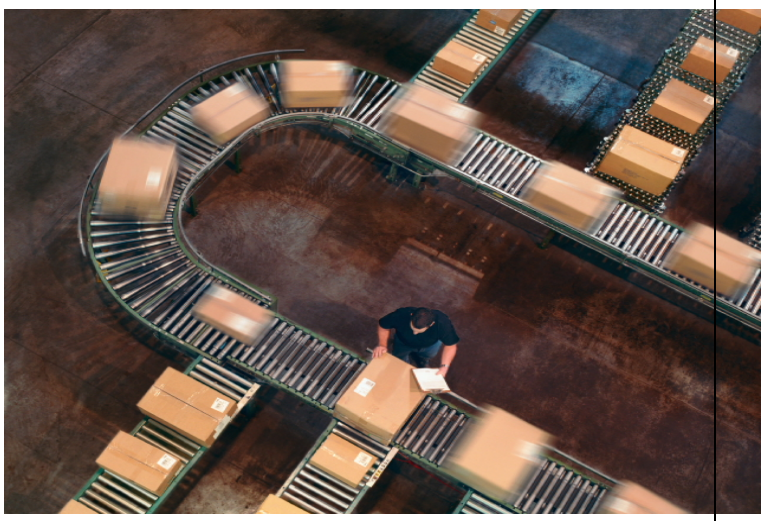
TRANSPORT SECTOR STRATEGIES 1st phase

(time horizon: 2013)



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Introduction

1.1 Purpose of document

"Transport Sector Strategies" represent one of the strategic documents addressing the area of transport in the Czech Republic. The document elaborates in more detail on certain areas of the basic strategic document for the development of the transport sector which is the Transport Policy of the Czech Republic for the period 2005-2013 (hereinafter Transport Policy of the CR)[1].The need to compile a strategic document dealing with the question of development of the transport infrastructure of individual modes of transport arises from the effort to coordinate this development in a manner supporting competitiveness of individual segments, and fully utilising the positive aspects of individual modes of transport.

The strategic document reflects the need to assess the position of individual segments in a wider context in terms of territory and time. It takes into consideration the overlap of transport access in relation to building trans-European networks including trends that can be expected based on the situation in the country and in Europe. The document also endeavours to outline general trends and development of individual segments in the long term until 2030.Compilation of "Transport Sector Strategies" is foreseen by the Operation Programme on Transport (OPT), where it is stated: "Strategic documents[2] will be (…) completed to include development sector strategies outlining specific actions jointly contributing to achieving main objectives of the policy in transport along with corresponding plans for their implementation".

The first phase of the strategic document "Transport Sector Strategies" represents a summarized short-term concept forming a basis for elaborating the second phase document, which shall be drafted next and contain a detailed and comprehensive mid-term and long-term outlook. The main objective of the document is refinishing the objectives of the Transport Policy of the CR and specification of the expected plan for implementing steps towards fulfilment of key areas of transport set forth in OP Transport. It also includes a mid-term prediction of funding transportation projects, and also an outline of a long-term funding plan. The outline for 2030 is included in the document mainly to show how the implementation of certain projects will progress that were initially planned for the short-term period but are postponed due to lack of financial resources caused by the current economic crisis. It can be expected that the impacts of the crisis on financing will not be felt just during the crisis itself, but also in the period following after the crisis due to the need to compensate the budgetary deficits in public finances.

The document should not be seen as an instrument to influence the short-term period as due to the lengthy preparation of transport construction projects, projects for the period till 2013 are already being implemented or at the start of the implementation phase and on the top of this, the preparation of certain important projects is complicated and requires a lot of time. It should rather be seen as a document defining the longer-term strategic

[1] Transport Policy of the CR defines the principles for development of individual transport sectors but does not adresss individual projects. Individual areas described by the Transport Policy should be addressed in more detail by the related sector strategies, as for example the dokument Transport Sector Strategies.
[2] Particularly Transport Policy 2005-2013

framework selecting the projects to be prepared in the first place, or in which the prepararation should be speeded up.

Transport Sector Strategies address the following key aspects:

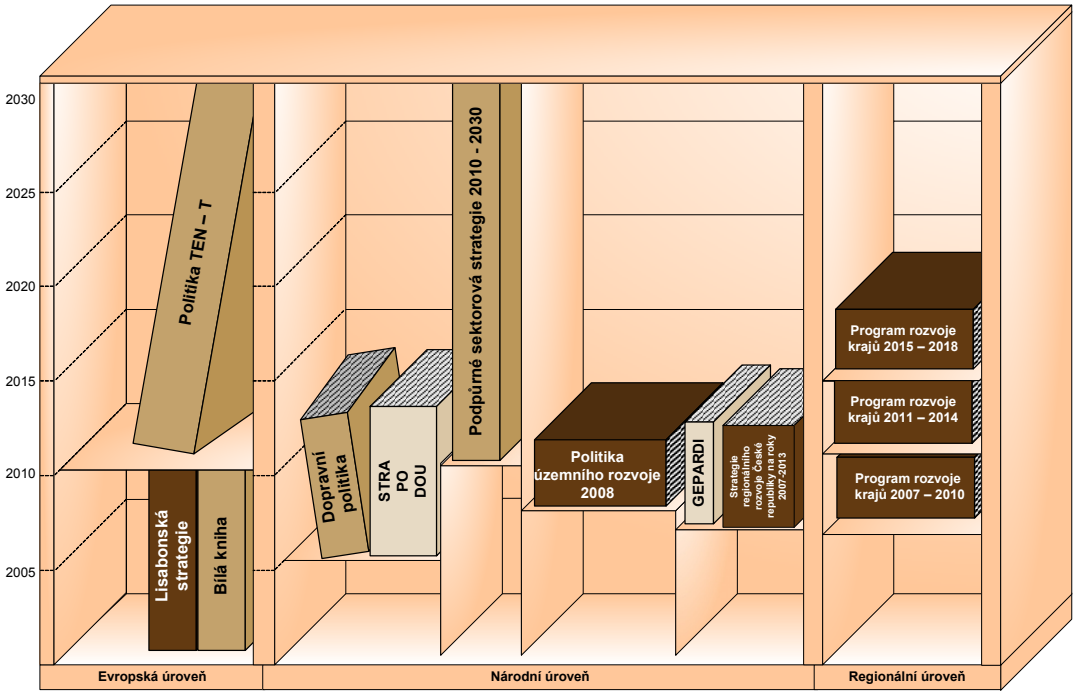
- ***Competitive positions***: evaluation of the competitive position of the sector within the Czech transport market and of its expected trends, founded upon the basis of representative market segmentation and upon comparison of services with competing modes of transport;
- ***Core business***: establishment of a set of core services for the distinct market segments (including both transport and value-added services) together with their associated performance requirements (in terms of quality, reliability, responsiveness, price, customer relationship environment) that could ensure a long-term sustainable economic development for the sector and should constitute the focus for its development in the medium to long-term;
- ***Gap-analysis***: performance of a gap analysis establishing the additional requirements and facilities deemed necessary for successful implementation of the defined core services. This should address not only the needs regarding additional infrastructure facilities but also potential re-engineering of current commercial/operational processes, the introduction of new business/service concepts or innovative technologies that are judged essential to attain the earmarked core service goals;
- ***Implementation and investment plan***: definition of a framework implementation strategy that maximises the benefits to the end-user community minimises risks and optimises the utilisation of investment resources.

1.2 Linkage of documents to further strategic documents

The transport strategy in the Czech Republic is resolved through several documents. They differ from each other in relation to

- the time frame that they cover (short-term, medium-term and long-term strategic documents)
- territorial scope (documents on the European, national or regional level)
- width of thematic spectrum (documents resolving only part of the transport strategy, such as infrastructure, documents dealing with transport as a whole, and documents covering wider topics)

The chronological, territorial and thematic scope of “Transport Sector Strategies” and a summary of documents that concern the area of transport in the CR, and which must be taken into consideration when compiling “Transport Sector Strategies”, is shown in the following figure.



Politika TEN-T	Policy TEN-T
Lisabonská strategie	Lisbon Strategy
Bílá kniha	White Paper
Dopravní politika	Transport Policy
STRAPODOU	STRAPODOU
Podpůrné sektorové strategie 2010-2030	Support Sector Strategies 2010 – 2030
Politika územního rozvoje 2008	Territorial Development Policy 2008
GEPARDI	GEPARDI
Strategie regionálního rozvoje České republiky na roky 2007-2013	Regional Development Strategy of the Czech Republic for the years 2007-2013
Program rozvoje krajů 2015-2018	Regional Development Programme 2015-2018
Program rozvoje krajů 2011-2014	Regional Development Programme 2011-2014
Program rozvoje krajů 2007-2010	Regional Development Programme 2007-2010
Evropská úroveň	European Level
Národní úroveň	National Level
Regionální úroveň	Regional Level

Figure 1 Framework summary of strategic documents for the area of Transport;
Explanations (from general to specific projects):
Dark brown – documents on territorial development also including transport sector;
Brown – strategic documents from the area of transport;
Light brown – documents on transport infrastructure.

The main reference document is the Transport Policy of the CR. This is the supreme strategic document of the Ministry of Transport for the area of transport in the CR. This document resolves the main needs and objectives of the transport sector.

Priorities and objectives of the Transport Policy had to be elaborated within follow-up strategic dociments, mainly the Support Strategy for Territorial Transport Service (STRAPODOU) and the General Plan for Transport Infrastructure Development (GEPARDI). Their importance is based on the fact that these strategies deal with issues which are the most demanding for financing from public budgets. While STRAPODOU

was accepted by the Government, the drafting of GEPARDI was suspended. Sector Strategies should therefore solve this defficiency of transport-political process.

The objectives and measures of the Transport Policy are compiled in the following strategic documents:

- The Support Strategy for Territorial Transport Service (STRAPODOU) aimed at the public transport system and its support is the basis for elaborating the Public Services Act;
- National Cycling Strategy of the Czech Republic;
- National Road Traffic Safety Strategy
- Innovation technology (INOTECH);
- GEPARDI – General Plan for Transport Infrastructure Development, which has not been finalised and this must be solved by elaborating the documents for both phases of Transport Sector Strategies.

At the national level, the area of transport is addressed by two documents with a broader thematic coverage sponsored by the Ministry for Regional Development, that is by the Policy of Territorial Development of the Czech Republic 2008, which is the top instrument of territorial planning and by the Regional Development Strategy of the Czech Republic. Another related document is the Support Strategy for Territorial Transport Service (STRAPODOU) that covers the public transport system and its support (it is a follow-up strategy related to the Transport Policy 2005-2013 that further develops its selected priorities and objectives). All these documents can be seen as top instruments of territorial planning. The Timetable for Building Transport Infrastracture (HVDI) represents the concept document.

On the regional level, it is also important to mention the Regional Development Programmes (RDP), which are medium-term general programme documents regarding support for regional development on the regional level.

In relation to completion of the document “Transport Sector Strategies”, accordance will be verified and the OP Transport may be modified accordingly.

The first phase document Transport Sector Strategies shall become the basis for completing the medium-term development plan of the transport infrastructure with a long-term outlook (2nd phase of Transport Sector Strategies, GEPARDI II), which shall be updated in the order of five-year intervals. The annual budget for transport infrastructure financing that is submitted every year to the Parliament of the CR[3] for approval shall be based on both phases of Transport Sector Strategies.

[3] Today the Timetable for building transport infrastructure (HVDI) functions as the supporting document for the annual financing budget.

1.3 Description of activities and members of the Joint Steering Committee

The “Support Sector Strategies” as a strategic document for the transport sector has laid out as its objective to formulate the needs of all key entities in this sector.

This led to the establishment on 14 April 2009 of the so-called “Joint Steering Committee” (JSC), whose members are important institutions and interest associations dealing with the area of transport including European Commission representatives. The objective of the JSC is to secure completion of the document “Support Sector Strategies” while respecting various needs of the main key players.

The JSC meets at joint sessions and comments on the current form of the elaboration of the document “Support Sector Strategies”.

Below is a list of the Joint Steering Committee members.

Table 1 Members of Joint Steering Committee

institution	part of institution
MD	Department of EU Funds (430) :
MD	Department of Transport Policy and the Environment (520)
MD	Department of Road Network (910)
MD	Department of Railways, Railway and Combined Transport (130)
MD	Department of Waterways (230)
MD	Department of Civil Aviation (220)
SFDIOPT	State Transport Infrastructure Fund
MP	Railway Infrastructure Administration
MP	Road and Motorway Directorate of the CR
MP	Directorate of Waterways of the CR
MMR	Department of Development and Regional Policy Strategy**
MZP	Department of EU Funds
EK	DG REGIO
EK	DG TREN
EK	DG ENV
AKAD	Transport Research Centre, v. v. i.
AKAD	ČVUT, Faculty of Transportation Sciences
AKAD	University of Pardubice, Jan Perner Transport Faculty
ZO	The Transport Union of the CR
AZO	Association of Regions of the CR

Key:

MD	Ministry of Transport
SFDI	State Fund for Transport Infrastructure
MP	Majority recipients
MMR	Ministry for Regional Development
MZP	Ministry of the Environment
EK	European Commission
AKAD	Academic and Research Institutes
ZO	Interest organization

1.4 Method of document preparation; the methodology used

The following procedures were used when drafting the document.

The primary starting point for the document is the original document "Support sector strategies for Operational Programme Transport" and also the comments by the members of the Joint Steering Committee with regard to this document.

The documentation specified in part 1.2 has been used for the part on **competitive positions** with the aim to ensure continuity with existing national and European documents. The documentation was analysed further. The methods used were synthesis of above given sources and the SWOT analysis.

The subsequent parts are based on these primary analyses. Based on the market segmentation and SWOT analyses, the **core services** to be provided to individual users have been defined. The core services thus reflect the market needs, but also the efforts to eliminate weaknesses, to provide security against potential risks that could distort the competitiveness of individual segments, while benefiting from the strengths of the current situation and development possibilities in the future.

The **gap analysis** follows from these parts and it specifies concrete projects of transport infrastructure to be implemented in order to fulfil the core services. It represents the intersection of the general part to the part on core services that defines the needs from a general point of view and to the part on the current situation. The **multi-criteria analysis** follows from the gap analysis with the objective to create an ordered list of projects based on their importance, while taking into account the criteria of attractiveness and feasibility as well. The multi-criteria analysis deals with the sectors of road and rail transport as these sectors are the majority ones in fulfilling the defined core services (see also Annex 2). The detailed procedure of multi-criteria analysis is given in the respective chapter. The projects of air transport and water transport were not included in the MCA. Projects of water transport were assessed according to their importance and degree of preparation by the Waterways Directorate. Air transport projects were not included in the MCA regarding the fact that in the Czech Republic, these projects are not financed from the national level and in some cases not even from public resources. OP Transport does not support such types of projects. Moreover, the number of these projects is limited.

For the purpose of drawing up the proposal of investment plan, the **analysis of financial situation** and **prediction of accessible resources** for financing particular projects of transport infrastructure were performed in the following chapter. In order to assess further development, income factors were considered. The accessible resources were predicted in three variants – restrictive, minimalist and progressive.

Finally **the investment plan** follows from the multi-criteria analysis. The objective is to show variants of solution how to use the expected available resources for projects based on the order of importance attributed to them in the multi-criteria analysis. The main objective of this plan is more to demonstrate the overall impact of the available resources on the key sector rather than planning for concrete dates of opening and completing of

individual constructions. A detailed description of the investment plan compilation is given in the respective chapter.

The logical interconnection of individual parts of the document is shown on the following scheme.

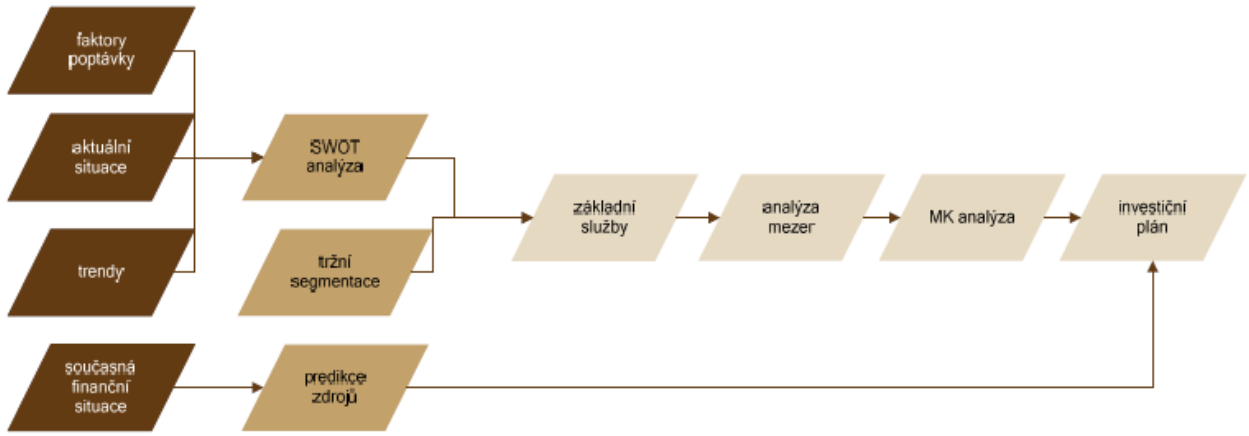


Figure 2: Logical framework of the documents

Faktory poptávky	Demand factors
Aktuální situace	Current situation
Trendy	Trends
Tržní segmentace	Market segmentation
SWOT analýza	SWOT analysis
Základní služby	Core services
Analýza mezer	Gap analysis
MK analýza	Multi-criteria analysis
Investiční plan	Investment plan
Současná finanční situace	Current financial situation
Predikce zdrojů	Prediction of sources

For the level of core services, the document takes into account the infrastructure needs as well as needs of non-infrastructure nature. The gap analysis and subsequent parts of the document work primarily with needs of infrastructure projects. The reasons why the chapters from the second part of the document concentrate on infrastructure projects are mainly the following:

- The needs of infrastructure projects are significantly higher than needs of non-infrastructure projects;
- The Operational Programme Transport that should provide a significant part of the resources for transport projects in the period 2007-13 concentrates on infrastructure projects;
- Currently, no unified list of non-infrastructure projects is available.
- Non-infrastructure projects are dealth with in more detail in other strategic documents related to the Transport Policy of the CR (STRAPODOU, INOTECH, NS BESIP and relevant legislation).

1.5 Method of document control and updating

The document “Support Sector Strategies” is compiled based on the impetus of the Ministry of Transport while respecting the comments and requirements of individual members of the JSC.

The director of the Department of Strategies (520) of the Ministry of Transport is responsible for document steering.

The document should reflect the current development in the area of transport, whether it concerns a change evoked by the economic situation (for example economic downturn caused by the crisis) as well as the change in needs of individual key players. The document will become part of the medium-term transport infrastructure development strategy with a long-term outlook (updated GEPARDI).

The Department of Strategy (520) should ensure updating of the document in relation to other strategic documents, always at least once in five years (in relation to the updating process of the Czech transport policy) and also always in relation to compiling new documents concerning the drawing of EU funding (ex. Operational Programmes) in such a way that these documents would reflect possible changes in the transport sector and its trends.

2

Competitive Positions of Transport Segments in the Czech Republic

2.1 Market segmentation

The basic assumption for assessing the competitive position of modes of transport is transport market segmentation. Primary segmentation of the market is separated into passenger and freight transport as the two basic segments. Both the factors and the trends of the demand in personal and freight transport are specified in the following chapters.

Each type of transport has its own irreplaceable place on the transport market. Within the framework of the transport policy process, it is therefore necessary to form such conceptions that lead to establishing cooperation between individual modes of transport, and on the contrary, to strengthening the competitive environment between service providers within the framework of individual modes of transport. Interconnection of transport policy objectives with infrastructure development plans is necessary to be secure with the help of a "conception pillar", which must be an integral part of transport infrastructure development plans at all levels.

The issue of the "concept pillar" will be resolved in greater detail in the 2nd phase document of Transport Sector Strategies, because this area will most likely also be a part of the European policy on the trans-European transport network (TEN-T), and more detailed specification of this important area securing the fulfilment of transport policy objectives will be the subject of the output of an expert team, which is being formed from the initiative of the European Commission. But it is not yet possible to anticipate the results.

Passenger transport

The starting point for resolving passenger transport will be an analysis of the current state, inter-departmental relations and trends and applicable strategic documents, of which the most important are the measures of the Transport Policy of the CR for 2005 – 2013 and developing from this, the Support Strategy for Territorial Transport Service (STRAPODOU).

It is possible to divide the issue of passenger transport into two basic segments - individual transport and public transport - whereas it is necessary to create conditions for cooperation of both segments (example - parking lots P&R, B&R and K&R). Public mass transport is mostly dependent on support from public sources by means of balancing payments, thus it is a public service. It must take advantage of individual modes of transport to be effective. These should thus be applied in those segments where they are advantageous[4].

