilot projects should encompass modernization and reconstruction projects on conventional railways, which would be connected to high-speed railways and used by express trains running partially on high-speed railways. Such projects should be designed to maximize complementarities to high-speed railway projects. Among these projects, we can identify:

- Projects on the railway between Ústí nad Labem and Teplice - need to secure as short travel time as possible:
  - Reconstruction of railway section Ústí nad Labem západ - Chabařovice
  - Reconstruction of railway station Bohosudov
- Projects on the railway between Most, Chomutov and Karlovy Vary - need to secure as short travel time as possible:
  - Reconstruction of railway station Most
  - Reconstruction of railway section Most - Kyjice
  - Reconstruction of railway section Kyjice - Chomutov
  - Reconstruction/relocation of railway station Chomutov (construction of new centrally-located railway station)
  - Reconstruction of railway section Chomutov - Kadaň-Prunéřov
  - Reconstruction of railway section Kadaň-Prunéřov - Perštejn
  - Reconstruction of railway section Perštejn - Stráž nad Ohří



## 6. STAKEHOLDER ANALYSIS AND STAKEHOLDER INVOLVEMENT

### 6.1. Identification of relevant stakeholders for the elaboration of Corridor Capitalisation Plans

Level of influence and power  +       -	<i>Keep satisfied</i>	<i>Key players</i>
	1. ŽESNAD CZ. (rail freight companies)	1. SŽCZ
	2. České Dráhy a.s.	2. Ministry of Transport
	3. ČD Cargo a.s.	3. Ústí Region
	4. Port operators (SBO, České přístavy, a.s.)	4. Cities (Ústí nad Labem, Most, Teplice, Chomutov)
	5. Cities (Děčín, Litoměřice, Louny)	
	<i>Monitoring</i>	<i>Keep informed</i>
	1. General public	1. Rail freight companies
	2. Regional transport associations	2. Rail passenger traffic operators
	3. DG MOVE	3. Operators of intermodal terminals (ČD DUSS, Metrans, Upline)
	4. INEA Advisory Group for CEF Transport	4. Municipalities and cities affected by the planning and construction of high-speed railways
	-	+
	<i>Level of interest and commitment</i>	

### 6.2. Description of the approach towards stakeholder involvement during the elaboration of the regional analysis of challenges and needs

Since the Ústí Region is not going to conduct any pilot action, we haven't approached any stakeholders so far. We used available data, our expert knowledge, and consultations with external experts to elaborate on the regional analysis of challenges and needs.



## 7. ANNEXES

### 7.1. Maps

Map 1: Relief of Ústí Region .....	7
Map 2: TEN-T corridor and urbanized areas of the region .....	8
Map 3: TEN-T and RFC corridors in the area .....	9
Map 4: Connections of the planned high-speed railway to TEN-T and RFC corridors in the area .....	10
Map 7: Intermodal terminals in and around the Ústí Region .....	13
Map 8: Barriers to transport in and around the Ústí Region .....	14
Map 9: Road network system in the Ústí Region .....	16
Map 11: Allowed speed on railway lines in Ústí Region .....	20
Map 9: Rail infrastructure in the Ústí Region .....	21
Map 10: Waterways and Airports in and around the Ústí Region .....	23
Map 11: Multimodal terminals in and around the Ústí Region .....	25
Map 12: Border crossings between Ústí Region and Germany .....	26
Map 13: Settlement system .....	28
Map 14: Main floater and destination points.....	38
Map 15: Agricultural industry in the Ústí Region .....	40
Map 16: Logistic, storage and distribution points in and around the Ústí Region .....	42
Map 17: Railway node Ústí nad Labem.....	74
Map 18: Proposed improvements .....	81

### 7.2. Figures

Chart 1: Population increase of the Ústí Region since 2000 .....	29
--	----

### 7.3. Tables

Picture 1: Traction system and the number of tracks .....	11
Picture 2: Maximum allowed speed on railways .....	12
Picture 3: Traction system and the number of tracks .....	19
Picture 4: ČD-DUSS Lovosice terminal .....	50
Picture 5: Trimodal terminal Ústí nad Labem (Metrans) .....	51
Picture 6: Intermodal terminal Obrnice .....	52
Picture 7: Projected travelling times now and after completion of high-speed rail network .....	58
Picture 8: Projected travelling times now and after completion of high-speed rail network .....	85