It is thus advisable for the applicable public transport customers to order services on the basis of five-year transport plans, which would determine the position of individual modes of transport in the system. For these purposes, it is suitable to plan according to public transport segments:

> ***a) Long-distance transport*** – connections between major cultural, administrative and economic centres – urbanization areas of international relevance (with railway and air transport as priorities)

[4] one example is the fact that rail transport is more expensive, and therefore must be geared towards stronger transport corridors as the system's backbone, and should provide higher quality with smaller environmental impacts, and on the other hand, it should not be used for general service of municipalities where it is not effective and where it is not capable of providing quality service

b) Interregional transport – fast connections between domestic regional centres (with rail transport as priority augmented by bus lines in directions and with smaller transport flows or with underdeveloped railway infrastructure)

c) Regional transport backbones – backbones of regional and city systems (with priority on regional railways, metro, augmented by bus lines where railway infrastructure parameters are inappropriate)

d) Area transport service coverage – where the priority is to operate direct lines to target destinations within the serviced territory with minimisation of walking distances, with area of coverage preferred to speed of the connection. The segment of area transport service is usually covered with bus lines with lower transport capacity connected to the regional transport backbones in their nodes, if possible.

Without applying transport planning in line with the given segments, it will not be possible to develop a harmonised system of public transport benefiting from the advantages of individual transport modes and the current practice used in many regions will continue, where there are two systems of area service by road and rail that are not sufficiently interconnected, they are mutually competitive and are financed via compensation payments from the regional budgets. Integrated transport systems that gradually change this unsatisfactory situation are being developped in individual regions in different forms, but so far they usually only cover a smaller number of municipalities in the surroundings of regional cities.

It may be assumed that critical points of rail transport will be defined and proposed to be solved first, especially in the surroundings of major agglomerations and where the current qualitative or quantitative (capacity) indicators indicate critical values.

High-speed passenger transport (VRT) is currently based on the thesis that the implementation will be occur at the soonest after about 2018; nevertheless even in the period in question, investments may be commenced in relation to the issue. That is why this issue also needs to be dealt with. Only implementation of VRT in the surroundings of the main residential agglomerations will allow for separation of fast passenger transport (long-distance and inter-regional) from city transport. That will provide for sufficient capacity for all segments of rail transport including freight transport.

The issue of road transport will be resolved in the sense of the requirements of the European Transport Policy and the Sustainable Development Strategy. This means on the one hand satisfaction of citizen needs in the area of individual car transport (IAD), with the targeted offer of alternative public mass transport on the other.

In 2008, the regions and municipalities spent a total of CZK 4.683 bn for contracting public regular bus transport services, which is an increase of 8% compared to 2005. A total of 401.7 million passenger were transported (increase of 3.4% compared to 2005), which represents the performance of 9.35 bn passenger kilometres (increase of 8.6%).

In 2008, the regional and national budgets spent a total of CZK 9.120 bn for contracting public regular train transport services, which is an increase of 27% compared to 2005. A total of 177.4 million passenger were transported (decrease of 1.6% compared to 2005), which represents the performance of 6.803 bn passenger kilometres (increase of 2%).

Freight Transport

Defining market segments in freight transport may be performed based on a large quantity of criteria, because as opposed to passenger transport, here quantities of various commodities are transported requiring differing transport technologies. For maximum simplification and transparency, it is possible to base market segmentation upon the size of transported consignments. From this aspect, it is possible to categorize transported goods as:

- full loads
- bulk goods
- piece consignments

(a) Full loads

In principle this concerns the size of goods, where door-to-door shipping fills at least one bed unit or a freight vehicle or rail wagon. Based on the definition used in the White Paper on Transport, the consignment should weigh at least five (metric) tons, although this condition isn't regarded as effective. Transport of freely lying loose or liquid materials should be removed from this segment. These require specific handling equipment, and during trans-shipment, their fundamental characteristics generally change, such as weight and volume. But if these materials are transported in special packaging such as various types of containers, they may be included in this segment.

Around 1/5 of freight transport in Europe falls into this segment of full loads. The dominant type of transport here is road transport, making up half of all transport. Around 1/3 is transported by waterway transport, and the remainder is mostly transported along railway lines.[5] Full loads are a typical and suitable segment also for engaging combined transport.

From the aspect of commodity structure, full loads are represented in all types of goods, and practically in all segments of the economy. Industrial manufacture transport holds the greatest portion, led by mechanical engineering products and semi-finished products, followed by consumer goods and food for the commercial sector.
Full load consignments can be further divided in terms of quality requirements to consignments with demand on accuracy and speed of delivery, and consignments where requirements for these parameters are not so strict. While the first group is most dominantly implemented by road transport, it is possible to implement the second group without major technological barriers with rail transport (waterway transport in exceptional cases as well). In this case, price is the decisive factor. Rail transport is capable of implementing time-demanding transports only in the event of large volumes, if it is possible to join the locations of the source and destination by one compact train. The lower capability of securing consignments with greater demands on precision of delivery in the case of railway and combined transport is the result of insufficient interoperability, outdated technological procedures and insufficient capacity of the railway infrastructure (influenced by peaks in passenger transport, and meeting the technical and technological demands of transports to the required location (door to door). Thus the condition of the

[5] Data from the Final Report "Study on Freight Integrators", DG TREN

railway infrastructure plays a major role in this, including its technical facilities applying modern technologies.

The decisive indicators are price, quality of services and time and area accessibility. The speed of transport represents an associated indicator. The dominant type of transport is road transport.

(b) Bulk goods

This is the dominant transport segment in terms of total volumes. Its importance with gradual restructuring of modern economies eventually yields to transporting smaller consignments of higher-value goods. Goods in this segment are characterised by relatively small demands for speed in delivery, and in this case the transport price is the dominant factor. The dominant field in this sector has traditionally been rail transport, and perhaps also inland waterway transport and sea transport for short distances.

But by gradually making road transport technologies in road transport more effective, a major part of volumes in this segment switched mainly from rail transport to road transport. This is especially the case with transport of small quantities than what suffices for effective formation of compact trains. Moreover, missing railway connections form a barrier when servicing certain customers. Necessary reloading and handling of goods then makes the transport chain more expensive, thus devaluating rail transport. When transporting petroleum and its derivatives, just like natural gas, pipeline transport plays the fundamental role.

According to the commodity structure, the dominant ones are solid fuels and other mineral raw materials, petroleum products and other chemicals, followed by raw materials and products in the steel industry, construction materials and agricultural products.

Regarding rail transport's market position, its focus on solely this segment may be problematic, e.g. for example on coal transport. In the event of fluctuations and structural changes in the economy, rail transport is then incapable of flexibly reacting and offering suitable services for other prospective market segments.

Price is the decisive indicator. Associated indicators include price, quality of services and time and area accessibility. The dominant modes of transport are roadway and rail transport.

(c) Piece consignments

This segment may be further divided according to other characteristics. All goods that cannot be categorised into the two remaining categories fall into this segment. The fundamental characteristic is such a quantity of goods that does not allow for full use of the capacity of the means of transport or transport unit. From the aspect of its effective use, these must then be loaded with consignments to various destinations and for various customers. Within the framework of this segment, it is possible to differentiate mainly between package or postal services and pick-up services. Package services are known for creating sophisticated and global networks along with high demands on speed and reliability of delivery. The backbone transport fields here are rail, air and possibly sea transport, and road transport is used for area service.

Other smaller consignments that are not full loads are most often implemented with the help of pick-up services. Sea or air transport is then used for intercontinental transports

based on shipping speed demands. Road transport is the dominant form of land transport. Rail transport in Europe takes part in this segment just very marginally.

The decisive indicators include transport speed, quality of services and time and area accessibility. Price is an associated indicator. The dominant modes of transport are road and air transport.

In 2008, a total of 95.073 million tonnes of goods were transported by rail, which is an increase of 11% compared to 2005, in performance this is 15.437 bn tonne-kilometers (increase of 3.8%). In road transport, the transported volume was 431.855 million tonnes (decrease by 6.3%) and performance 50.877 bn tonne-kilometers (increase of 17.1%).

The transported volumes of inland waterway transport are influenced by climatic conditions. In 2008, a total of 1.905 million tonnes of goods were transported, which is 0.453 bn tonne-kilometers in performance.

Requirements for transport infrastructure

In terms of the relationship to the transport infrastructure, it is necessary to leave sufficient, but acceptable reserves in capacity of rail transport and decrease negative impacts of freight road transport. It is advisable to avoid certain unfavourable long-term development trends manifesting themselves in Western Europe and hard to mend in the context of the EU Transport Policy. That is why the following procedure would be convenient to apply:

- Define conditions for acceptable division of inter-disciplinary transport labour
- Introduce suitable measures for acceptable division of interdisciplinary transport labour
- Monitor efficiency of the measures and update them
- Invest into transport infrastructure in compliance with the concept of sustainable development of transport on the basis of the above points, including measures providing for traffic interoperability in the EU context including the neighbouring regions. The TEN-T transport network must also include points of contact of the individual transport mode networks (multimodal terminals including public logistic centres).

For that purpose the conceptual materials for the individual transport modes are used – where they exist – or the framework model of the solution will be introduced.

The decisive indicator for deciding on measures within the framework of freight transport and their infrastructure needs is the transport flow, or the volume and transport performance and interdisciplinary division of transport labour.

Road transport reached its position by setting baseline, framework conditions and diverse development in individual fields of transport on both the EU level and the level of individual Member States. The situation of transport labour division differs considerably between the Member States. This is given by the very nature of the territory, settlement structure, industry distribution, and the level of market environment in the individual industries and distribution of public subsidies and other forms of financial support.

The backbone transport mode for the conditions of the Czech Republic in the major long-distance directions, i.e. international transport flows, should be rail transport and in certain cases also inland water transport (where there are navigable rivers or their navigability is

feasible with regard to the environment and economy of construction), and road transport should certainly not take over, or should abandon the role of transit and backbone transport.

In the area of freight transport, in addition to the transport distance, or the area of the serviced territory, the transported commodity is a key aspect. Road freight transport, thanks to the developed road network and modern means of transport, is currently able to serve virtually all types of customers. Nevertheless the interest of society as a whole is to cover certain market segments with other transport modes, in the case of the Czech Republic mainly with rail transport.

On the basis of long-term international development it is possible to define the prospective segments where modern rail transport is able to cover a substantial part of the transport performances.

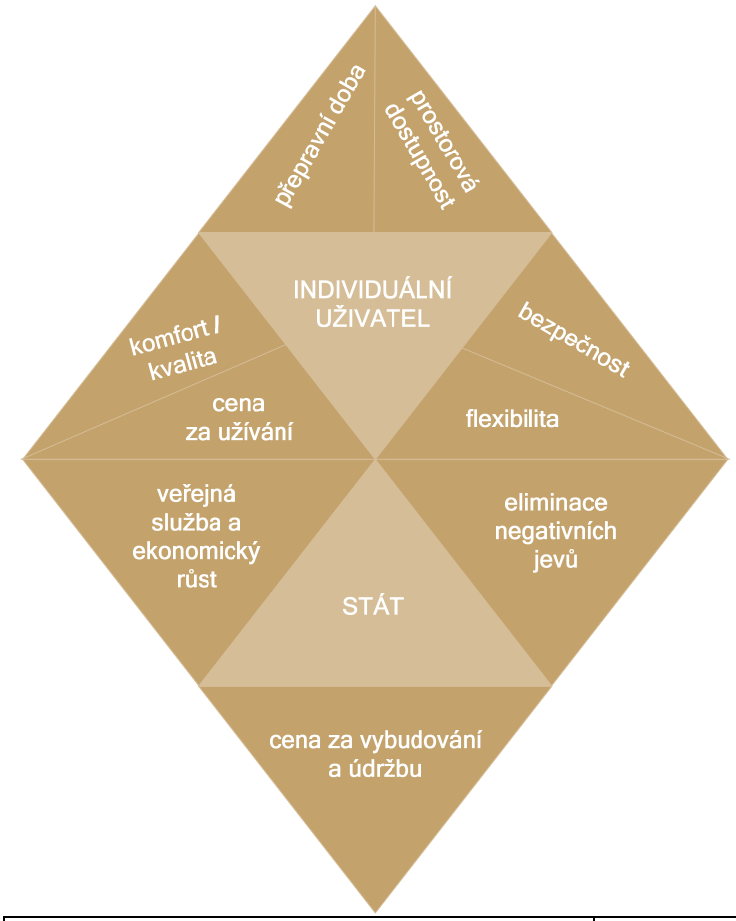
- Large volumes of bulk goods transported across long, medium and short distances - inland waterway transport may also be conveniently applied in this segment, with the limitation represented by accessibility of the waterway and the quality of navigation conditions.
- Large volumes of standard goods (non-express) transported across long distances – transport using the existing system of train forming stations and relay trains providing for connections between them. This segment may well be applied to servicing of economic centres, industrial zones and public logistic centres.
- Large, medium and small quantities of goods transport across long distances – with the use of inter-modal (combined) transport – this is the most prospective segment with a large potential. One of the basic conditions of competitiveness to direct road transport is the minimum critical transport distance – at present in most cases at least 400 - 600 km when using the most widely spread technologies of combined transport. The key subgroup within this segment is represented in the case of the Czech Republic by transport of marine containers from/to large ports. The minimum critical transport distance might be shortened by deployment of suitable low-cost transhipment technology.

2. 2 Factors influencing demand in market segments

Factors of demand include characteristics of transport services influencing the size of the demand for these services. On a general level, these characteristics can be used to describe not just specific transport services, but also every transport segment – see chapter 2.2.1. Two groups of factors influencing demand are found in the following text (also see fig. 3).

First, these are factors influencing demand of user for transport services, including passengers in passenger transport and carriers seeking freight transport. The main factors of transport users are the transport duration, price, area and time accessibility of transport services, safety, comfort and flexibility.

The strategy of the public sector upon building the transport infrastructure and providing services relating thereto should depend on factors such as providing reasonable transport needs of transport users, elimination of negative phenomena including externalities and cost for building and maintaining infrastructure/a service. Deciding on the construction of new infrastructure or providing other services should thus be governed by demand and its prognoses for the given modes of transport, and it also must be in accordance with the remaining strategic objectives of the public sector.



Czech	English
prostorová dostupnost	area accessibility
INDIVIDUÁLNÍ UŽIVATEL	**INDIVIDUAL USER**
bezpečnost	**safety**
flexibilita	**flexibility**

eliminace negativních jevů	**elimination of negative phenomena**
STÁT	**STATE**
cena za vybudování a údržbu	**cost of building and maintenance**
veřejná Služba a ekonomický růst	**public service and economic growth**
cena za užívání	**cost of utilization**
comfort - kvalita	**comfort – quality**
přepravní doba	**transport period**

Figure 3 Factors of demand on part of users and the state as the main initiator of transport construction

2.2.1 Factors of transport user demand

Transport users prefer such transport services that fulfil the criteria listed below. Required characteristics relate to users of both freight and passenger transport. At the same time individual factors carry various weight for each user. And individual preferences have subjective and objective causes. Objectively, the importance of individual factors of demand may be determined by the incidence of a given user in a specific transport segment (such as a user of waterway transport on a certain section of a navigable waterway prefers securing of flexibility/reliability of transport independently on natural fluctuation of the water level over the density of the network).

Individual factors of the demand for transport service and transport infrastructure are briefly characterised below.

(a) Time of transport

The time needed to transport persons or goods between two locations is one of the main factors when transport users are deciding between individual modes of transport. Time losses caused by insufficient infrastructure or related services decrease the advantage and cause growth in both direct and indirect costs of transport users.

(b) Area and time accessibility

Area and time accessibility characterise the level of coverage of a geographical area by transport infrastructure and possible frequency of its use. This characteristic concerns both regional and backbone infrastructure. Greater network density generally increases the competitive value of the given segment, because it provides users of the given type of transport with an additional advantage in the form of direct access to a larger territory. Just as important is the number and location of stops in the case of passenger transport and terminals, or other service locations in freight transport.

(c) Safety

Transport users prefer safer modes of transport, in terms of quantity of transport accidents and related risk of harm to human heath and property. This preference probably only exists implicitly, meaning that preference for a safer mode of transport over a more dangerous one does not appear amongst the majority of users. The advantage of safe transport for all of its users however is a given.

(d) Comfort

Comfort characterises the level of comfort relating to use of the given mode of transport. Although this concerns a relatively subjective category relating to the others (time of transport, safety), it is defined separately. That is, this may significantly differentiate two modes of transport in terms of consumer preferences. For example, a mass transport operator providing (under the otherwise same conditions as the competition) additional services free of charge to travellers may initiate meaningful growth in the quality of transport throughout the entire market segment.

(e) Flexibility

Flexibility means the potential for the given type to react to the differing requirements of their users. This mainly concerns requirements for:

- Time when transport will occur;
- Places from where/to where transport will occur;
- Subject of transport.

The transport infrastructure/service with higher flexibility holds a competitive advantage partly thanks to its ability to satisfy the needs of a large number of users, and partly thanks to its ability of react to changes in requirements of a specific user.

(f) Costs of services

This factor takes into consideration only direct user costs (ex. costs for the means of transport and its maintenance, fuels, fares, fees for infrastructure or a service). In most cases this is a determining factor for freight transport. Related costs not carried by the user are considered within the framework of demand factors on the part of the public sector.

2.2.2 Demand factors on the part of the public sector (mainly the state)

Entities in the public sector decide on building public transport infrastructure. The task of the public sector during this decision is to secure reasonable transport needs of transport users, but also to eliminate the negative influences relating to transport. The third factor that the public sector must take into consideration is the price to be paid from public funds for building and maintenance of infrastructure/service.

The factors listed below describe the desired state of the transport sector from the viewpoint of the public sector.

(a) Providing public service and stimulation of economic growth

The public sector should react to preferences of transport users and provide such services that they require. Their characteristics as described above however are not just meaningful for individual users of the transport infrastructure or services. Some of them are crucial for the national economic importance of transport, which is obviously the most important factor in decision-making on the part of the public sector. These characteristics that are crucial for the state are time and area accessibility of services and the time of transport. That is, a more perfect transport infrastructure and related services stimulate balanced economic development of regions. From the nationwide viewpoint, it facilitates economic development of the country and its engagement in international division of labour (importance for foreign trade, an influx of investments, tourism, etc.).

(b) Elimination of negative phenomena including externalities

Transport brings with it negative influences on the environment (emissions, limitation of free passing through rural areas, noise, etc.) and damage to property and human health (traffic accidents, respiratory illnesses, obesity caused by excessive use of motor transport, etc.). Economically it is possible to indicate these influences as externalities – the transferring the costs from an activity of a certain entity to another entity. The task of the public sector is to promote such policies that lead to limitation of negative influences through inclusion of externalities into transport prices.

Another task of the public sector transport policy relates to this, which is to use individual modes of transport in order to make maximum benefit of their respective strengths. The public sector should thus strive for the optimum division of labour between individual fields of transport, while taking into account expected future trends.

(c) Cost for building and maintaining infrastructure/ service

The cost for building and maintaining the transport infrastructure and services is one of the most important factors on the part of the public sector. A comparative cost-benefit analysis should be performed for each particular project.

2.3 Trends influencing the demand in market segments

Trends in demand for transport depend on many circumstances and factors such as the lifestyle of the population, town and country planning, structure of industry and services, international commerce, etc. The demand for transport, mainly in freight transport, has historically developed in correlation to development of the GDP. With regard to freight transport, globalization of the economy plays a significant role as does migration of production to countries with low manufacturing costs. Other crucial areas include fuel prices and gradual introduction of charges for use of road infrastructure. Demand is also stimulated by construction of new transport infrastructure.

Some of the aforementioned factors are known ahead of time, or it is possible to estimate their scope, whereas for others it is not possible to estimate ahead of time, or whether they will occur or not. Even negligible changes of some factors may in the future represent a substantial impact on development within the transport sector. On the contrary, transport then affects all the other areas of human activity, both in the area of social behaviour and in the area of economic development.

Development trends of the transport sector in the Czech Republic that could have an impact on the structure and intensity of demand in the future must be perceived and analyzed in the wider time and territorial framework.

Territorial framework

The “Transport Sector Strategies” further address the level of the transport sector in the entire Czech Republic while taking into account transport trends and development in the wider – European – framework.

Time framework

The existing strategic documents as a rule cover the short-term and medium-term horizon. The time framework as a rule is an artificially created period stemming for example from the state budget cycle (horizon of one year), election period (horizon of four years) or for example based on the EC programming period (horizon of seven years).

There is no document that would capture trends in a longer term period, so it could predict well enough ahead of time the necessity for implementation of necessary measures of a strategic nature. It is possible to expect that one of the reasons is also the difficulty of economic prognoses and the demand for services that develop from them. The “Transport Sector Strategies” aim to replace this missing prognosis. Mainly in chapter 2.1.3.1., periods are resolved until 2030. Thanks to the complex nature of factors influencing trends in demand for transport, long-term trends are analyzed in this chapter, and short-term trends in the following chapter 2.1.3.2.