## 8. SOURCES

### Data sources:

MDČR (2020): Přepavní proudy věcí. Available at: <https://www.sydos.cz/cs/proudy.htm>

Statistical yearbook of the Ústí Region 2018. Available at: <https://www.czso.cz/csu/czso/statisticka-rocenka-usteckeho-kraje-2018>

SŽCZ (2018): Prohlášení o dráze celostátní a regionální. Platné pro přípravu jízdního řádu 2018. Available at: <https://www.mdcr.cz/getattachment/Dokumenty/Ministerstvo/Prepravni-a-tarifni-vestnik/Prepravni-a-tarifni-vestnik-2016/Prepravni-a-tarifni-vestnik-23-2016/Prohlaseni-o-draze-2018.pdf.aspx>

SŽCZ (2019): Nové železniční spojení Praha - Drážďany. Prezentace aktuálního stavu příprav vysokorychlostních tratí v ČR.

SŽCZ (2020): Interaktivní mapa investiční výstavby. Available at: <https://www.stavby.SZCZ.cz/>

VDB CZSO (2020): Public database of the Czech Statistical Office. Available at: <https://www.vdb.czso.cz>

### Documments, strategies and studies:

Územně technická studie VRT Praha - Litoměřice (2013)

Územně technická studie Nová trať Litoměřice - Ústí nad Labem - st. hranice SRN (2015)

Územně technická studie Nová trať Kralupy nad Vltavou - Most (2015)

Technicko-provozní studie. Technická řešení VRT (2017)

Studie proveditelnosti optimalizace trati Kolín - Všetaty - Děčín (2015)

Strategie rozvoje Ústeckého kraje do roku 2027

Dopravní plán Ústeckého kraje 2017-2021

The Transport Policy of the Czech Republic for 2014-2020 with the Prospect of 2050

Transport Sector Strategies

The strategy of freight transport for period 2017-2023

The conception of conversion to a single power system concerning priorities of 2014-2020 period and requirements TSI ENE

Program of development of fast railway connections in the Czech Republic

The spatial development policy of the Czech Republic

Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU Text with EEA relevance

TEN-T Corridors: Forerunners of a forward-looking European Transport System. ISSUES PAPERS OF EUROPEAN COORDINATORS. TEN-T DAYS2016, Rotterdam.

TRANSPORT MARKET STUDY RAIL FREIGHT CORRIDOR ORIENT/EAST-MED RFC 7



RFC Orient/East-Med CID Book 3 - Terminal information for timetable 2019

Annex to the Rail Freight Corridor Orient/East-Med Investment Plan

Orient/East-Med. Third Work Plan of the European Coordinator Mathieu Grosch April 2018

Study on Orient / East-Med TEN-T Core Network Corridor. 2nd Phase Final Report. December 2017

Corridor 24 Development Rotterdam - Genoa. One Corridor - One Strategy! Towards an enduring interregional alliance for the integrated and balanced development of the Rhine-Alpine Corridor November 2014

SPATIAL AND TRANSPORT DEVELOPMENT IN EUROPEAN CORRIDORS - EXAMPLE CORRIDOR: ORIENT/EAST-MED. Connecting and Competing in Spaces of European Importance. 2019. Akademie für Raumforschung und Landesplanung, Hannover.

Global trends to 2030. Challenges and choices for Europe. European Union Institute for Security Studies, Brussels, 52 pp.

**Web pages:**

[www.SZCZ.cz](http://www.SZCZ.cz)

[www.rsd.cz](http://www.rsd.cz)

<https://www.vysokorychlostni-zeleznice.cz/>

[www.zdopravy.cz](http://www.zdopravy.cz)

[www.koridory.cz](http://www.koridory.cz)

[www.k-report.net](http://www.k-report.net)

<https://www.ceskepristavy.cz/>

<https://cdduss.com/>

<https://www.upline.cz/>

<https://www.metrans.eu/terminal-operations/trimodal-terminal-usti-nad-labem-cz/>