2.3.1 Long-term trends

We define long-term trends as phenomena that can indeed appear at the present time, but whose manifestations will probably become stronger in the future and will have crucial consequences for demand for transport (in a time horizon of 10 – 30 years) . Under the assumption of continuation of these trends, the geographic area of the European Union

will be a part of a more globalized world economy, which will have closer contacts with surrounding countries. The population will be older and more culturally diversified than today. From the aspect of the population structure, the population will be more concentrated into densely populated cities and suburban areas. The transport sector will be known for its new methods of using energy resources and new communications technology. Also essential will be the impacts of climate changes. When formulating medium-term and long-term trends influencing demand for support, the document uses among others the conclusions from study The Future of Transport issued by the European Commission in February 2009, and specific aspects of the situation in the Czech Republic. The Future of Transport does also address development after 2030, but the trends up until 2030 mentioned therein will already be playing an important role.

Below are listed the main socioeconomic trends expected to have potential influence on transport in Europe, including the Czech Republic, in the decades to come. This summary of socioeconomic factors is then followed by an analysis of their specific impacts on the demand for passenger and freight transport.

- Growth of GDP and standard of living of the population – GDP growth is one of the crucial factors determining the changes in the standard of living of the population. Based on the long-term forecast of the Ministry of Finance of the Czech Republic, an average GDP growth of 2.61% is expected for the period 2009-2030. On the other hand, a rather insignificant increase of the population is expected. Specific values for both indicators are given in Annex 1. If both predictions become true, the GDP per inhabitant should grow and the general standard of living of the population should thus probably increase as well. Growth in the standard of living is traditionally linked to an increase in transport of passengers and goods.

- Continuing economic integration in the EU – It is possible to expect further integration of a unified European market, not just in the area of trade, but also in work force mobility. Interconnection of European regions will take place through major infrastructure projects, such as the TEN-T network. Another consequence of removal of administrative and legal barriers within the EU will be growth in mobility of the population.

- Continuing globalization – It is possible to expect further removal of barriers in the movement of goods, services, capital and even work forces to a certain extent. Further economic integration and the growth in the importance of former “developing” countries in global economics contribute to further growth in the volume of international commerce. Strengthening will also occur of economic ties to countries around the Mediterranean Sea (Near East, mainly Turkey, North Africa,) and the Commonwealth of Independent States /especially Russia/). The importance of these ties will be strengthened by demographic changes in regions neighbouring the EU – growth is expected for example in the population of North African nations from the current 141 mil. to 236 mil. in 2050.

- Aging of the population – The number of EU citizens shouldn’t change significantly, but the average age will increase from 40.4 (2008) to 47.9. Assumed average age for the Czech Republic in this time horizon is aroud 50 years. For example, the number of persons reaching 80 should triple in the EU by 2060. For the Czech Republic, even higher values are expected, more than fourfold compared to 2007. Furthermore, the number of persons in productive years will decrease by 15%, in

consequence it is possible to expect by 2030 a lack of work forces and slowing of growth in GDP. This trend may be partially reversed by greater integration of immigrants, introduction of innovative work procedures and greater engagement of older people in economic activity. Not the least of which, aging of the population will evoke increased demands on budgets relating to retirement disbursements and higher costs in health and other care.

- Growth in immigration into the EU – Without immigration, the size of the population of the EU would begin to significantly decrease starting in 2012. Therefore a surge of immigrants is expected until 2061 with a net effect on population growth in the EU of 56 mil. The Czech Republic is also expected as an immigrant country in the future with annual increase between 10 and 40 thousands of new immigrants. Despite this trend the total population of the Czech Republic will probably decrease below 8 millions inhabitants in 2060.

- Continuing urbanisation – The quality and efficiency of cities is a key prerequisite for economic growth and sustainable development. Thanks to taking advantage of the effects of area concentration of economic activities, the bulk of added value of goods and services is found in cities. There is currently a definite tendency of continuing concentration both on the regional and international level: By 2050 the level of urbanisation in the EU should grow from today's 72% to 84%. In relation to its growth, it is possible to expect formation of higher level city regions ("mega city regions"). Another important trend is the continuing suburbanization ("urban sprawl"), which changes the monocentric urban area into a polycentric megalopolis with multiple local and regional centres. Effects of suburbanization are partially reduced by the so-called "re-urbanization effect" – in part by public policies supporting revitalization of city centres, and in part by the growing number of small households with lesser demands on size of floor space.

- Climate changes and their limitation – EU Member States will implement measures that fulfil international agreements on decreasing emissions of greenhouse gasses. The transport sector produces 23% of the world´s CO2 emissions relating to man's use of energy, and therefore part of the measures will concern it directly. In terms of the climatic system itself, it is possible to expect further growth in weather extremes, such as windstorms, floods, droughts and fires, with related damage to the transport infrastructure. These risks should be accounted for when building transport infrastructure, and economically justified measures should be implemented to decrease their impacts.

- Further technological advancement – It can be expected that in the decades to come, product and operational innovations will continue to strongly modify the form of transport systems on the side of both offer and demand. But the specific impact of innovations depends on further development of socio-technological trends such as optimization of logistics chains, development of information and communications technology, design innovation of means of transport, changes in using energy or greater application of multi-modal access, which should lead to more effective use of the existing transport infrastructure, to decreases in freight and passenger transport, and not the least of which, to a decrease of the influence of transport on the environment, global climate changes and human health.

Impact of socioeconomic trends on demand for transport

It is possible to expect that in the medium-term and long-term horizon, two main factors will influence transport which relate to the social and economic trends described above. This will concern on the one hand a growth in demand for transport in passenger and freight transport, and on the other hand the effort of the public sector to eliminate negative impacts of transport.

In terms of expected growth in demand for transport, most social trends speak in favour of this conclusion. Growth in demand for mobility will mainly be induced by the growth in the population's standard of living, further economic integration and globalization and partially also a higher-quality transport infrastructure. All of these factors strengthen further demand for fast and reliable transport as one of the main factors for preserving competitiveness of the Czech/European economy.

In freight and passenger transport alike there is a long-term trend of growth in transport performances. Also growing with this is the importance of capacity transport networks (mainly railways). The economic importance of mobility is growing, and in certain segments it has reached the point where capacity of the existing networks does not satisfy the required transport volumes. In consequence of the growing demand for transport, the need grows for building new, higher-quality transport infrastructure, or adopting measures to increase capacity of the existing infrastructure.

On the other hand is possible to identify trends that lead to decreasing demands on physical translocation of persons and goods. This concerns for example development of e-commerce, phone work, communications technologies, and policies supporting consumption from local production or greater optimization of logistics chains. Examples include increasing the number of persons working out of the home, a drop in numbers of the economically active population or more free time that may lead to decreasing differences between transport peaks and saddles.

On the part of the offer, limiting factors may appear such as relative growth in the costs of energy, increased costs for infrastructure or the growing share of users of transport and financing their negative impacts. But it is possible to expect that these opposite trends will be weaker and will mostly be social and economic trends causing a growth in demand for mobility.

It will also be necessary to minimize the impact of negative externalities in the area of:

- The environment (pollution, CO_2 emissions, noise);
- The economy (congestion);
- Communities (health, transport safety).

The effort of the public sector to eliminate negative impacts of transport has been an integral part of transport policies for a long period. This trend reacts not only to the ever-growing demand for mobility, but closely relates also to improvement of the standard of living of the population and relating to this, better environmental protection requirements. Measures eliminating negative impacts of transport on the environment have an influence

on costliness of individual modes of transport, and are important limiting factors for building the transport infrastructure.

The following text specifies what social trends will lead to growth in demand for passenger and freight transport and to efforts of the public sector to eliminate its negative impact.

(a) Growth in demand for mobility in passenger transport

Growth in demand for mobility in passenger transport may be expected based on consequences of certain trends described above.

- Growth of GDP and standard of living of the population – Based on the medium-term development scenario, linked among others to the GDP development prediction (see Annex 1), there should be an increase of 39% in transport performance in passenger transport during the period 2008-2030 in the Czech Republic. Higher pressure for improved public transport efficiency can be foreseen due to the increase in the standard of living of the population and in the demand for passenger transport. Mainly for rail transport, it will be necessary to proceed to re-organisation and to provide balancing payment under stricter conditions, respecting however the renewal cycle of transport means. Efforts by the state and other public sector entities to create a market environment even in the area of providing public transport services can be expected. This trend should lead to an improvement of the condition of public transport.

- Continuing economic integration in the EU – As a consequence of the continuing development of the internal European labour market and integration in further areas, migration will grow in correlation to changes in employment, study abroad etc. These migration flows bring with them the additional so-called social mobility (travelling of families and friends) of migrants. Growth in this long-distance passenger transport will be enabled by development of the trans-European transport networks and overall improvement of quality or speeding up of mass and individual transport. For example, if high-speed railways are built in the Czech Republic, they will become strongly competitive for trips up to 1,000 km in comparison with air or individual automobile transport.

- Continuing globalization – Growing interaction with countries outside the EU (commerce, recreation) increases demands on capacity and quality of passenger transport. This may evoke overburdening of large airports and on the contrary, represent the potential for regional airport development. One major opportunity for more effective long-distance transport is increasing co-modality between air and rail transport, where railways enable interconnection of cities and airports.

- Aging population – It is possible to expect that thanks to progress in health care, greater interconnection of European social systems and greater knowledge of foreign languages, older people in 2050 will be more mobile than they currently are. Part of them will use their pensions for living in another country or will travel to another country for health care. These facts then strengthen the demand on long-distance personal transport. There will also be a need to react to specific needs of older people in mass urban transport.

- Growth in immigration to the EU (which will occur in the Czech Republic as well) – Immigrants more often live in cities and are characterised by a lower average age and higher fertility. Their demand for transport will depend on the method by which they will be integrated into the urban environment. For example, in the case of a concentration of immigrants into suburban areas (due to lower costs for housing) it is possible to expect greater demand for mass transit relating to travel to schools, to work and to services.

- Continuing urbanisation – In relation to further growth in urban agglomerations, or formation of megalopolises with multiple cores, it is possible to expect the growing demand for transport within the framework of these urbanized wholes. Importance will grow of strengthening the effectiveness of city mass transport systems and their relationship to individual transport, whose volume will continue to grow thanks to suburbanization (mass transport service of suburbanized areas is difficult). Support for non-motorised transport will play an important role in agglomerations in terms of environmental protection and public health support. It has strong potential for recreational purposes but also for commuting over short distances.

(b) Growth in demand for freight transport

- Growth of GDP and standard of living of the population – Based on the medium-term development scenario, linked among other to the GDP development prediction (see Annex 1), there should be an increase of 22% in transport performance in freight transport during the period 2008-2030 in the Czech Republic. As for individual segments in freight transport, with the change in the GDP structure and the shift of the Czech economy towards services with higher added value, a slow down in freight transport growth may be expected mainly in the bulk goods segment. On the contrary it is possible to note the growth in the average transport distance in all segments of freight transport. Importance will also grow of the segment of full load and mainly piece consignments with emphasis on speed and reliability of delivery. It is also possible to expect that with gradual internalization of external costs in transport, logistical processes will react to the change in the cost ratio to transport and storage.

- Continuing economic integration in the EU – Growth in demand for transport of raw materials and goods will be a direct consequence of the continuing interconnection of the economies of EU Member States. Thanks to gradual removal of administrative and technical barriers in movement of production factors, it is possible to expect further specialization of regions in individual segments of industry. Regional concentration of production into easily accessible locations with adequately qualified labour force then increases demands on long-distance freight transport expressed by the growth in transport distances. In terms of the offer, as a consequence of further development of the European network of railway corridors for freight transport and growth in competition in this market, it is possible to expect a growth in the proportion of the railway sector's share of freight transport. Economic integration in the EU for transport will have an effect towards faster growth in demand for transport in comparison with GDP growth (have an affect against "decoupling"). Ever-improved logistical processes will have an opposite effect.

- Continuing globalization – In consequence of continuation of the long-term trend of removing barriers to the movement of goods in global economies, it is possible to expect growth in demand for freight transport between the EU and the rest of the world. Probably, it is trade with macroregions immediately bordering the EU, thus with countries of the CIS, countries from the Near East and North Africa that will grow most in importance.

- Further technological progress – It is possible to expect that trains used in freight transport will be longer with higher capacity wagons and higher energy efficiency. Further increases in railway infrastructure quality will also enable extension of the length of train, support the development of multi-modal transport systems and decrease the price of rail transport for its users. On the other hand, it will be necessary to resolve the problem of the difference between speeds of passenger and freight rail transport, which will impede the use of the same infrastructure.

- Climate changes – Although the direct influence on climate change in the Czech Republic is limited, it is possible to expect that transport flows in the CR will be influenced secondarily by changes in other parts of the world. For example, based on current predictions, the summer appearance of ice in the Arctic Ocean should entirely disappear by 2040. Use of this ocean route would shorten the current sea route from European ports to East Asia by 40%, which would have important economic consequences for intercontinental freight transport and related logistics in certain European countries. But upon using this route it is necessary to take into account the additional burden on the environment.

(c) Elimination of negative influences of transport

Efforts of the public sector in the area of limiting negative consequences of ever-growing passenger and freight transport will depend on certain trends described above.

- GDP growth and standard of living of population – Thanks to the further expected growth in GDP in the EU and the in Czech Republic as well, and with the relating increase in the standard of living of the population, it is possible to expect movement of the preferences of voters towards higher environmental quality (for example, construction of noise barriers, decreasing vehicle exhaust emissions, support for non-motorised transport, increasing transport safety, etc.).

- Continuing economic integration in the EU – It is possible to expect that with the continuing economic integration of the EU, the tendency to unify policies in the area of environmental protection will grow too, under which measures for limiting negative impacts of transport also fall. One example may be making European standards on exhaust emissions stricter.

- Continuing globalization / Climate changes and their limitation – As mentioned in the example above, integration of worldwide economic relations also brings about the need to a certain extent to unify environmental measures on a global scale. This will likely continue to concern measures on decreasing greenhouse gasses, but also other worldwide initiatives with an impact on transport policy may come about.

- Continuing urbanization – The large concentration of the population in the area of the city agglomerations/megalopolises and related commuting flows may bring about overburdening of the transport infrastructure and be at the origin of congestion and growth in the number of transport accidents. The cause of both may be the ever more frequent use of agglomeration transport infrastructure for both local and transit transport. Congestion decreases logistical efficiency, increases costs for fuels and decreases work productivity. Transport efficiency and thus even competitiveness of large agglomerations and megalopolises will therefore be founded upon application of often even radical measures limiting congestion (for example charging fees for using automobiles in city centres), building or renewing transit systems and careful territorial planning.

- Aging population – As a consequence of the growth in the proportion of the economically inactive population to that which is economically active, a gradual decrease will occur of public resources available for renewal and for construction of new transport infrastructure. This trend will be strengthened by the fact that part of the infrastructure built in the second half of the 20th century will approach the end of its service life, and will require significant investment into renewal. For the purpose of eliminating negative impacts of these trends on public budgets, the transport sector will have to search for methods of self-financing, for example on the principle of charging user fees, or fees to polluters.

- Further technological progress – From the public sector it is possible to expect definite support for use of new energy resources in transport – for example based on certain estimates it is possible to expect to cover 50% of the energy needs for road transport in 2050 from hydrogen. On the contrary the trend will continue of long-term growth in price of fossil fuels, which will be accompanied by a drop in their share in the overall consumption of energy in transport.

- Introduction of modern information and control systems in both personal and freight transport is another trend enabling use of technological advances for eliminating negative aspects relating to transport. The benefit of these systems may be greater fluidity of transport, better integration of various modes of transport segments or making mass transport more attractive.

2.3.2 Short-term and medium-term trends in the Czech Republic

Included amongst short-term trends are such phenomena that appear today and their appearance is expected in the near future as well, whereas in practice the “boundary” is normally considered as within the span of 5-10 years.

Passenger transport

In passenger transport it is possible to identify the following trends having influence on competitiveness of individual market segments.

(a) Risk of growth in the share of individual transport

Division of transport labour in passenger transport between individual transport segments is expected to develop unfavourably in terms of sustainable development in the segment. Since the mid-1990s the ratio of individual transport to mass transport grew from 20:80 to today's roughly 45:55 [6]. This unfavourable trend, which leads to congestion on roads and generally threatens the functionality of the transport system while unfavourably affecting the environment, was stopped thanks to the offer of high-quality and high-interval mass transport. In the case of a change in the offer there nevertheless exists the risk that growth will occur again in the segment individual transport.

(b) Insufficiently fast development of integrated transport systems

Individual systems providing public transport are still mostly operated as separate transport systems, whereas integrated transport systems are operated only in limited territories, with limited functionality without greater interconnection between regions. In most locations the integrated system is only an added element to the system (facilitating use of city and suburban transport), and not a principle interconnecting all modes of transport within the territory of the region. Interconnection of the system of city, suburban and regional transport is not on a sufficient level. PPP projects appear as one of the future possibilities of supporting integrated transport systems, or possibly expansion of cooperation of individual operators from regions in the area.

(c) Insufficient development of non-motor and mass transport

With regard to decreasing impacts on the environment and improving public health, there is a need to reverse the trend of a drop in the share of mass, bicycle and pedestrian transport and to build infrastructure relating to mass and non-motor transport.

(d) Insufficient increase of quality of mass transport

Passenger railway and public bus transport often provide services with a lower quality and insufficient mutual cohesion, which contributes to the preference of individual automobile transport.

Freight transport

In freight transport it is possible to identify the following trends having influence on competitiveness of individual market segments.

(a) Growth in the importance of road freight transport as opposed to other segments

Performances of freight transport are growing faster than the economy. Growth in demands for freight transport is the consequence of globalization influences, specifically the growth in the distance between the place of manufacture and that of consumption. Customers, or freight transport carriers, attempt to minimize logistics costs, and prefer accuracy and speed of transport[7]. In consequence of this, logistics systems are mainly

[6] These shares are applicable for Prague and big cities

[7] Distortion of the ratio of costs to storage and transport occurs as a result of insufficient internalization of external costs.

oriented towards road freight transport. Extension of transport distances relating to globalization of international commerce and shortening of delivery terms thus leads to increasing transport performances.

(b) Growth in the importance of transport of goods with higher unit price

In consequence of the continuing European integration process, a change will occur in the structure of the flows of goods. The share of bulk goods is decreasing to the benefit of goods with higher added value. This trend is appearing:

- By the decrease in the share of transport in the segment of bulk goods (coal, ore, etc.) and by the growth in the share of transport in segments of full load and piece consignments that require transport services with higher added value – logistics services
- Growth in the requirements for the scope and quality of additional logistics services

With the change of the GDP structure and the shift of the Czech economy towards services with higher added value, a slow down of growth of freight transport may be expected in the medium-term horizon.

The competitiveness of freight transport in individual transport sectors is also influenced by the conditions set for business activities. While fees for railway freight transport are applied on the entire network, in road freight transport the fees are applied only to certain categories of vehicles and only on a selected part of the network. In order to balance these differences, the Government is gradually adopting many measures:

- During 2006 and 2007, the 1st and 2nd phase of the electronic toll system have been prepared. The 1st phase (toll for motorways and expressways) was put into operation as off 1 January 2007 and the 2nd phase (selected restricted part of the Class I roads network) as off 1 January 2008.

Other stages (under direct management of the RMD) are based on negotiations from 2007 and annexes agreed by the Kapsch consortium and the MoT, or more precisely RMD on 27 December 2007.

The basic characteristics of the following stages:

- The microwave system (DRSC) will be applied not only to existing but also to all newly constructed motorways and expressways in all constructions starting till 2017.
- Tolls on Class I roads will be applied only on transit connections.
- The issue of tolls to be applied on other Class I road and roads of lower classes shall be discussed at the meeting of the working group of the Minister with the expert team of the MoT.

<u>The “hybrid” solution</u>

The annex was agreed with the contractor mainly based on the current situation and experience with operating the toll system in the Czech Republic. In this case it is planned to use a different technology that must be compatible with the existing microwave technology so that the current equipment (especially the central system) can be used to the maximum possible extent.

The regions are requesting that toll is applied to prevent traffic to bypass the paid sections. Nevertheless it is not possible to use the microwave system on roads of lower classes without extra additional costs and building the toll frames (also due to a high number of exits). It was therefore necessary to search for other options, i.e. the satellite technology combined with the microwave technology – the hybrid solution. The expert team of CVUT under the guidance of prof. Moos presented the hybrid solution concept that is currently being prepared with the general contractor.

The aim for 2009-2011 is to prepare the pilot operation and correct testing of the hybrid system using the OBU units from the current general contractor and also from other suppliers.

- In order to harmonise the prices for using transport infrastructure, the maximum price for using inland railway transport infrastructure for passenger and freight transport has been decreased by 20% as off 1 January 2009. The related shortage in RIA revenues used for operating the transport infrastructure has not been addressed. After this decrease in maximum price for using RI, the price for using road and rail transport infrastructure is still comparable only in freight transport and only on those sections where the road toll is applied (on approx. 5% of the road network).
- In 2005, the Czech Government discussed the concept for developping combined transport and approved the programme for support of combined transport for 2005-2010 financed exclusively from the Czech national budget. The Programme was notified to the EC (State Aid No C 12/2006) and two sub-programmes were prepared within this programme: Building of new and enlarging and upgrading of existing transloading stations; Innovation technology for introducing new lines of combined transport. The documentation for both sub-programmes was approved by the Ministry of Finance, but no resources for implementation were provided for 2008. In 2009, the sub-programme Innovation technology for introducing new lines of combined transport was provided with CZK 90 m as a result of an initiative by MPs. A new documentation for the sub-programme has been prepared for this amount and the granting of state aid in line with the “temporary framework” has been negotiated with the EC. After the EC decision in April 2009 and the approval of the updated sub-programme by the Ministry of Finance, the call for submitting applications has been launched. In line with the EC Decision, state aid is intented for transport carriers and operators of transloading stations and combined transport. The maximum support is equal to the state aid limit of EUR 500,000 and shall be used for acquiring transportation units, special road vehicles, information systems, reconstruction of vessels for CT, purchase of coaches for CT in the context of new combined transport lines.
- Other proposed solutions to this issue will be discussed in the context of updating the Transport Policy of the CR in 2010.

2. 4. Analysis of the current situation and trends of individual transport sectors

2.4.1. Road transport

The Czech Republic has relatively high road network density (see Annex 10), whereas the basic network of expressways and motorways is still not completed and does not match true needs. Certain regional centres still have no decent connection to motorway and expressway networks. It is similarly necessary to continue to build by-pass roads of residential districts, thus alleviating city centres of the transport burden.

In the past 20 years rapid growth occurred in the Czech Republic in the volume of road transport of both passengers and freight. In terms of expected trends, in the period until 2015 it is possible to expect continuation of growth in transport in the area of passenger individual transport.

In road freight transport, a further increase in performances by another 30 – 40 % may be expected before 2015. The progress of the increase will be affected by the rate and scope of toll (also including internalization of external costs), not only in the Czech Republic but also in the surrounding countries, as well as fuel prices.

Main trends

- Completion of construction of missing sections of motorways and expressways for covering growing volumes of individual automobile transport and freight road transport;
- Gradual conversion of external costs for development and maintenance of infrastructure to its users in the form of performance fees;
- Elimination of negative influences of road transport (development of alternative transport segments, for example through support for combined transport or measures relating directly to road infrastructure and relating services – such as constructing of noise barriers).
- Persisting problem of lack of funding for maintenance and resulting poor technical conditions of roads

In terms of financing transport infrastructure, the state is responsible for construction of Class I roads, motorways, expressways, railways and inland waterways. Regions are then responsible for Class II and III roads, and the given municipalities are responsible for local roads.

It is also necessary to state that Czech expressways are, by virtue of their parameters, motorway-type roads. Roads of the “high quality roads” class (see AGN Agreement), e.g. 2-3 lane roads with directional exit and entrance ramps leading exclusively in rural zones are built only to a limited extent in the Czech Republic.

SWOT analysis

Strengths	Weaknesses
▪ high density of road network as a whole with sufficient share of first class roads providing service to region ▪ most effective method of providing area servicing of a territory, mainly on the local/regional level for shorter distances ▪ flexibility and efficiency of road transport upon the need for high speed and accuracy of the supply of goods	▪ highest accident rate of all sectors (in numbers of victims) ▪ excessive use of road transport to the detriment of other types of transport ▪ worst environmental impact of all transport segments ▪ exhaustion of capacity of road infrastructure – creation of congestion due to constant growth of road transport (level of main routes and cities) ▪ lower quality of public bus transport and insufficient cohesion with other public links supporting growth of individual automobile transport ▪ poor technical condition of roads as a result of lack of finances for maintenance ▪ the level of services of intelligent transport systems lags behind demand (such as in the area of optimization of supplying cities – city logistics) ▪ connection to a high-quality road and motorway network is not finished of all regions ▪ costliness of road maintenance, even with regard to their density
Opportunities	**Threats**
▪ introduction of performance fees for services – passing on externality costs to users ▪ introduction of intelligent transport systems for increasing safety for intensifying the capacity of roads ▪ decrease in some of the negative influence of transport by construction of roads and by-pass roads of cities and municipalities ▪ development of intelligent transport systems	▪ continuation of growth in road passenger and freight transport to the detriment of other modes of transport ▪ growth in volume of externalities ▪ insufficient securing of financing infrastructure leading to a lack of funding for maintenance and removing defects ▪ significant impact on the environment during construction of infrastructure and its subsequent operation

2.4.2 Rail transport

Today in the Czech Republic there are a total of 9.5 thousand km of railway track in operation which in regards to the territorial size of the Czech Republic makes this one of the world's densest railway networks. On the other hand, only around 31% of length of the

existing tracks are electrified. Map of railway network of the Czech Republic is included in Annex 11.

In 1993, gradual construction got underway of four transit railway corridors that form the backbone network both from the aspect of domestic transport and of transit transport, and connection of the CR to key railway lines in neighbouring countries. To today's date have been completed, with the exception of a few sections, the first and second corridor (Děčín – Praha – Pardubice – Brno – Břeclav and Břeclav – Hodonín – Přerov – Ostrava). In the following period attention will be mainly focused on modernizing and restructuring main railway junctions and on completing construction of two additional corridors planned for 2012-2016.

After 2004, the worsening situation in rail transport was stabilized and the deviation from rail transport to other forms of transport has been slowed. This trend was noted in both passenger and freight rail transport. Also on a European scale, liberalization is occurring of freight rail transport, and pressure is constantly being generated to compel the majority of freight road transport to switch to using rail transport. Individual automobile transport is emerging as the main competitor to passenger rail transport on medium and short routes thanks to growing motorization. Air transport has become ever stronger for long-distance routes.

Long-distance, fast-train transport of persons is currently provided exclusively by the company České dráhy [Czech Railways]. Opening of this sector to other private entities should occur in the immediate future through announcement of procurement proceedings. It is expected that the state will open competition of up to 75% of long-distance rail transport. One of the fundamental requirements and aims will be enhancement of the quality and comfort of the vehicles.

Main trends

- Ongoing modernization and electrification of railway networks – building third and fourth railway corridors
- Increasing intermodality and interoperability
- Making operation of passenger rail transport accessible to private entities
- Competition to passenger individual transport in relation to the gradual increase in quality of rail transport services operated on a modernized transport infrastructure and in relation to the trend already underway of applying an interval-based timetable with shorter intervals
- Competition for air transport for longer routes
- Stopping the trend of a decline in demand caused aside from others by saturation of the capacities of road freight transport and the related demand migration to the railway sector
- Steady condition in the case of demand for personal transport with possible expected mild growth

SWOT analysis

Strengths	Weaknesses

▪ relatively dense railway network connecting most of the main centres and relatively good access for passenger and freight transport ▪ combination of relatively high comfort, satisfactory speed and low prices for certain medium-length routes forms a competitive advantage for rail transport (for example higher preference for railway link between Prague and Ostrava thanks to introduction of the Pendolino link) ▪ low accident rate in comparison with road transport (where 2007 saw 1,222 deaths and 29,243 persons injured, in rail transport there were 25 deaths, where not one of them was a passenger, and 157 persons injured) ▪ low burden on the environment in comparison with road transport (10 – 33 % of emissions compared to freight vehicle transport) ▪ leading transport corridors in passenger transport to city centres without large demands on land	▪ insufficient level of services related to transport as opposed to other sectors (for example train station facilities vs. airport facilities) ▪ lack of connections of outer lying regions to modern networks, of electrification and completion of direct rail links. *Example: Praha – Karlovy Vary, Praha – Liberec* ▪ building of the third and fourth railway corridors has not yet been completed ▪ maximum speed limit of 160 km/hr on railway tracks; poor technical condition of network ▪ in relation to road traffic safety, high accident rate at railway crossings
Opportunities	**Threats**
▪ completion of third and fourth railway corridors – connection to TEN – T ▪ Connection of railway routes to important airports – Praha Ruzyně, Ostrava, Brno ▪ interconnection of rail transport with municipal transport – integrated transport systems ▪ migration of part of road transport (mainly freight) to rail transport ▪ increasing quality of services by means of procurement proceedings when submitting contracts for providing personal transport ▪ introduction of intelligent transport systems (ERTMS/ETCS)	▪ poor technical conditions and insufficient parameters of tracks of the state-wide network and regional tracks important for backbone passenger transport, including outdated spreading of certain railway stations and stops not corresponding to developmental changes, including facilitating accessibility for persons with limited capabilities in mobility and orientation ▪ decreasing the capacity for freight transport by reduction of the scope of railroad lines within the framework of modernization ▪ insufficient connection of new industrial and logistical complexes to railway networks ▪ insufficient political will to enable access to other entities in operating personal transport ▪ dense railway could lead to existence of many less utilised railways

2.4.3 Air transport

There is a relatively dense network of civilian airports in the Czech Republic. In most cases however this concerns regional airports of lesser meaning, which often are of a recreational/sport character.

Amongst the important airports in terms of transport it is definitely possible to include the international Prague-Ruzyně Airport and other international airports in Brno, Ostrava, Karlovy Vary and Pardubice, which are owned by the regions. The only airport that is still owned by the state is Prague-Ruzyně Airport. These airports are technically equipped for performance of commercial air transport and also have at their disposal essential navigation equipment and system of runways including services, which they may offer travellers or airlines.

Upon analyzing the current situation in air transport, it is necessary to take into account international airports in neighbouring states, which are often also used by travellers from the Czech Republic. These include for example the airport in Vienna (covering the region of South Moravia, competition to the airport in Brno) and the one in Munich, and possibly also the airports in Dresden and Leipzig.

The airport infrastructure was reconstructed in recent years with regard among others to fulfilment of safety requirements arising from the Czech Republic's incorporation into the Schengen Area.

The fragmented ownership structure nevertheless limits implementation of direct strategic access.

Main trends

- Decrease in demand for freight transport from November 2008 as a consequence of the economic crisis (decrease in exports)
- After overcoming the economic crisis, transport volumes may be expected to rise gradually to the current level, and to grow again in the future

SWOT analysis

Strengths	Weaknesses
▪ important international airport in area of Central Europe (Prague -Ruzyně) ▪ high share of private capital and attractiveness for investors in comparison with other transport sectors ▪ airport as an economic growth centre – creates a high number of jobs and demand for a qualified work force	▪ weak position in domestic transport relating among others to shorter domestic distances and to strengthening of fast and high-quality modes of transport ▪ overburdening and insufficient capacity of takeoff and landing runways of Prague Ruzyně Airport ▪ burden on the environment through emissions ▪ high noise pollution for municipalities in close proximity to airports ▪ insufficient transport connection of

	international Prague-Ruzyně Airport to the centre of Prague (only road connection available) ▪ lower attractiveness of other centres outside of Prague for international transport ▪ competition of other sectors within the framework of domestic transport
Opportunities	Threats
▪ increasing transport volume via low-cost lines (even for other airports aside from Prague) ▪ use of capacity of airports outside of Prague ▪ construction of parallel take-off and landing runways in Prague	▪ competition from airports abroad ▪ incresed burden on the atmosphere – emissions

2.4.4 Inland waterway transport

Waterway transport is mainly represented by freight transport and recreational passenger transport and operation of ferries. The share in the transport market amounts to less than 1% of the total volume of freight transport. The natural conditions in the Czech Republic enable navigation on only two waterways – the Labe Vltava Waterway (see Annex 12) and the Bata Canal in Moravia, the latter of which serves however only for recreational transport. As for operating inland waterway transport, this has a relatively low impact on the environment and the safety of traffic is high.

Main trends

- Stagnation of transport performance with expected growth in the event of resolving the problem with navigability of the Elbe from Ústí nad Labem to the state border with Germany

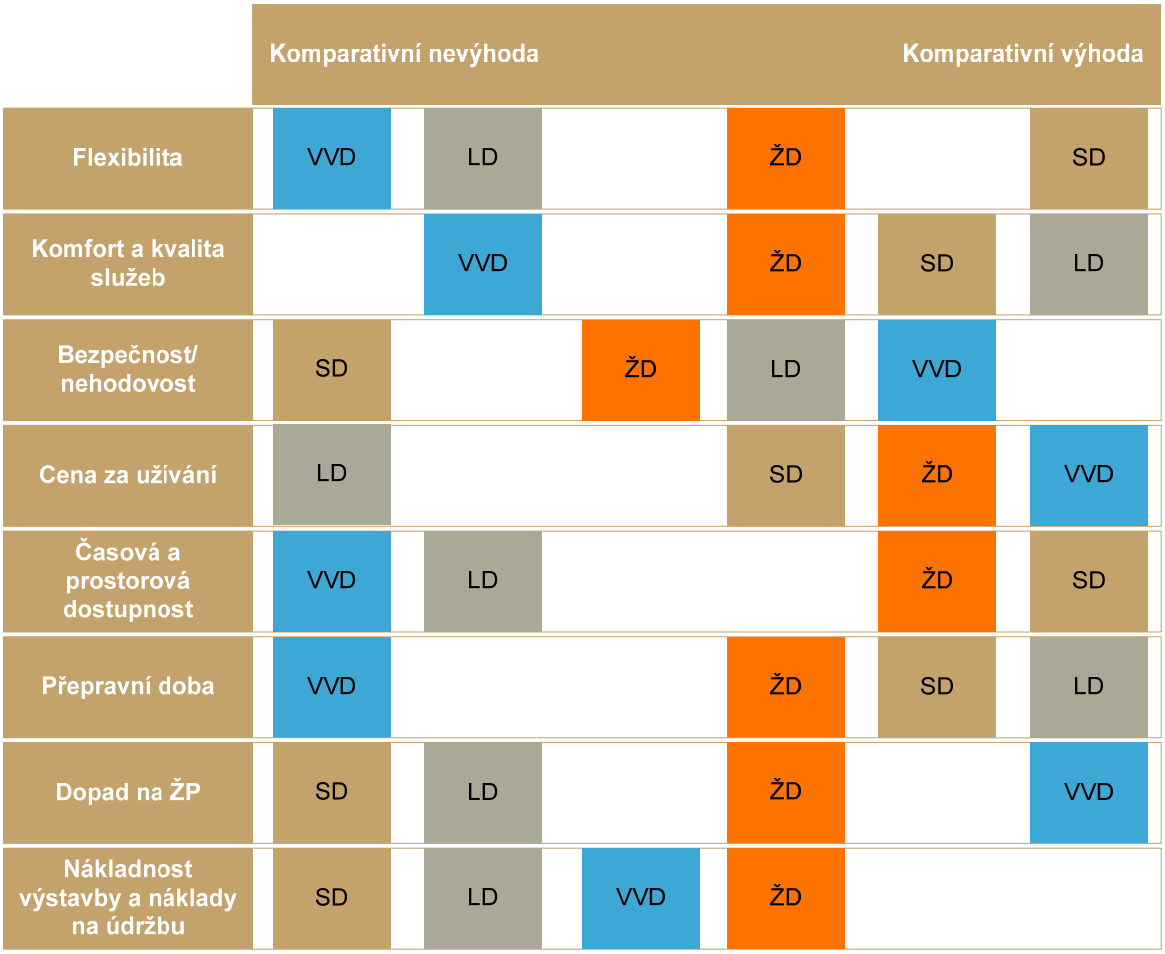
SWOT analysis

Strengths	Weaknesses
▪ safe method of transport ▪ low costs for transport in comparison with other transport sectors ▪ low negative impact on the environment in comparison with other transport sectors ▪ completion of a telematic system of water transport LAVDIS (Labe Vltava Information System) enabling GPS navigation and provision of timely information on navigability	▪ minimum of suitable watercourses for creating navigability (in fact only the Labe and part of the Vltava) ▪ problems with navigability of the Labe in the section Ústí nad Labem – state border and in the area of the Přelouč waterwork ▪ insufficient interconnection of water transport with logistical processes (providing transport door-to-door, providing consolidation and de-consolidation of consignments)

Opportunities	Threats
▪ development of recreational navigation ▪ development of international navigation in the Labe section	▪ influence on the environment when providing for higher reliability of navigability on waterways

2.5 Summary of the competitiveness of individual sectors in the Czech Republic

The figure below summarizes the current positions of individual transport sectors in the Czech Republic as drawn from the previous SWOT analyses. Comparative advantages of the sectors are compared on the basis of demand factors. The positions of individual sectors are not unchanging, and may develop in time. In the case of certain sectors, such a movement is desirable because it moves in the direction of trends of other European countries. One example is the comfort and quality of services in the case of rail transport, which in the case of the Czech Republic lags behind road transport, and has the potential to gain a higher comparative advantage from this factor. Strengthening competitiveness of the sector may also take place without a change in the order, by a simple movement towards the right part of the table.



Czech	English
komparativní nevýhoda	**C**omparative disadvantage
komparativní výhoda	Comparative advantage
Flexibilita	Flexibility
Komfort a kvalita služeb	Comfort and quality of services
Bezpečnost / nehodovost	Safety/accident rate
Cena za užívání	Price for use
Časová a prostorová dostupnost	Time and area accessibility

Přepravní doba	Transport time
Dopad na ŽP	Impact on the environment
Nákladnost výstavby a náklady na údržbu	Costliness of construction and maintenance costs

Figure 4 Framework summary of comparative advantages of individual sectors in the Czech Republic, explanations: SD – road transport, LD – air transport, ŽD – rail transport, VVD – inland waterway transport

The following are outputs of the competitiveness analysis of individual sectors.

Road transport

Road transport is irreplaceable mainly in terms of area-wide territorial service, both in individual and public transport and in freight transport. The fact that the Czech Republic has one of the densest networks in Europe contributes to this. Deficiencies in terms of infrastructure are mainly found in the unfinished sections of the TEN-T network, e.g. certain important sections of motorways and expressways. Another problem is the inadequate condition of roads of Class I and lower classes, mainly by virtue of neglected maintenance. Transport problems are caused by the absence of bypasses around municipalities and cities, which also has a negative affect on the environment and traffic safety.

The rapid growth of roadway transport in the past 20 years has brought with it a number of negative aspects as well. Decreasing them is possible by improving the quality of road infrastructure, by leading main transport flows away from city centres, through anti-noise measures and by making public transport more attractive, and in the case of freight transport, through higher competitiveness of rail transport.

Rail transport

Rail transport may be used mainly in the case of existence of strong freight flows. In these cases it may be a fully competitive alterative to road transport while preserving advantages. These mainly include diminished negative impact on the environment, lower accident rates, and smaller territorial scope at the same or greater capacity over what road transport infrastructure can offer. An advantage from the aspect of Czech conditions is the still relatively dense rail network, providing access of rail transport in all main centres. On the contrary, as regards infrastructure, the technical condition of certain tracks that have not been modernized is inadequate, especially the condition of interlocking systems.

In personal transport, promising segments mainly include regional transport in the surroundings of main seats, where it is necessary to continue in forming integrated transport systems, increase line capacities and offer more comfortable vehicles. Another promising segment may be long-distance transport, whose attractiveness to a considerable extent depends on the progressing modernization of transit railway corridors.

Rail freight transport should concentrate on customer diversification so that it wouldn't be dependent upon certain traditional fields of heavy industry and raw material extraction. Downturns in these sectors then cause a decline in the number of contracts for the

railway. It is necessary to concentrate on service of newly forming industrial centres and logistics parks. It is also necessary to work on the concentration of transport flows, for example by supporting the creation of public logistic centres (PLCs), or supporting combined transport.

Air transport

Air transport is irreplaceable in long-distance personal, especially intercontinental transport. On the other hand, negative aspects mainly include the enormous energy demands of this sector and the negative influence on the environment, both in terms of noise pollution around airports and of engine emissions. The most important airport, Prague Ruzyně Airport, currently has satisfactory terminal parameters for both departures and arrivals, as do most other international airports in Brno, Ostrava, Karlovy Vary and Pardubice. In the future it is possible to expect insufficient capacity of runway systems at Prague Ruzyně Airport.

Inland waterway transport

The strengths of inland waterway transport mainly include the smaller impact of operating waterway transport on the environment, lower energy demands and particularly the provision of transport of Czech goods to sea ports through the Elbe waterway which is free of charge. A weakness in the CR on the other hand is found in the very limited accessibility of waterway transport, mainly attributed to its having a single jointly navigable water route along the Elbe and Vltava. Even the Elbe-Vltava waterway suffers from unreliability due to fluctuation of the navigation depth. Amongst the natural weaknesses of water transport is mainly its low transport speed, so its application in terms of freight transport is mainly possible for transporting mass substrates or in the case of large inseparable consignments, which are very difficult to perform using other types of transport.

Combined transport

The share of combined transport in the Czech freight transport market does not exceed 1% of total performance. It is however one of the fastest-growing segments with the potential for taking on goods transported by road transport, thus diminishing road transport's negative influences. Practically all combined transport in the CR occurs in the form of a road-rail combination. One fundamental precondition is the existence of a network of combined transport terminals and corresponding rail network parameters, especially in terms of loading gauge. The weakness of combined transport terminals in the Czech Republic is mainly its dependence on investments from operators' own resources given mainly by their non-public character and insufficient support from public resources.

3

Core Business and Needs of Individual Transport Sectors in the Czech Republic

The objective of this chapter is to identify the core services and needs of individual transport sectors in the Czech Republic. The following text contains the summary of priorities of the target situation. More detailed requirements on specific technical parameters of services in individual transport segments are given in Annex 2. Related to that, the second subchapter defines the core services and related measures that should lead to providing the given services.

3.1 Priorities for the target situation in the transport sector

This chapter defines the priorities for the target situation in the transport sector of the Czech Republic that are to be reached in order to allow for a sustainable development of this sector. These priorities result from:

- Analysis of transport demand factors
- Analysis of expected impact of trends influencing transport in the EU and the Czech Republic
- SWOT analyses of individual transport sectors
- Analyses of technical requirements for transport services (see Annex 2)

The priorities for the target situation as defined below are in line with priorities included in the document Transport Policy of the Czech Republic for the period 2005-2013 and with other key documents as the Territorial Development Policy or the Sustainable Development Strategy of the Czech Republic.

Priorities for the target situation can be achieved through various instruments that have been divided into the following groups:

- Building new infrastructure;
- Increasing the quality and capacity of existing infrastructure;
- Renewal and upgrading of the vehicle fleet and watercrafts;
- Introducing modern technologies including ITS;
- Legislative measures.

Priorities for the target situation in the area of transport:

1. Providing for transport services friendly for the environment and human health

The efficiency analysis of the European Transport Policy[8] showed that “the ETP has assisted social and economic cohesion and promoted the competitiveness of the

[8] The European Commission document COM(2009) 279 final

European industry therefore contributing significantly to the Lisbon Agenda for Growth and Jobs. More limited, however, have been the results with respect to the goals of the EU SDS: as indicated in the progress report of 2007, the European transport system is still not on a sustainable path on several aspects". This is a very serious finding and it is clear that in public interest, transport should have the lowest possible impact on environment and human health. Elimination of negative transport impacts should therefore represent one of the main factors to be taken into account when providing for transportation services. The importance of this factor increases with the rising mobility demand, mainly in the area of road transport. Importance is also given to decreasing the contribution of human activities to climatic change.

When providing for transport services friendly for the environment and human health, it is necessary to implement at first the following measures:

- Support to introducing the co-modality principle and benefiting from comparative advantages of individual transport modes;
- Introducing Green Corridors;
- Optimising logistic processes;
- Introducing integrated transport systems for passenger transport;
- Research and development of new energy sources for transport and development of more efficient drive units.
- Removing old ecological burdens caused by the existing infrastructure;
- Improving the capacity for wild fauna to pass through transport infrastructure ;
- Applying anti-noise measures (preferably in areas with values exceeding the limits);
- Ensuring the upholding of limit values in force for transport emissions;
- Supporting projects leading to economical usage of energy sources in transport;
- Supporting the electrification of railway lines;
- Better solutions for transit transport through municipalities (slowing the transport, building by-passes);
- Supporting the maximum possible usage of capacities of environmentally friendly transport.

The majority of instruments for the implementation of the given measures consist of improving the quality of existing infrastructure and infrastructure being built including utilisation of ITS, but also of renewing vehicle fleets and watercrafts and introducing legislative measures.

2. Providing for the links between individual transport modes

The trend of payment for usage of road infrastructure by freight transport is more reflected in total logistics costs of transporters, and the change in the ratio of transport to storage costs shall contribute to the development of new logistic

technologies. On top of this, the growing volumes of transported goods cause an overcharging of the road and motorway network, thus decreasing its reliability for both freight and passenger transport. On the other hand, rail or waterway transport is able to improve the quality of provided services. As the transporters tend to prefer the lowest possible price, these trends can incite a change in demand in certain segments of freight transport, moving from road to rail or waterway transport.

As for rail transport, the following key segments can be selected where modern rail transport can comply with the requirements of transporters in a competitive manner:

- Large quantities of bulk goods for long, medium and short distances - inland waterway transport could also be successfully used for this segment.
- Large quantities of goods (full loads) of normal (non-urgent) type for long distances - this segment can be used for servicing business centres, industrial zones, and public logistic centres.
- Large, medium and smaller quantities of goods of any type for long distance - using intermodal (combined) transport - this is the most promising segment, with a big potential, taking into the account the globalisation influences.

The public sector is trying to eliminate negative events and externalities related to the increase in the volume of freight car transport. As a result, support is given to optimising the distribution processes within freight transport, without which the shift in transporters´ preference would be much more difficult to achieve. In line with this objective, the EU and CR transport policies provide for the support in creating public logistic centres (PLC) allowing for an increased share of rail transport on the transportation market and for the development of combined transport.

Supporting the linking of individual transport modes covers not only freight, but also passenger transport. It is important especially in the context of reducing traffic jams in cities and agglomerations suffering from excessive individual car traffic. Support to quality interconnections of public transport systems, for example by introducing integrated transport systems, represents another area of interest.

As for providing for links between individual transport modes, it is necessary to implement at first the following measures:

- Supporting the development of public logistic centres (PLC)
- Supporting multimodal and combined transport;
- Supporting the development and introduction of new multimodal technologies and intelligent transport systems for multimodal transport;
- Supporting new concepts for supplying to cities based on citylogistics and relying on the connection to the PLC system;
- Supporting the systems of P+R parking and connections between individual car transport and mass public transport;
- Creating integrated transport systems and ensuring the coordination of activities of individual authorities contracting public services of identical and different levels;

- Connecting the Czech Republic to the pan-European multimodal information system that is being created;
- Supporting the links of individual types of mass transportation.

The majority of instruments for the implementation of the given measures consist of support to building of new infrastructure (PLC), improving the quality of existing infrastructure or infrastructure being built and introducing modern technologies. Therefore the Czech Government has adopted the Strategy for Support of Logistics from Public Resources defining conditions for supporting the development of infrastructure for multimodal and combined transport with the objective to create important junctions interconnecting individual transport modes and set up conditions for concentrating transport flows as a necessary pre-condition for applying the co-modality principle.

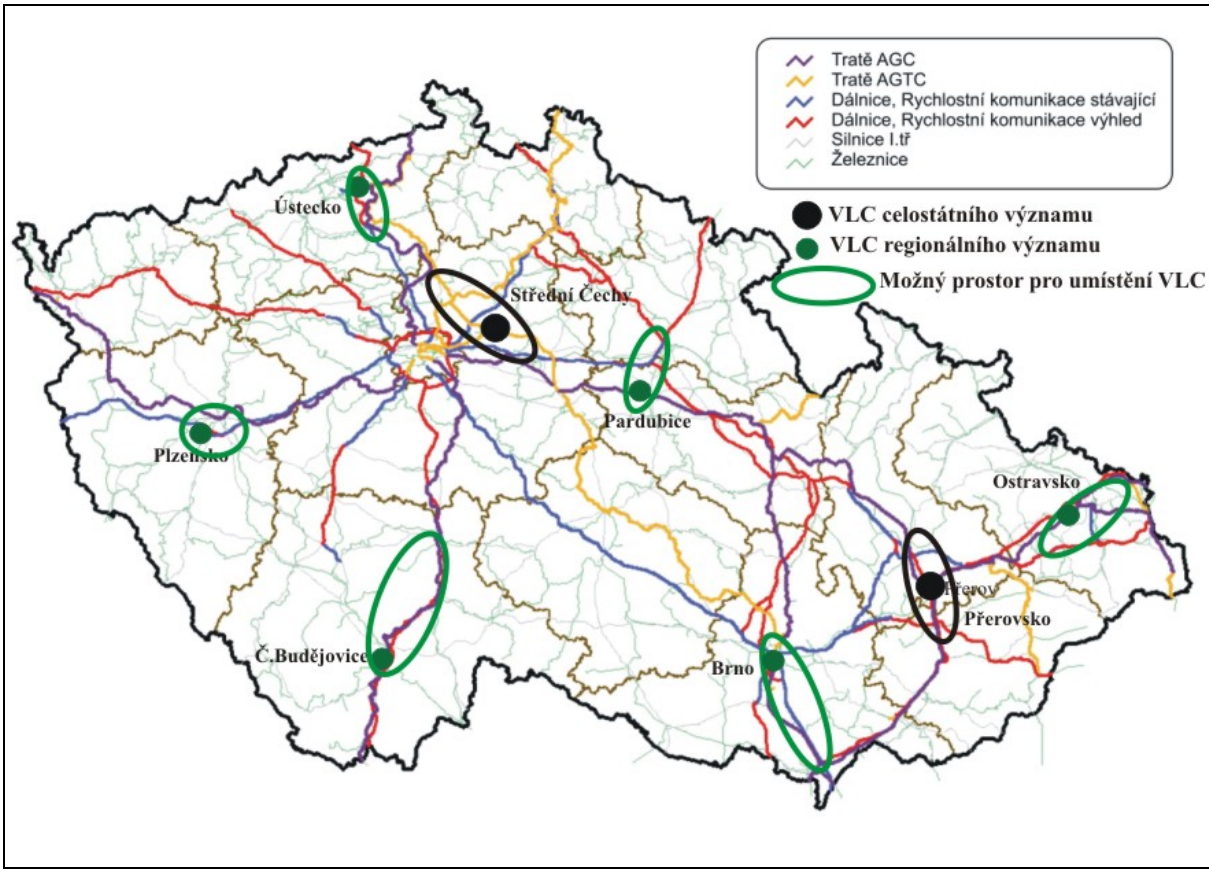


Figure 5 The planned network of public logistic centres in the Czech Republic

3. Increasing transport safety and awareness of its users

As the demand for mobility increases, the requirements concerning the measures for improving safety and smoothness of traffic are growing too. Traffic accidents, traffic jams, unclear road signs etc decrease the quality of transport for end users. These negative phenomena lead to other unfavourable consequences within society, including high costs for the entire society that are not covered directly by transport users. Reacting to these phenomena therefore represents one of the main priorities for transport policies of individual states.

In the area of increasing traffic safety and awareness of its users, it is necessary to implement at first the following measures:

- Implementing measures for technical safety of roads (priority modifications at crossroads with high accident rates, removing level crossings on Class I roads and main railway lines, improving the safety parameters of railway crossings);
- Introducing modern signalling systems for railway transport;
- Providing for interoperability and remote traffic management in railway transport, e.g. developing technologies for safe management of running of trains in line with European trends;
- Implementing the objectives of the project “Unified system of transport information (JSDI)” in order to increase traffic safety, minimise the risk of traffic jams and improve the awareness of road transport infrastructure users;
- Implementing intelligent transport systems on the motorway and speedway network;
- Improving the awareness of passenger transport users by developing a comprehensive information system.

The majority of instruments for the implementation of the given measures consist of introducing modern technologies and improving the quality of existing infrastructure or infrastructure being built.

4. Providing for conditions for quality air transport

A long-term increase in demand for mobility through air transport can be observed in the context of continuing integration within the EU, strengthening of external economic relations of EU member states, market innovations (low-cost airlines) or increase in tourism performance. The role of the public sector is to support air transport through building of infrastructure and ensuring necessary qualitative parameters at airports in its possession.
As for providing for conditions for quality air transport, it is necessary to implement at first the following measures:

- Preparing conditions for increasing the capacity of Prague - Ruzyně airport;
- Creating conditions for upgrading the technical airport infrastructure of public airports leading to an increase in air traffic capacity, quality and safety.

The majority of instruments for the implementation of the given measures consist of building of new infrastructure, improving the quality of existing infrastructure or infrastructure being built and introducing modern technologies.

5. Providing for conditions for quality waterway transport

The importance of waterway transport is rising due to a long-term increase in

demand (transport performance) in freight transport. If the impacts of waterworks on the ecology of territory are successfully eliminated, the waterway transport itself has a minimal negative effect on environment, especially with regard to energy intensiveness. Another advantage of waterway transport is partially the potential alleviation of road freight transport in the segment of mass substrates, thus increasing the safety of road traffic and decreasing damages to road infrastructure.

As for providing for conditions for quality waterway transport, it is necessary to implement at first the following measures:

- Dealing with the issue of navigability on waterways used for transport and other waterways the development and upgrading of which is in public interest;
- Upgrading the waterways infrastructure - additional equipment of waterways and ports with anti-flood measures, ensuring safe fuelling and waste storage in ports, support to installing public access functionalities in ports and docking locations (barrier-free access, access to vessels, etc);
- Upgrading the vessels;
- Preparing projects for installing additional infrastructure for recreational navigation on important transport routes.

The majority of instruments for the implementation of the given measures consist of building of new infrastructure, improving the quality of existing infrastructure or infrastructure being built and fleet renewal.

6. Supporting the development of non-motorised transport

Aside from its recreational function, non-motorised transport has also a big potential for short-distance commuting. This function can be used mainly in growing agglomerations and surroundings of cities. Investments into non-motorised transport generate significant benefits such as reducing the exhaust fumes of individual car transport, preventing traffic jams, economising public transport capacity or improving public health (fight against obesity etc.).

As for supporting the development of motor-less transport, it is necessary to first implement the following measures:

- Building infrastructure for bicycle transport with the aim of incorporating the bicycle transport more into the system of short-distance passenger transport;
- Separating bicycling from other modes of transport in order to decrease the number of traffic accidents involving cyclists.
- Development, innovation and renewal of pedestrian routes and zones.

The majority of instruments for the implementation of the given measures consist of building new infrastructure and improving the quality of existing infrastructure or infrastructure being built.

7. Supporting modern public transport

The need for available and quality public transport arises from several long-term trends. Due to problems with traffic jams and deterioration of the environment by car transport in cities, it is necessary to increase the efficiency of public urban transport with regard to time and territorial availability but also to transport comfort. This need is related to the expected continuation of the urbanisation and suburbanisation processes that will lead to larger agglomerations and conurbations. As the social diversification of the (not only urban) society increases, the requirements concerning the ability of (urban) public transport to react to different needs of individual groups of its users are also on the rise. The ability to satisfy the user demands for speed, costs or comfort is the decisive factor of competitiveness of public transport compared to individual transport.

At the same time, public transport still has to fulfil its traditional role in providing for sufficient service coverage of the territory for persons that do not want or cannot use individual transport. Public policies defining the desired volume and quality of services, subsidies to transporters or market entry rules are playing a significant role regard.

As for supporting modern public transport, it is necessary to first implement the following measures:

- Preparing conditions for service coverage so that rail transport represents the backbone of public passenger transport;
- Increasing the territorial coverage and functioning of integrated transport systems;
- Making all types of transport accessible to persons with limited mobility or orientation capacities;
- Supporting the development of vehicle fleet for public passenger transport and special technical equipment for non-accompanied combined transport;
- Better definition of standards in public passenger transport that will be used for selecting the transporters to provide the core service coverage of the territory.

The majority of instruments for the implementation of the given measures consist of building of new infrastructure, improving the quality of existing infrastructure or infrastructure being built, renewal of existing infrastructure and vehicle fleets and introducing legislative measures and changes in the market environment.

8. Improving the accessibility of regions through quality road transport

The development of road transport remains one of the key priorities of the transport policy of the Czech Republic, as it can ensure in the most efficient way general service coverage of the territory, mainly on the local/regional level for shorter distances. It plays an irreplaceable role in freight transport when high speed and precision of delivery of goods are needed, that is mainly for transporting full loads

and piece consignments. Improving the accessibility of regions is thus in full compliance with the expected upward trend in mobility demand.

From the macroeconomic point of view, the connection of all regions to a quality network of motorways or high-speed roads stimulates balanced development of regions and facilitates their involvement in international workload sharing (importance for foreign trade, influx of investments, tourism, etc.). A part of investments to road transport are targeted at eliminating its negative impacts on the environment and safety of its users.

As for improving the accessibility of regions for quality road transport, it is necessary to first implement the following measures:

- Continue in building the sections of the trans-European TEN-T network in the Czech Republic;
- Connecting all regions to a quality network of motorways and expressways
- Providing for sufficient capacity of road infrastructure in frontier and sensitive areas.

The majority of instruments for the implementation of the given measures consist of building of new infrastructure, improving the quality of existing infrastructure or infrastructure being built and renewal of existing infrastructure.

9. Improving the accessibility of regions through quality rail transport

Both passenger (long-distance and suburban) and freight railway transport have a significant potential for increasing their market share in their respective segments through improvement in speed and availability of services. Improving spatial and time accessibility of regions for railway transport is a necessary precondition for slowing the increase in road transport volume and related negative impacts. Railway transport could thus satisfy a major part of the expected increase in mobility demand.

As for improving the accessibility of regions to quality railway transport, it is necessary to first implement the following measures:

- Completing the modernisation of transit corridors (III. and IV. corridor); upgrading the key railway junctions, including the interconnection of corridors in the Prague railway junction;
- Preparing conditions for connecting all regions to a quality railway network;
- Supporting the development of cross-border railway transport projects;
- Reconstructing other tracks included in international agreements (e.g. the TEN-T network, AGC, AGTC) and other important tracks with the objective of reaching the recommended parameters;
- Turning other national and important regional lines (in areas where railway plays an important role) into optimum condition including rail systems of

regional and urban transport in case of their combination.

The majority of instruments for the implementation of the given measures consist of building of new infrastructure, improving the quality of existing infrastructure or infrastructure being built and renewal of existing infrastructure.

10. Improving the quality of rail transport

While the previous service is targeted at improving the accessibility of regions for rail transport, this service is targeted at improving the quality of rail transport as a whole. In addition to higher safety, the railway could present other comparative advantages as opposed to road transport (on certain sections and for a certain group of users) - higher speed and time availability, but also better comfort and flexibility. These changes would allow for the shift of a part of passenger and freight transport from roads to rail.

As for improving the quality of rail transport, it is first necessary to implement the following measures:

- Introducing modern technologies in rail transport (e.g. combining light rail systems with classic rail);
- By developing services in railway transport contribute to resolving the issue of increased air transport over shorter distances;
- Ensure the respect of business conditions on the railway network in a non-discriminatory manner for all operators by resolving the relations of the entities concerned;
- Implement the EU programme “Revitalization of Railways and Gradual Implementation of Interoperability”

Based on the consent of the government from December 2007, the function of operating the national railway infrastructure and regional infrastructure owned by the state has been transferred from Czech Railways to the Railway Infrastructure Administration as of 1 July 2008, including the respective material, technological and HR capacities (approx. ten thousand employees and assets for CZK 12 bn have been transferred). The transfer of the function of operator does not include the servicing of the infrastructure, i.e. organising and managing the traffic on the infrastructure, as the staff in charge of these activities also performs other activities not related to operating of the infracture, for example commercial activities in the area of passenger transport.

By transferring the servicing of the infrastructure from ČD to RIA, the process of transferring the function of infrastructure operator will be completed. RIA will become an infrastructure operator as defined by Act No 266/1994 Coll., on railways and ČD will become an independent transporter. The activities of infrastructure operator will thus be separated from the activities of the transporter in line with EU requirements concerning the separation of basic functions. The requirement to separate these functions is also provided for by the resolution of the Parliament of

the Czech Republic No 157 of 27 February 2008. The proposal how to solve the remaining activities has been prepared, the original deadline for submission to the government was postponed to 31 October 2009 (at the request of the MoT). The Czech Goverment entrusted the minister of transport to submit the "Proposal how to solve the remaining activities of the company České dráhy".

The majority of instruments for the implementation of the given measures consist of improving the quality of existing infrastructure or infrastructure being built, renewal of existing infrastructure and vehicle fleets, introducing modern technologies, introducing legislative measures and changes in the market environment.

11. Maintenance and renewal of existing infrastructure and completion of works in progress

This core service reacts to the requirement of users and providers of transport services concerning a rational usage of public financial resources. It reflects the fact that in case of need to choose from building new infrastructure and performing the necessary maintenance of existing infrastructure (or completing the infrastructure being built), higher benefit is usually generated by the maintenance or completion of infrastructure. It is caused by lower unit costs for providing the transport service. For example the cost of building 1km of new motorway is usually similar to turning several kilometres of existing motorway into the required technical condition.

- Ensure quality maintenance and renewal of transport infrastructure; give it preference over building of new infrastructure in case of insufficient financial resources;
- As a priority, complete constructions in progress (not just prepared administratively) and logical transport structures related to works in progress.

The majority of instruments for the implementation of the given measures consist of building (completing) new infrastructure and renewing existing infrastructure.

3.2 Defining core services

Based on the analyses contained in both previous chapters, this chapter specifies the following core services (in bold) for individual market segments in passenger and freight transport.

a) Transport in general

- Regulation by the state with the objective of optimisation and providing for a sustainable development of transport – **providing for a sustainable transport and competitiveness of individual sectors**

b) Market segment and related core service in passenger transport:

- Passengers in general – **improving conditions in passenger transport**;
- Passengers of long-distance transport (travels for longer distances, mainly of business or leisure type) – **connecting centres of international importance**
- Passengers of inter-regional transport – **connections between local regional centres**
- Passengers of the regional transport backbone (travelling for services within the region, ex. to the regional centre)
    - **providing for suburban transport**
    - **interconnecting larger municipalities with regional centres (the radial network)**
- Passengers of short distance transport (daily commuting to work, school, normal services etc.)
    - **providing for urban mass transport**
    - **interconnecting smaller municipalities and connecting them to the backbone network**
    - **providing for conditions for recreational transport**

c) Market segment and related core service in freight transport:

- Transporters in general – **supporting sustainability of freight tranport**
- Transporters of bulk goods – **providing for optimum conditions for the transport**
- Transporters of full loads – **providing for optimum conditions for the transport**
- Transporters of piece consignments – **providing for optimum conditions for the transport**

Each core service is implemented through a specific measure - see Annex 2. It is given for each measure whether it is of an infrastructure, mixed or non-infrastructure nature and in which sector/s the measures are implemented.

3.3 Main Development Areas and Axes of the Czech Republic

A key basis for planning further development of transport infrastructure is knowledge of the main development areas and their interrelation. The main development areas, where it is possible in the future to also expect increased transport demands, are indicated in the map (see Figure 3). Development axes are defined as a territory where it is possible to expect an increase in transport connections inducing requirements for building or modernizing transport infrastructure, and for which basic services defined in chapter 3.2. shall be implemented.

OB1 The largest and the most important development area is **Prague**. Its dynamic development is given by the development of the capital city, along with other centres surrounding it (Kladno, Beroun). This is the highest population concentration in the Czech

Republic, with a large concentration of industry in the area surrounding Prague and associated services (logistics). The area has key importance for domestic and international transport. Development locations are situated around Prague that are important in terms of industrial and related services, especially with regard to accessibility from main motorway routes regarding national and international connections. Other smaller industrial centres in the immediate surroundings of Prague are found in Kladno, Beroun, and thanks to the automobile industry, the developing industrial zones in Mladá Boleslav and Kolín. As a promising location for locating PLCs could be considered the surroundings of Lysá nad Labem or the area of the former military grounds of Milovice-Mladá.

OB2 Ostrava represents a large concentration of the population in several seats in close proximity of one another. Together with traditional industrial sectors, mineral extraction, chemical industry, etc., it forms exceptionally great demands on transport. The industrial centres of the region are found in the districts of Ostrava - město, Karviná and Frýdek-Místek. The greatest development may be expected in industrial zones around Nošovice and Mošnov, where PLCs are to be situated; heavy industry restructuring is ongoing in Ostrava and its surroundings.

OB3 Brno – the area of the second largest city in the CR also represents an important development territory. Also important are the ties to nearby foreign centres in Austria and Slovakia. Industrial sector focus is still concentrated on mechanical engineering manufacture. Developing industrial zones are concentrated in the localities of Černovická terasa, Modřice and Slatina, which would be advantageous for possible location of a PLC(s).

OB4 Hradec Králové/Pardubice – these two regional cities close to each other represent a large population concentration. A number of economic activities of a manufacturing and non-manufacturing character are also concentrated in the area; they are expected to develop further with corresponding demands on transport. The developing industrial zones are found mainly in the area of Pardubice. A port on the Labe is also planned in Pardubice; this locality should satisfy demands on locating PLCs.

OB5 Pilsen – in the area surrounding this regional city, there is a concentration of development areas with a number of new investments in manufacture and logistics. These are mainly concentrated along motorway D5. The largest development areas include the industrial zone at Borské pole, Nýřany and the area nearby the airport Plzeň - Líně, where construction of a PLC is being considered.

OB6 Ústí nad Labem – besides the regional city of Ústí nad Labem, Teplice is another nearby centre. The territory is affected by mineral strip mining, but the importance of other economic activities is growing. The developing industrial zones are concentrated in Lovosice, Krupka, and Havraň, whereas the largest is the IZ Triangle nearby Žatec. Conditions for building a PLC in this agglomeration serving also for servicing the area below the Krušné Hory Mountains may be sought out in Lovosice or in the area of Ústí nad Labem.

OB7 Liberec – the connection of the regional city with Jablonec nad Nisou represents a continuous agglomeration area. A number of investments are flowing into the area in the field of manufacture and related services. The traditional textile and glass-making

industries are gradually being replaced by investments into new industrial zones, of which the largest are located around Liberec. The area also has the most advantageous location for locating a PLC.

OB8 Olomouc – regional city with a strong concentration of population and a number of industrial enterprises, mainly in the fields of mechanical and electrical engineering. Another industrial centre is nearby Přerov, which is also an important transport junction. This locality has also been proposed as a favourable location for a PLC.

OB9 Zlín – besides the regional city this also concerns its other neighbouring centres Otrokovice and Vizovice. The centre of industry is found in Zlín and Otrokovice, and another development centre is located in Tlumačov.

OB10 České Budějovice – regional city and main centre of the southern part of Bohemia with international ties to Austria. The surrounding area has more of a recreational and agricultural character. Most industrial enterprises are concentrated in the regional city's surroundings. On its north-west edge in Nemanice construction of a PLC is also under consideration.

OB11 Jihlava – regional city with a concentration of industry and relatively high population concentration. The industrial structure in this area is oriented mainly towards mechanical engineering and wood processing. New developing enterprises are found in the industrial zones of Jihlava and Havlíčkův Brod.

OB12 Karlovy Vary – besides the regional city, another centre is Ostrov. The area is partially affected by strip mining of mineral resources; its character is further strongly influenced by spa tourism and tourism in general. New industrial zones are developing in the area surrounding Karlovy Vary, Ostrov and Bochov.

The link of selected projects of transport infrastructure assessed by the multi-criteria analysis to development axes and specific measures for ensuring core services in particular market segments is visible in Annex 4; links of inland waterways projects to development axes and specific measures are presented in the table in Annex 5.

Development axes are defined as territories where increase of transport connections leading to requirements of building or modernization of transport infrastructure and implementation of core business defined in chapter 3.2 is expected.

Internationally relevant development axes particularly connect the Prague agglomeration and development areas of Central Bohemia with Germany, Austria and Poland through important regional development areas; and further Moravia and Silesia with Austria, Poland and Slovakia including the interconnection of two most important development areas of the eastern part of the country, Brno and Ostrava – see Figure 6.

Nationally relevant development axes complement the internationally relevant axes by connecting other important development areas. The gap analysis results from mapping of the capacity and quality deficiencies of transport infrastructure – mainly in the directions of development axes.

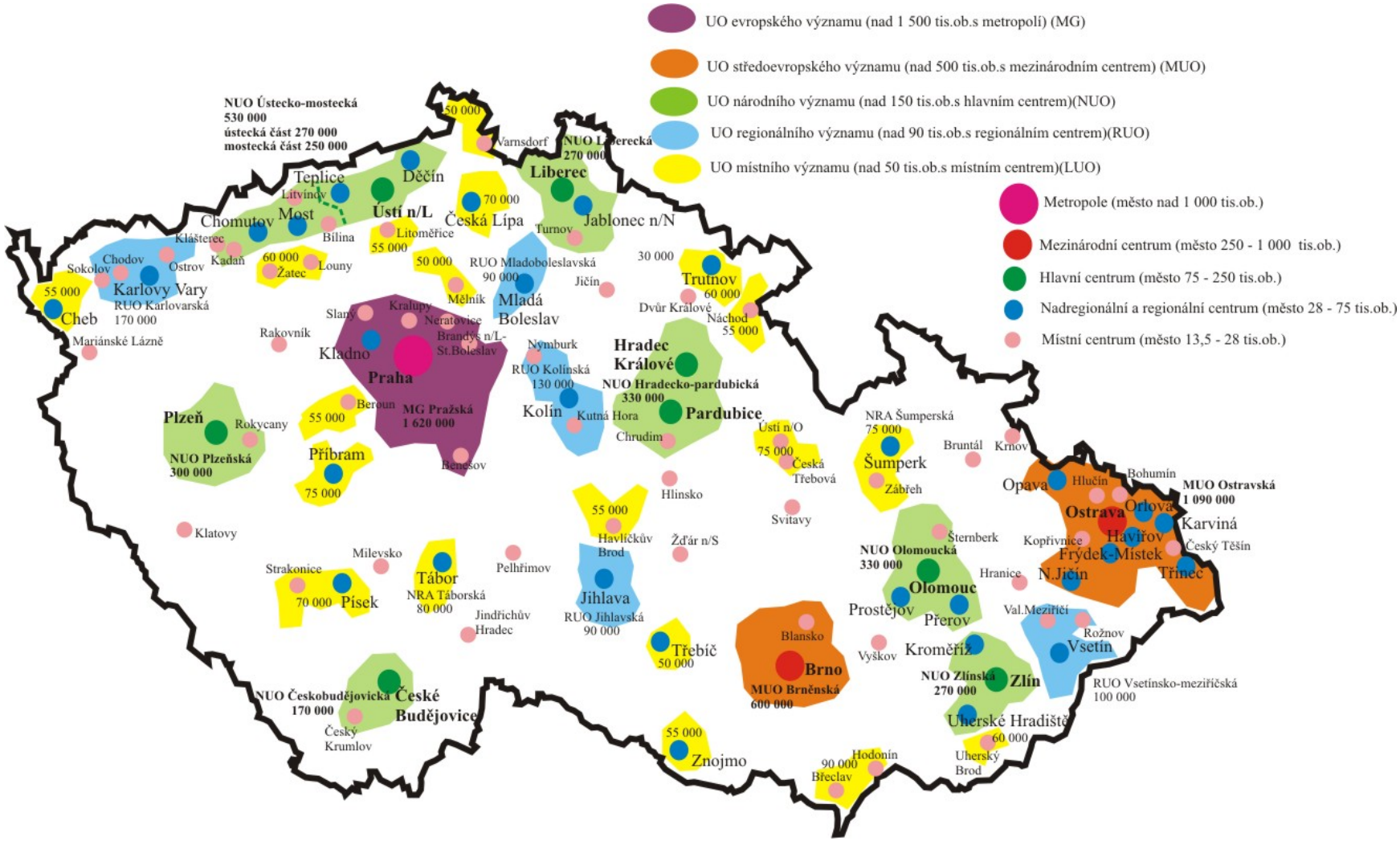


Figure 6: Design of urban areas (UA) divided into five categories based on the ESPON study (source: MD)
UA of European relevance (above 1,500 thousand inhabitants with capital) (MG)
UA of Central European relevance (above 500 thousand inhabitants with international centre) (MUO)
UA of nationwide relevance (above 150 thousand inhabitants with main centre) (NUO)
UA of regional relevance (above 90 thousand inhabitants with regional centre) (RUO)

UA of local relevance (above 50 thousand inhabitants with local centre) (LUO)
Metropolis (city with population above 1,000 thousand)
International centre (city with population between 250 and 1,000 thousand)
Main centre (city with population between 75 and 250 thousand)
Regional centre (city with population between 28 and 75 thousand)
Local centre (city with population between 13.5 and 28 thousand)

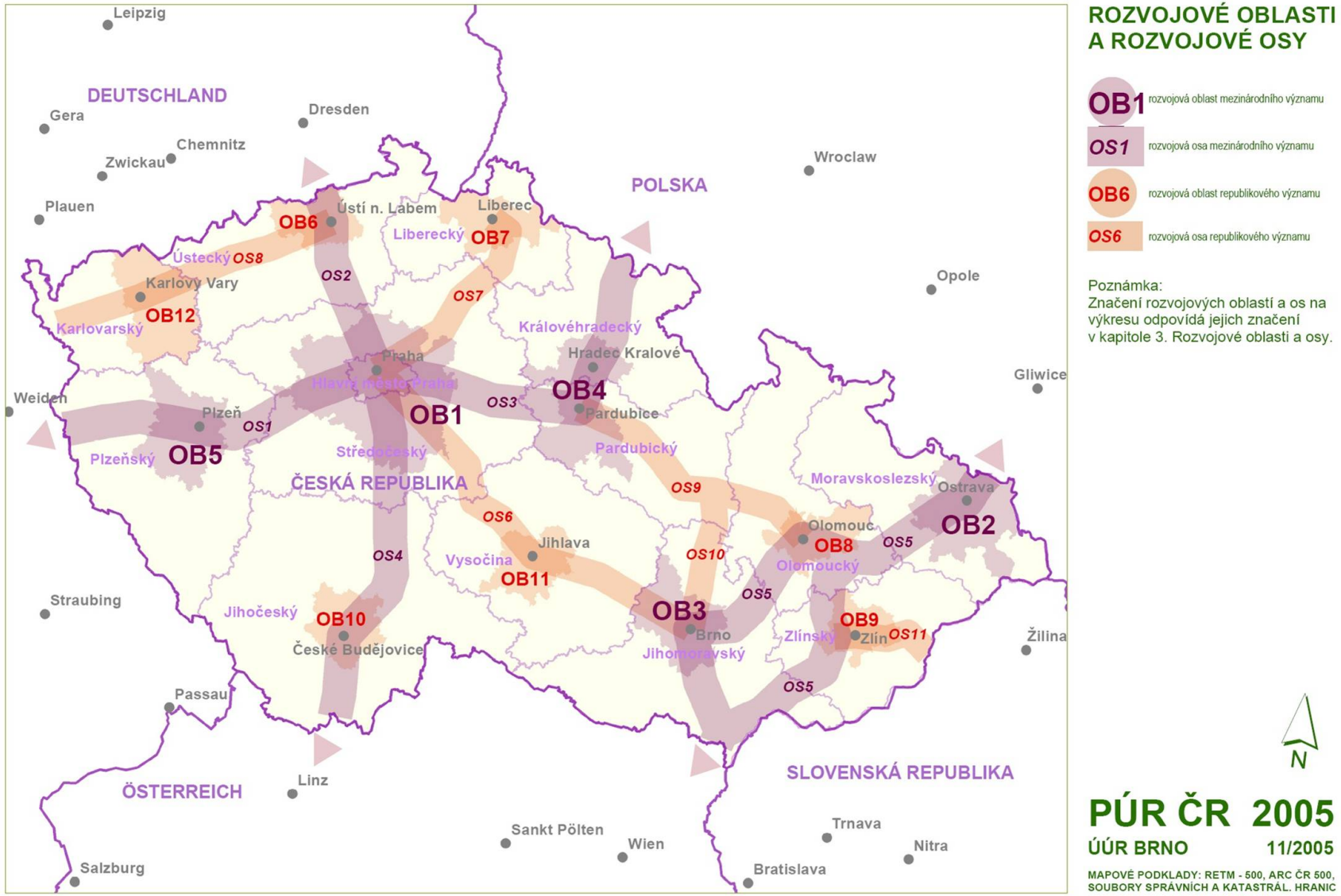


Figure 7: Development areas and axes
OB 1 – development area of international relevance
OS 1 – development axis of international relevance

OB6 – development area of nationwide relevance
OS6 – development axis of nationwide relevance

4

Gap Analysis

4.1 Comparison of the current condition and basic needs of individual sectors including compilation of a list of relevant projects

Transport infrastructure equipment with modern technologies important for solving the interoperability of traffic, optimization of the capacity of infrastructure, increasing traffic safety and decreasing environmental impacts is an integral part of infrastructure af all transport modes.

4.1.1 Road transport

The basic requirement of the Czech and European transport policy is accessibility of all regions. The Czech transport policy extends this requirement to regions – NUTS III – in the sense of their connections to high-quality road infrastructure. High-quality road connection is mainly represented by the network of motorways and expressways. With regard to connections of the individual regions it is necessary to complete motorway/expressway sections, or modernize important segments of Class I roads that provide this accessibility:

The recent yeas have seen constant growth in the transport burden of roads and motorways. Aside from connecting regions to high-quality road infrastructure, it is also necessary to resolve bottlenecks on the road network with insufficient capacity for securing fluidity and safety in road transport and a decrease in its negative impacts on the environment.

Connection of regions

Prague and the Central Bohemia Region

Completion of SOKP (Prague City Ring) is crucial in this area. This first concerns completing construction of the unfinished segments Lahovice – Slivenec, D1 – Vestec and Vestec – Lahovice and then completing construction of the remaining missing segments Ruzyně – Suchdol, Suchdol – Březiněves, Březiněves - Satalice and Běchovice – D1. Completion of SOKP will strongly influence the entire transport system in Prague and the surrounding agglomerations. It shall interconnect the motorways and expressways as well as class I and II radial roads leading to the capital city. It shall mainly free from transit transport the capacity radial roads I/2, R4, I/9, I/12, II/102 and the future D3.

South Bohemian Region

Completion of the motorway D3 and in the southern part (from Třebonín) the connecting expressway R3 in its entire length in the route Prague – Tábor – České Budějovice – Dolní Dvořiště national border with Austria. So far only the part of the highway between Tábor and border of the Central Bohemia Region in the direction of Prague is completed, and its construction is continuing at the border with the Central Bohemia Region. The segment between Tábor and Veselý nad Lužnicí is under construction.

Completion of the expressway R4 Prague – Nová Hospoda linked to I/20 in the direction of Písek. The segments between Příbram and Nová Hospoda are currently under

construction or in the preparation phase; after their completion R4 shall be operational along its entire length. Modernization and possibly increasing capacity of road I/20 Písek – České Budějovice for connecting Pilsen with České Budějovice and further completion of increasing the capacity of road I/34 in the segment České Budějovice – Třeboň.

Pilsen Region

Basic connection of the region is completed by motorway D5 Prague – Pilsen – Rozvadov national border with Germany.

Karlovy Vary Region

For the economically weak and structurally challenged region, the expressway route R6 Prague – Karlovy Vary – Cheb – national border with Germany is very important. Segments of R6 are currently under construction, which shall facilitate a fast high-capacity link of Karlovy Vary with Cheb. It is also necessary to complete the capacity increase of road I/21 linking Cheb and Mariánské Lázně with motorway D5.

Ústi nad Labem Region

Completion has yet to be reached of the last part of motorway D8 in the segment Lovosice – Řehlovice, which is currently under construction. This is the last segment of the integral motorway route Prague – national border with Germany, which is a part of the existing road network of the 4th European multi-modal transport corridor, and that will represent a direct motorway connection of Prague and Ústí nad Labem with Dresden and Berlin. For connection of the Most-Chomutov agglomeration with Prague, it is necessary to complete the expressway R7 in the section Slaný – Chomutov.

Liberec Region

The Liberec Region has its basic network nearly completed. Connection to the motorway and expressway network is provided by R35 in the segment Liberec – Turnov and also to Prague via R10. Modernization still remains to be completed on the segment I/35 Bílý Kostel n/N – Hrádek n/N, national border (Poland and Germany).

Hradec Králové Region

The Hradec Králové Region still needs to complete the motorway D11 in the segment of Sedlice or Praskačka – Hradec Králové (the segment Sedlice – Praskačka operated as half profile). There is also the need to complete the segment Hradec Králové - Jaroměř with further continuation in parameters of the expressway (R11) in the direction of the national border with Poland near Trutnov (Královec). The role of D11, in addition to interconnection of Prague and Hradec Králové and Pardubice, is mainly in its connection to the future expressway R35 in the direction of Olomouc, and creation of an alternative high-capacity connection to the overburdened D1 between Northern, Eastern and Central Bohemia and Central and Northern Moravia and Silesia. Also important is the connection of Hradec Králové with Liberec, whose solution has not yet been prepared in consequence of problems with the creation of the route R35 through the UNESCO Geopark Český ráj and in immediate proximity of the Protected Landscape Area by the same name.

Pardubice Region

The Pardubice Region for now has the opportunity to connect to the motorway and expressway network via motorway D11. Connection to motorway D11 is possible by using road I/37 in the direction of Hradec Králové or along road I/36 to Lázně Bohdaneč to the flyover crossroads of Chýšť in the direction of Prague. After completion of construction of R35 in the segment Sedlice – Opatovice n. L. connection shall be enabled for the direction to Hradec Králové – Jaroměř – Náchod via the flyover crossroads Sedlice.

A key construction for the Pardubice Region is expressway R35 in the segment Opatovice – Mohelnice and its connection to the already operational segments of R35 between Mohelnice and Olomouc and Olomouc and Lipník nad Bečvou. The only section of R35 currently under construction is the segment Sedlice – Opatovice, which shall connect motorway D11 Prague – Hradec Králové with road I/37 Pardubice – Hradec Králové, and shall thus become one of Pardubice connecting routes onto motorway D11 for both regional and transit transport.

Vysočina Region

The Vysočina Region has its basic connection to the network of motorways and expressways already finished – motorway D1 runs through the region. But the road connection of Jihlava with other former district seat cities is unsatisfactory. It is also necessary to increase capacity, with the help of bypasses, of road I/38 connecting the regional city (Jihlava) with Austria and the Central Bohemia Region.

South Moravian Region

This region has good connection to the network of motorways and expressways (motorways D1, D2). But completion has not been reached of the connection with Austria in the segment leading to the national border (R52 Pohořelice – Mikulov). Construction is being prepared of R43 for connecting D1 with the future R35. In terms of capacity however, the current connection Brno – Mikulov national border is satisfactory for now.

Olomouc Region

The region has basic connection to the network of motorways and expressways. It is necessary to complete construction of the expressway R35 for connection with the Pardubice, Hradec Králové and Liberec Regions, which will represent a significat unloading of D1 motorway at the same time.

Zlín Region

For connection to the network of motorways and expressways, the Zlín Region needs to open the entire segment of D1 Vyškov – Hulín, which is soon to be completed, and also build the expressway R49 Hulín – Fryšták – Střelná, national border with Slovakia and expressway R55 at least in the segment Hulín – Uherské Hradiště.

Moravian–Silesian Region

The Moravian-Silesian Region needs to complete motorway D1 in the section Hulín – Přerov – Bělotín – Ostrava, to complete the entire expressway R48 Bělotín – Český Těšín state border with Poland and to modernize road I/11 in the section Havířov – Mosty u Jablunkova, state border with Slovakia.

Completion of construction of the entire motorway route D1, including segments of the existing D47, connecting the main industrial areas and centres of residential areas in the

axis Prague – Brno – Ostrava, is one of the fundamental road constructions with importance for domestic connections and for connecting to the infrastructure of the European Union. Completion of D47 (future D1) shall also contribute to resolving capacity problems on the roads of the Ostrava agglomeration, and shall facilitate, upon completion of the segment Bohumín – national border, connection to the future Polish motorway A1, which shall lead all the way to Gdansk. R48 is an important connection mainly for long-distance transport (into Poland through the Chotěbuz border crossing). R48 aside from connection with Poland shall also be a part of high-capacity connection with northern Slovakia. The importance of this connection grew after building of the large industrial enterprises of Hyundai in Nošovice and KIA in Žilina. Along with roads I/68 and I/11, it forms a transport link between Frýdek-Místek and Žilina in Slovakia.

Expansion of capacity of selected segments

The situation is worst in and around Prague in terms of full utilisation of capacity. Congestion even forms on the highest capacity roads, mainly as a result of the absence of the Prague Ring Road (SOKP) – also termed expressway R1. In Prague this mainly concerns the overburdened part of the South Connection in the segment between D1 and Barrandov bridge and the linking street K Barrandovu, which are used for transit transport.

The solution lies in completing SOKP. The transport importance of the entire circuit around Prague is mainly comprised of the fact that alleviation of overburdened city roads of Prague shall occur with decrease in transit traffic – limitation shall occur of travel through the city centre. A decrease shall also occur in intensity of transport on the road II/101 thus leading to environmental improvement of municipalities lying along this roadway.

Completion of the Vysočany, Štěrboholy, Radlice and Břevnov radials and the inner city ring shall also play a vital role in improving the capacity of roads in Prague.

Bottlenecks on the road network include:

- D1 at the Brno ring road
  High capacity utilisation of D1 at the Brno ring road shall be resolved through planned expansion to six traffic lanes near Brno in the segment Kývalka – Holubice.
- I/2 in the Prague area and in the Central Bohemia Region must be resolved by rerouting and bypasses of municipalities practically along its entire length all the way to Pardubice, mainly including Uhříněves, Říčany, Zásmuky, Kutná Hora, and Přelouč.
- I/3 in the segment Mirošovice – Benešov
  Today the road I/3 between Mirošovice and Benešov is already failing to meet the capacity needs of existing traffic. In terms of traffic burden, it is one of the worst segments in the entire Czech Republic. The solution to this situation shall be construction of the motorway D3, which shall interconnect Prague and the area of South Bohemia, and connect the Tábor and České Budějovice areas to the Czech Republic's motorway network. Unfortunately due to problems when selecting a route, the first part of the motorway from Prague to the border of the Central Bohemian Region in a length of around 60 km shall be implemented in the last place. Making operational the motorway D3 in this segment would cause alleviation

of the heavily used section of D1 between Mirošovice and Prague, which has already been built in six-lane configuration.

- I/3 road running through České Budějovice
  Exceeding the boundary of 75% capacity use for road I/3 in afternoon peak shall be resolved in the future by completion of the motorway D3 and the city bypass by the so-called north tangent, which shall interconnect the motorway with the roads I/20 and I/34.
- Continuation of I/4 linking to R4 in the segment Nová Hospoda – Strážný national border, mainly at the bypasses and rerouting of Strakonice, Volyně, Vimperk, where there are unsuitable technical and safety parameters.
- D8 in the missing motorway section - to be resolved by completion of the section Lovosice – Řehlovice.
- I/9 indicates insufficient capacity parameters, i.e. parameters in the passage through Mělník and it is necessary to resolve the unsatisfactory segments in the area of Česká Lípa, Nový Bor and Rumburk.
- It is necessary to conceptually resolve the segment of road I/10 Turnov – Harrachov.
- The unsatisfactory conditions on road I/11 were removed in the segment Prague – Hradec Králové by construction of D 11, in the next course it is possible to expect a decrease in intensities after implementation of R35 and resolution of the roads in the area of the Jeseník Mountains. Improvement is expected here of the technical and safety parameters by point and linear modifications. I/11 road running through Opava and Ostrava /Poruba/ (shall be resolved by the northern bypass of Opava and rerouting and expansion to a four-lane road in Ostrava). In relation to opening the strategic industrial zone Nošovice, it is possible to eventually expect capacity problems also in the segment Dolní Tošanovice – Jablunkov, mainly in the area of Třinec. These should be resolved by planned modernization to a four-lane road in the segment Nebory – Bystřice, so far the Jablunkov bypass has been opened.
- The road I/12 is unsatisfactory in terms of capacity in the area between Prague (Kyje) and Úvaly. It should be resolved by rerouting to a new position further south.
- I/13 – bypass of Bílina will be resolved by a four-lane road in the northeastern part of the town. Rerouting of road I/13 between the motorway D8 and Děčín has to be territorially resolved in such way to ensure its acceptability regarding the protection of nature and landscape and to fulfill technical standards for its construction at the same time.
- Deficiencies in terms of capacity on road I/14 are found in the area of Liberec – Jablonec nad Nisou, in the area of Náchod and Ústí nad Orlicí. They shall be resolved by local and linear modifications of the route.
- Deficiencies in road I/15 are now appearing between Most and Lovosice, it is possible to expect that they shall be partially eliminated after completion of R7. Further connection from Litoměřice to the north shall be resolved by local modifications.

- Also road I/16 shall be resolved by point and linear modifications in the area of Slaný and Velvary. In the area of Podkrkonoší the situation shall change after completion of R11 through Trutnov to the border with Poland.
- The local bypasses and modifications to road I/17 shall mainly improve safety along the entire route.
- By roads I/18 and I/19 local deficiencies shall be removed by point and directional modifications.
- I/20 is designed for improvement of parameters by a series of local reroutings along its entire length.
- A series of reroutings has been proposed for road I/21 in the area of Františkovy Lázně up to connection with D5, because this exposed road serves as a connecting route/conduit to D5 from the Karlovy Vary Region and its current status does not satisfy projected intensities.
- It is necessary to remove point and directional flaws on road I/22, and implement bypasses of important municipalities.
- The unsatisfactory section of road I/23 must be replaced by reroutings and bypasses, which however are not considered to be priority at the present time.
- On road I/24 there is a priority rerouting of Suchdol nad Lužnicí – Tušť and elimination of level railroad crossings.
- On road I/26 it is necessary to resolve the bypass of the municipality of Babylon; other modifications are not indicated as priority.
- I/27 on the route leading through Pilsen shall be partially resolved by completion of the motorway connecting route to D5 at Jižní Předměstí, and the ongoing increase in capacity of the city section Tyršův Sad – Sukova by expansion into four lanes in the length of 1 km. Further investments are also being prepared in the segment Borská – Přemyslova and Sukova – Borská in a total length of around 2 km.
  I/27 in the segment Most – Litvínov – shall be resolved by widening to four traffic lanes.

- I/30 in Ústí nad Labem
  There is high use of road capacity in Ústí nad Labem and surroundings, mainly road I/30 running between Lovosice and Ústím nad Labem along the left bank of the Labe River, which substitutes for the unfinished motorway D8. The solution that leads transit traffic away from the city is found in completion of ongoing construction of the segment Lovosice – Řehlovice on route D8.

- I/31 in Hradec Králové (city ring)
  There is high use of capacity of roads in Hradec Králové and surroundings, mainly I/31 as the inner city ring. Completion of motorway D11, which is built to temporary completion in front of Hradec Králové, and expressway R35 and its connection both play an important role in resolving the situation. Completion of the remaining section as far as Hradec Králové has been delayed by various property rights disputes concerning pieces of land in the designed motorway route. The situation shall be resolved after completing construction of the motorway crossroads Sedlice R35-D11 (R35 direction of Olomouc). Around Hradec Králové the motorway D11

shall join R35 and the two shall run together as far as the second motorway crossing R35–D11 where R35 shall depart to head towards Liberec.

- I/33 in Náchod and Jaroměř
  The insufficient capacity of I/33 in Náchod and Jaroměř shall be resolved by planned bypasses. Connection with Poland shall be resolved in the future by continuing D11 from Jaroměř in the form of expressway R11 to the Polish border, which shall alleviate the current I/33 by absorbing part of the traffic burden.

- I/34 in Pelhřimov must be resolved by completion of the bypass in relation to further events continuing towards Kamenice nad Lipou. It is also necessary to resolve the segment between České Budějovice (inclusive of) and Jindřův Hradec (inclusive of), mainly the bypasses of Lišov, Lásenice, and Stráž nad Nežárkou (under construction). This also goes for the section Humpolec – Svitavy, mainly Havlíčkův Brod, Česká Bělá, Humpolec, Hlinsko and Polička.
- I/35 in the segment Hradec Králové – Mohelnice
  High use of capacity along the entire segment of Hradec Králové – Mohelnice, necessary to resolve by construction of R35. In the section between Hranice na Moravě and the border with Slovakia, where construction of an expressway is not planned, connection to the expressway and motorway networks should be resolved by a new route in the section Palačov – Valašské Meziříčí (connection to R48).
- On road I/36 bypasses of municipalities shall be created, including the problematic segment Bohdaneč – Pardubice.
- On road I/37 it is necessary to resolve problems in the area of Hradec Králové – in relation to D11 and R35 and the Chrudim bypass.
- On road I/38 priorities are considered to be the bypass of Kolín (under construction), Havlíčkův Brod and implementation of a bypass of Moravské Budějovice and Znojmo.
- Road I/39 shows certain bottlenecks, but which are not yet regarded as priority.
- Road I/40 needs bypasses of municipalities, but they are not yet considered priority.
- I/42 in Brno High utilization of the capacity of the road I/42 in Brno shall be resolved by investment into the Large Brno Ring Road (I/42). Four investment events are planned.
- Problems with roadway I/43 shall be resolved by construction of the sections 4301 and 4302 of expressway R43, further in the medium-term horizon bypasses of municipalities and other modifications have been proposed (in the area of Letovice in the first phase).
- Homogenization on I/44 of the section through Červenohorské sedlo has been completed, and reconstruction is prepared for the section Vlachov – Rájec.
- On roads I/45 and I/46 there are bottlenecks, but they have not yet been considered to be priority, implementation of a tunnel under Červenohorské sedlo is being considered, but from today's aspect only in the long-term horizon.
- Bottlenecks on road I/47 shall be eliminated by opening of the motorway D1 (in the section Lipník nad Bečvou – national border with Poland, indicated so far as D47).

- I/48 in Frýdek-Místek. Completion of the ongoing construction of R48 along its entire route and mainly the bypass of Frýdek-Místek should resolve the insufficient capacity of R48 in Frýdek-Místek. The continuously delayed construction of the bypass of Frýdek-Místek is caused mainly by various appeals by civic associations.

- I/49 between Zlín and Otrokovice. The roads of the Zlín agglomeration have insufficient capacity. This mainly concerns I/49 from Otrokovice through Zlín up to Vizovice and Class II road II/490 between Zlín and Fryšták. Its resolution is planned in the form of construction of expressways R49 and R55. Expressway R49 shall link to motorway D1 at the flyover crossroads Hulín, where it meets R55 and R49 with the backbone motorway route in the Czech Republic. R 49 forms the basis of the transport skeleton of the Zlín Region. The road runs from Hulín via Fryšták, Slušovice, Vizovice to the national border with Slovakia.
- Road I/50 shows a series of deficiencies, which must be resolved by point and linear modifications, which however are currently not considered to be priority. Mainly the sections over the Chřiby Hills and through the town of Bučovice are problematic in terms of traffic.
- The issue of I/51 is resolved by a bypass of Hodonín in its entire length.
- The issue of road I/52 shall be resolved by completion of the second traffic lane on R52 in the missing section of Pohořelice – Mikulov national border.
- Road I/53 shows a number of problematic aspects, which shall be resolved by bypasses and modifications (Lechovice).
- Road I/54 shows a series of problematic aspects along its entire length, which is not considered however to be priority.
- In the future, I/55 shall be gradually replaced by expressway R55. The priority is construction of the bypass of Otrokovice to R55 and the linking segment from Napajedla to Uherské Hradiště or Staré Město, which shall remove the problem of the now nearly exhausted capacity of the route through both localities.
- It is necessary to resolve the issue of I/56 in relation to transport service of the affected area of the Moravian-Silesian Region.
- A bypass of the municipality of Hladké Životíce has been designed at road I/57.
- I/58 in the suburbs of Ostrava. High use of capacity on I/58 in the Ostrava agglomeration, especially on the route through Mošnov shall be resolved by planned bypass of Mošnov and Příbor and by modernization of the linking segment Příbor – Skotnice.
- A bypass of Jeseník is expected for road I/60.
- On other segments of Class I roads, there are no priority events presently considered for removing bottlenecks, or dangerous places.

Recommendations for priorities for road transport infrastructure

With regard to current and future demands, the following should be the most immediate measures for road infrastructure:

- Speed up preparation for commencing construction of the remaining sections of the Prague Ring Road SOKP;
- Speed up preparation of construction of the entire D3 motorway segment Prague – Nová Hospoda within the territory of the Central Bohemian Region, so that after its completion it would be possible to make the entire motorway route operational between Prague and České Budějovice;
- Develop maximum effort to fast negotiations and approval of the route of expressway R35 between Opatovice a Mohelnice and include it into the construction plan;
- Use all possibilities leading to approval of route R43 in the section D1 – Kuřim, and commence preparations for construction;
- Speed up preparation and commencement of constructing the segment of R55 between Napajedla and Uherské Hradiště (completion planned by the end of 2016);
- Finish resolving preparation of the Frýdek-Místek bypass and shorten the term for construction (planned for end of 2013);

4.1.2 Rail transport

As it is in the other transport sectors, the basis of rail support is its infrastructure subsystem and the operation of its own conveyance. The vast majority of the rail network is formed by publicly accessible infrastructure, whose building and operation is provided by the Czech government. Operation can then be divided into personal transport, whose scope and form is in the clear majority again determined by the public sector on the basis of its demand. For long-distance transport, in the Czech Republic the customer is the Czech government itself by means of the Ministry of Transport, whereas for regional transport the individual regions are the customers. The quality of the fleet in personal transport is depends on the possibilities of carriers, although the customer may establish conditions for its quality. The problem is that funding for fleet renewal has so far only been granted in bus transport within the framework of equalization payments. This, along with the high investment requirements in acquiring new rolling stock, is the reason why aging and inadequate rolling stock is still in operation. This factor influences the attractiveness of personal rail transport mainly in comparison with qualitative parameters amongst

competing types of transport, amongst the bus fleet and individual automobile transport. Freight transport has been totally liberalized in terms of legislation, and its scope depends purely on carriers in relation to the demand of their customers – transporters.

In terms of rail infrastructure hierarchy, priority is placed on backbone rail lines. This basic network is formed mainly by four so-called transit rail corridors that are important even from the pan-European viewpoint; they are thus included in a series of international agreements.

Completion of constructed transit rail corridors

The 1st transit corridor is part of the line E 61 AGC E 61 Stockholm – Trelleborg – Sassnitz Hafen – Berlin – Bad Schandau – Děčín – Nymburk – Havlíčkův Brod – Brno – Břeclav – Bratislava – Komárom – Budapest, of line C-E 61 Stockholm – Trelleborg – Sassnitz Hafen – Berlin / Seddin – Bad Schandau – Děčín – Nymburk – Brno – Břeclav – Komárom / Hegyeshalom – Budapest, parts of Priority Project no 22 based on Decision no 884/2004/EC Athens – Sofia – Budapest – Vienna – Prague – Nuremberg / Dresden and the former Pan European Corridor IV Berlin/Nuremberg – Prague – Bratislava – Budapest – Bucharest/Sofia – Constanta/Thessaloniki/Istanbul. It provides the main railway connection of the Czech Republic with Western Europe - it is the only efficient rail line between the Czech Republic and Germany. The vast majority of long-distance international passenger and freight transport is implemented here, with Germany being the Czech Republic's most important trading partner. Towards the east, it mainly enables connection with Slovakia and Hungary. In long-distance domestic passenger transport it links two of the most important cities - Prague and Brno – and also enables connection to North Moravia. In regional passenger transport it provides important connections in the area of Prague towards Kolín and Pardubice and towards Kralupy nad Vltavou and Ústí nad Labem. On the 1st corridor there is still the need to complete modernization of the section Ústí nad Orlicí – Brandýs nad Orlicí.(including railway stations), and Úvaly – Prague-Libeň (including railway stations), modernization of the Nelahozeves and Děčín tunnels and modernization of the passage through rail junctions and stations, which were not implemented within the framework of modernizing the track sections. Their modernization shall provide the same technical parameters on the though-pass as have the connecting sections of corridor lines. These include the following junctions: Kolín, Břeclav, Brno, Česká Třebová, Pardubice, Prague (Prague-Holešovice – Prague-Bubeneč), Kralupy nad Vltavou and Ústí nad Orlicí. So far through-passes have been completed through the junctions Děčín, Ústí nad Labem and Choceň.

The 2nd transit rail corridor is a part of the line E 65 AGC Gdynia – Gdansk – Warsaw – Katowice – Petrovice u K. – Ostrava – Přerov – Břeclav – Vienna – Bruck a.d. Mur – Villach – Jesenice – Ljubljana – Rijeka, of line C-E 65 AGTC Gdynia – Gdansk – Katowice – Petrovice u K. – Ostrava – Břeclav – Vienna – Villach – Jesenice – Ljubljana – Rijeka, and a part of the Priority Project no. 23 based on Decision no. 884/2004/EC Gdansk – Warsaw – Brno / Bratislava – Vienna (the main line corresponds to the former Pan European Corridor VI). The importance of this line lies mainly in the area of freight transport, mainly transit transport leading from Poland (especially the industrial area of Silesia) to Slovakia, to Austria, Italy and the Balkans. This line has key importance for domestic freight transport as well, because it connects an important part of the Ostrava

area, where the existence of a number of enterprises depends upon rail freight transport. In long-distance passenger transport this mainly concerns connection with Prague. Transit passenger long-distance transport between Poland and Austria is rather unimportant. Structural modernization of the 2nd corridor has already been concluded, and the ongoing modernization of the Břeclav junction represents the last major building project.

The 3rd transit rail corridor is a part of the line E 40 AGC Le Havre – Paris – Forbach – Frankfurt (M) – Schirnding – Cheb – Prague – Olomouc – Ostrava – Žilina – Košice – Čierna n/T – Lvov, of line C-E 40 AGTC Le Havre – Paris – Forbach – Frankfurt (M) – Schirnding – Cheb – Pilsen – Prague – Olomouc – Hranice na M. – Ostrava / Púchov – Žilina – Košice – Čierna n/T – Lvov, a part of Priority Project no 22 based on decision no 884/2004/EC in the part Břeclav – Prague – Nuremberg with the crossborder section Nuremberg – Prague and based on the same Decision, in the section Přerov – Ostrava, it is a part of European Priority Project no 23. It is also a part of the former Pan European Corridor IV and VI. The importance of the corridor lies mainly in the area of domestic transport, or its outer lying part for international transport linked to Slovakia (possibly CIS nations) and Germany. Transit transport through the Czech Republic on this axis is not currently implemented due to insufficient infrastructure parameters. But potential exists here in connecting Bavaria – Silesia (Munich – Wroclaw / Katowice). The 3rd corridor mostly overlaps with the 1st corridor, and with the 2nd corridor in the area around Ostrava. The section Česká Třebová – Přerov forms a part of the backbone connection of Prague and the Ostrava area, with importance for long-distance passenger and freight transport. This section was partially implemented within the framework of modernizing the 2nd corridor as its branch line. The railway could have very big potential in the western part of the corridor, mainly between Prague and Pilsen. Modernization is ongoing of parts of the corridor that do not overlap with the line of the 1st and 2nd corridor, i.e. in the section Prague – Cheb national border with Germany and Dětmarovice – Mosty u Jablunkova national border with Slovakia. So far only optimization of the line section Pilsen – Stříbro and connecting branch Přerov – Česká Třebová have been completed.

The 4th transit rail corridor lies along the line E 61 AGC Stockholm – Trelleborg – Sassnitz Hafen – Berlin – Bad Schandau – Děčín – Nymburk – Havlíčkův Brod – Brno – Břeclav – Bratislava – Komárom – Budapest, on the lines C-E 55 AGTC Stockholm – Trelleborg – Sassnitz Hafen – Berlin / Seddin – Bad Schandau – Děčín – Prague – Linz – Salzburg – Villach – Tarvisio – Bologna / Trieste and C-E 551 AGTC Prague – Horní Dvořiště – Linz – Selzthal – St. Michael. The part from Prague to Děčín on into Germany overlaps with part of the 1st corridor. The second part from Prague to the south through České Budějovice and on into Austria is important mainly as connection of Prague with the largest city in the southern part of Bohemia, in passenger transport the greatest importance is mostly found in domestic transport providing connection to the South Bohemian Region, but also to areas with important recreational potential (Český Krumlov area, southern part of the Šumava, the Třeboň area, etc.). Mainly important in freight transport is the cross-border section with Austria, which connects the Czech Republic to the industrial area near Linz, and mainly then in the direction of the Adriatic seaports of Rijeka, Koper and Trieste, whose importance for Euro-Asian trade continues to grow. Modernization is ongoing of the section Prague – Horní Dvořiště national border with

Austria. So far only partial sections Prague-Hostivař – Stráncice and Doubí u Tábora – Tábor have been completed.

Aside from these corridors, it is necessary to include between the backbone lines another line for freight transport Děčín-Prostřední Žleb – Ústí n/L-Střekov – Lysá n/L – Kolín – Havlíčkův Brod – Brno, which is burdened by transit freight transport of the direction of the former Pan European Corridor IV. Its advantage is in the fact that it is influenced only slightly by suburban Prague and long-distance passenger transport. Modernization along this line has not been performed, and therefore measures for eliminating the influence on the environment have not been taken either (mainly noise in night-time hours).

Expansion of capacity of selected sections

Prague and Central Bohemian Region

Important lines converge in Prague heading in all directions, including three of four national transit corridors. Suburban passenger transport dominates on most of the lines whose scope has seen annual increases in recent years. In terms of flows of freight rail transport, Prague does not play a key role.

In 2008, the so-called New Connection was introduced into operation, improving interconnection of central railway stations to all connecting lines, and in the required quality and capacity. Aside from the new capacity for passenger transport, alleviation should gradually occur of further sections of the Prague junction and release of capacity for freight transport.

The section Prague – Vysočany – Lysá n.L. is reaching full capacity from the lines leading from Prague. Given by the influence of the interval suburban and long-distance passenger transport and mainly with regard to obsolete safety equipment, it is not possible to add additional trains during the day. This section shall have to be resolved by reconstruction also with regard to the need of having a bypass track during the course of the prepared modernization of the section Běchovice – Úvaly. It is also important to improve the quality of Prague's connection with the fast-developing areas of Milovice and in the future also with the Mladá Boleslav and Liberec areas.

The long-range capacity of the rail line Prague – Kolín is utterly insufficient, so in the long-term horizon there is an expectation for building new capacity for passenger transport (in relation to resolving and approving the high-speed line concept).

Other noteworthy sections starting from Prague include the section Prague-Hostivař – Prague-Uhříněves and also towards Benešov and Tábor. Mainly the section from Hostivař to Stráncice is heavily burdened by influence of suburban interval transport. In regards however to the already completed modernization within the framework of building the 4th corridor, no further actions are planned in this section. In the medium-term outlook it is possible to consider a new route for high-speed connection from Prague to Benešov.

The line along the Vltava towards Kralupy nad Vltavou is not yet problematic in terms of capacity. One problem is the constantly delayed modernization of the section containing the Nelahozev tunnels, which are limiting in terms of a passable opening, mainly for combined transport trains. Upon its saturation by suburban traffic it is possible to consider a new high-speed line.

Another line that is key for suburban transport is the section Prague – Beroun. Here it is necessary to perform optimization of the existing line along the Berounka River necessary

for servicing local municipalities and decide upon construction of the entire line in a new track led mostly through a tunnel. These shall be mainly important for connecting Prague with Pilsen and the southwest part of Germany.

For freight transport, the line from North Bohemia along the right bank of the Labe River to Nymburk and further on to Kolín is of key importance. In terms of capacity, the situation is worst in the section Lysá n.L. – Nymburk, where strong freight transport collides with suburban and long-distance transport from Prague. In terms of capacity, implementation of a unified European signalling system, the European Train Control System, should improve traffic-carrying capacity. The need for expanding capacity in the section Kolín – Lysá nad Labem – Nymburk should also be resolved in the future not just by introducing the ETCS, but also by platform construction at stations, removal of level crossing of directions, possible addition of a 3rd railway track Lysá nad Labem – Nymburk.

From the aspect of capacity reserves the worst situation is in Central Bohemia along the line Nymburk hl.n. – Mladá Boleslav hl. n. – Mladá Boleslav-město This line was declared as overburdened infrastructure in 2008 by the Railway Infrastructure Administration. This means that demand for capacity of the infrastructure could not be satisfied in certain time periods even after coordination of various requirements for capacity. This situation is brought about mainly by the increasing demands on the part of the Škoda Auto plant and by the low-performance single-track line with its obsolete interlocking system. For this purpose, the Railway Infrastructure Administration had proposals elaborated for measures to improve the situation. Among the considerations are its electrification and supplying with a modern interlocking system, increasing capacity of transport tracks in stations and possibly using alternative lines.

It is also necessary to resolve the transport serviceability of Ruzyně Airport and the north-west part of the Prague agglomeration with Kladno, the largest city in central Bohemia. Due to insufficient parameters of current rail connection with Kladno, transport of the population of the Kladno region commuting to work to Prague is mostly implemented by road transport, which has negative consequences resulting in burdening of roads and the environment. The situation should be resolved by creation of a high-quality, high-capacity rail connection. Modernization is being prepared of the line section Prague – Kladno or construction of a fast-track including a branch line leading to Ruzyně Airport in the form of a Public-Private partnership (PPP).

Moravian-Silesian Region and Olomouc Region

Aside from two transit rail corridors, the exceptional concentration of heavy industry and very high transport volume demands are also vital in terms of rail transport. Three important railway border crossings into Poland and two into Slovakia are found here. This also corresponds to the burden of the lines, the section Přerov – Hranice na Moravě is the most burdened line section in the Czech Republic. The lines running through the station Ostrava hl.n. are also heavily burdened. Introduction of DOZ (interlocking system remote control) prepared for sections Česká Třebová – Přerov – Polanka nad Odrou should bring improvement, as should construction in the longer term of new capacity within the framework of the VRT (high-speed rail line) conception in the Czech Republic.

A branch of the 3rd transit corridor from Český Těšín towards the border with Slovakia is currently under construction. After completion of modernization of the branch of the 3rd transit corridor Česká Třebová - Přerov, the traffic-carrying capacity will be sufficient in

this section. Also modernization of the Přerov railway junction itself is to be an important construction.

In relation to the Nošovice industrial zone and improvement of suburban transport in the Ostrava area, very soon the construction project should be commenced – Optimization of Routes no 301 and no 302 Ostrava Kunčice – Frýdek-Místek – Český Těšín, including pre-electrification modifications and optimization of the railway station Český Těšín. Electrification is also expected of the section Frýdek-Místek – Český Těšín. Major attention should be also paid to the suburban branch in the section Frýdek Místek – Frenštát and increase in capacity by addition of a 2nd railway track Ostrava-Kunčice – Frýdek Místek. An important construction project should also be the planned connection to the airport in Mošnov, which shall also be vital to the industrial and logistics complex construction prepared for this locality.

It is possible to resolve the deficiency in capacity of the main lines by construction of a high-speed line.

South Moravian Region and Zlín Region

The most important prepared investment in railways in this area shall be reconstruction of the Brno railway junction, which is now partially underway. In terms of the lines leaving Brno, for many years the most overburdened line is towards Přerov, because this is a single-track line. The line Brno – Blažovice – Přerov is utterly incapable of satisfying current requirements mainly in passenger transport, because it forms the backbone of Moravia connecting Brno with the other Moravian regional seats, Ostrava, Olomouc and Zlín. In regards to the fact that in parallel to the line Brno – Přerov, a high-speed rail line is proposed for future construction, which in terms of needed capacity appears to be excessive, it is suitable to dimension the parameters of the modernized line Brno – Přerov so that it could be used in the future also within the framework of the high-speed network. With regard to the minor differences between the variation of modernization of the line for a speed of 160 km/h and 200 km/h, it is more advantage in terms of future needs to modernize the line for a speed of 200 km/h.

Completion of reconstruction of the Břeclav railway junction shall strongly influence transport relations with Slovakia and Austria. This shall contribute to speeding up transport on lines no 316 towards Přerov and no 320 towards Brno.

Connection of the regional capital Zlín should see improvement in quality by modernization of the line Otrokovice - Zlín - Vizovice and Hulín – Kojetín (for connection with Brno).

Vysočina Region

The backbone line is a double-tracked electrified line from Brno to Kolín and on to Prague. But its parameters are not satisfactory and it also lies away from the regional seat of Jihlava. Improvement of the situation is therefore only possible after construction of an entirely new high-speed line.

In terms of capacity reserves, the situation is difficult in sections from Havlíčkův Brod and Jihlava through Jindřichův Hradec on to Veselí n. L. The entire section is single-tracked with relatively unfavourable elevation and direction parameters of line. Currently it is also heavily burdened by a bypass freight operation used due to building of the 4th transit

corridor between Prague and České Budějovice. Possible measures for increasing carrying capacity and line speed are currently being verified through studies.

The relatively important line Jihlava – Okříšky – Brno is currently single-tracked and is not electrified. Only the section Brno – Střelice is double-tracked. There are plans for its future electrification and building of a second track in the section Střelice-Zastávka u Brna, by which the burden shall be alleviated on line no 324 in the section Brno – Havlíčkův Brod. Along with electrification of the line, it is also necessary in sections suitable for this (mainly Náměšť nad Oslavou – Okříšky) to resolve the increase in speed of the given line.

Pardubice Region and Hradec Králové Region

For years this was one of the most heavily burdened sections of the connecting line of the regional seats Hradec Králové – Pardubice, whose doubling of the track has been prepared now for many years, as well as the resolution of the unsatisfactory connection of the line from Chrudim to the Pardubice railway junction. The entire line from Velký Osek through Hradec Králové, Týniště nad Orlicí on to Letohrad is also one of the sections with highly limited capacity.

For the connection Prague – Hradec Králové it is necessary to secure minor modernization modifications on the line Libice n/C – Hradec Králové, so that travel time would not exceed 75 min.

Local capacity problems are also appearing in relation to the expanding Škoda Auto plant in Kvasiny, and with the increasing demands on freight transport mainly in the section Solnice – Častolovice – Týniště n.O. The section Týniště n.Orlicí – Letohrad should be modernized in the future.

The section Brandýs nad Orlicí – Ústí nad Orlicí remains a bottleneck in an important section of the line of the 1st rail corridor, and its modification has yet to be commenced.

Ústi nad Labem Region

This area is equipped with a relatively high-quality network of electrified lines, especially for the industrial area around Ústí nad Labem and farther westward, southward towards Prague and eastward towards Nymburk. The system travel time along the most important connection Ústí nad Labem – Prague is 1:15. After completion of the motorway D8 however this shall no longer suffice, even with regard to international connection to Dresden.

The most important railway crossing connecting the Czech Republic with Germany and a large part of Western and Northern Europe lies in this region. In terms of capacity, for now the section Schöna – Pirna is a problem, as it is only double-tracked and provides interval suburban transport from Dresden. Another problem is the limited capacity for switching drive units of freight trains. This is given in part by the insufficient and ever-decreasing capacity of station tracks mainly on the part of DB Netz and also the constantly insufficient interoperability of the infrastructure and rolling stock on both sides of the border, which is the primary cause of the necessity of switching drive units. Exhaustion is expected in the future of the capacity of the section Pirna – Děčín due to growth in freight transport. This problem shall be resolved only after construction of a new line Ústí n. L. – Dresden, which shall be use for fast personal long-distance and also freight transport.

Also current is the need for modernizing the line Ústí n.L. – Chomutov, which has potential for increasing speed. This would lead to shorting the travel time for long-distance trains along this branch. But connection of Prague with the Most-Chomutov agglomeration shall remain only slightly competitive, and shall only be resolved after building a branch line from the high-speed line Prague – Dresden.

Liberec Region

The Liberec Region is the worst equipped region in terms of the quality of railway infrastructure. The rail network here is relatively dense, but is formed only by low-performance non-electrified lines with unsatisfactory parameters. Even within today's mediocre scope of transport, exhaustion of free capacity occurs on certain sections.

The most heavily burdened line is the extension of the connection with Prague and Nymburk through Turnov on to Liberec, and then on to Poland through Černousy and eventually to Germany through Hrádek n.N. The necessity for leading the lines through difficult and articulated terrain represents a barrier for both passenger and freight transport, because it won't come without significant cost increases for traction.

Therefore the aim of the project of fast railway connection Prague – Mladá Boleslav – Liberec is important (with branch line Mladá Boleslav – Nymburk) and further continuation from Liberec with connection in the area of Zhořelce to the important corridor between Germany and Poland. The travel time Prague - Liberec should be under 90 minutes. This project shall only be possible to implement based on economic feasibility in the period after completion of transit corridors. Nevertheless, despite this it shall be necessary to perform actions to increase capacity at least in the section Nymburk – Mladá Boleslav and eventually also in the direction towards Turnov.

Mainly the line Liberec – Tanvald plays a fundamental role in terms of suburban transport. Its technical condition however is very poor, and there is the threat of speed limitation down to 20 km/h, by which it could not fulfil its function (due to its parameters parallel Road I/14 also cannot take over the function of backbone service of the Liberec-Jablonec agglomeration). Within the framework of renewal, it is necessary to implement measures so that an interval at least 30 minutes could be introduced.

South Bohemian Region

Here the backbone lines connecting the regional seat České Budějovice with surrounding regions are all electrified. Despite this, capacity problems appear mainly on the connecting lines České Budějovice – Pilsen and Veselí n.L. – Havlíčkův Brod. The most important line is the 4th transit corridor leading from Prague, whose modernization is currently being implemented, and the entire section should later be expanded to two tracks. The perspective travel time of Prague – České Budějovice should be 90 min.

Modernization in the future should also continue in the section České Budějovice – Horní Dvořiště and on to Linz. Its path along the current line and its current parameters of course do not guarantee in the future sufficient capacity for international freight transport, or even sufficient speed for passenger transport. This should only be resolved by implementation of an entirely new line.

Ongoing modernization relating to electrification in the section České Budějovice – České Velenice and the prepared electrification of Veselí n.L. – České Velenice are mainly important for connection with Austria.

Modernization of the line České Budějovice – Pilsen is also being prepared.

Pilsen Region and Karlovy Vary Region

The backbone line in this part is a branch line of the 3rd transit corridor from Prague through Pilsen to Cheb. The travel time Prague – Pilsen should be no longer than 60 min in order to preserve competitiveness with road transport. Modernization work is underway on the section Pilsen – Cheb, which shall be partially expanded to two tracks, or the already double-tracked part shall be extended. Problems should not occur here in terms of capacity because denser passenger transport shall only be led around Pilsen. The already existing line Pilsen – České Budějovice is more problematic in terms of capacity, that's why the suburban section Plzeň – Nepomuk should be primarily solved.

From the aspect of needs for freight and passenger transport, the connection Pilsen – Domažlice – Furth im Wald is important, which is presently single-tracked and non-electrified. This line is an important international connecting line with Bavaria, whose potential is far from being utilised due to unsatisfactory parameters. Expanding the line to two tracks and a fundamental increase in speed are among the main priorities of developing the railway network for the period after completion of the transit corridors.

It is necessary to adopt a decision on fast connection in the direction of Bavaria through either Cheb or Domažlice in the future.

The connection of the Karlovy Vary Region to the centre of the country is also unsatisfactory. Resolution through construction of new capacity however is a long-term matter, and is only possible under the stipulation of constructing a high-speed line Prague – Dresden.

Recommendations for priorities for rail transport infrastructure

With regard to current and future demands, the following should be the most immediate measures for rail infrastructure:

- Increasing capacity and modernization of line (Milovice -) Lysá n.L. – Prague – Vysočany;
- Implementation of measures for increasing capacity of line Děčín - Ústí n.L. – Nymburk – Kolín as the backbone route for transit transport, including measures for protection of the environment and public health;
- High-capacity connection Prague – Ruzyně Airport/ Kladno;
- Increasing capacity of route Brno – Nezamyslice – Přerov;
- Modernization of route Pilsen – Česká Kubice;
- Modernization of route Prague/Nymburk – Mladá Boleslav – Turnov – Liberec - Poland;
- Improvement of passable opening in the Nelahozeves tunnels and in the Jakubský tunnel by Děčín and in further sections with limiting influence on combined transport consignments;
- East Bohemia diameter Hradec Králové – Pardubice – Chrudim;
- New capacity in the section České Budějovice – Horní Dvořiště.

4.1.3 Air transport

In the Czech Republic, the air transport infrastructure is composed of 91 civil airports in total, with the international airport Prague – Ruzyně representing the highest share in transport performance, followed by international public airports Brno Tuřany, Ostrava Mošnov, Pardubice and Karlovy Vary with significantly lower transport performance shares. The other airports are airports of regional importance used rather for sports and leisure purposes.

Air transport plays an irreplaceable role in transport of persons and partially in the transport of specific types of goods over long distances. Transport performance in air freight is negligible in comparison with other types of transport (road, rail).

In the long-term context, the volume of air transport has a growing trend. Despite the current drop in demand for air transport caused by the economic crisis in 2008, it is expected that the demand will return to pre-crisis values and subsequently will continue to grow.

Growing demand for air transport causes capacity problems in important international airports. In the Czech Republic, it is mainly the Prague Ruzyně Airport that suffers from insufficient capacity of the runways system especially in peak busy hours. These congestions could be eliminated by building a parallel runway (take-off and landing runway).

In the context of the accession of the Czech Republic to the Schengen area, it was necessary to implement many procedural and technical measures on all Czech international airports which required substantial investments. Measures to decrease noise and emissions caused by airplanes in the surroundings of airports will require additional investments.
As the ownership structure is very fragmented, the possibility to introduce a direct strategic approach of the state is considerably limited.

Recommendations for priorities for air transport infrastructure

With regard to current and future demands, the following should be the most immediate measures for airport infrastructure:

- Construction of new takeoff and landing runways at Prague-Ruzyně Airport,
- Railway connection of Prague-Ruzyně Airport,
- Railway connection of Mošnov Airport (Ostrava).

4.1.4 Water transport

Inland waterway transport in the Czech transport system has its undeniable, albeit limited importance, which is mainly given by natural conditions. One major advantage is its low energy consumption. Basically only the Elbe-Vltava water route is important, with a length of 303 km. This water route also facilitates connection in international transport, thus it is a part of the TEN-T network in the section from Pardubice to the national border with Germany, and from Třebenice to the confluence of the Vltava and the Elbe. Moreover, based on the AGN agreement (European Agreement on Main Inland Waterways of International Importance), the Elbe water route is a main inland waterway of international importance (water route E – trunk inland waterway). Other waterways in the Czech Republic are only of regional importance, and their potential mainly lies in the area of increasing the economic efficiency of tourism.
Aside from the small portion of navigable sections, a problem with inland water transport in the Czech Republic is the unreliability of the Labe Waterway in the section between Ústí nad Labem and Hřensko at the border with Germany. Without improvement of the infrastructure in this section, improvement of the connection with Germany shall not occur, and conditions shall worsen also for use of the remaining section of the Labe-Vltava Waterway. Also the insufficient clearance on the middle section of the Labe presents a certain problem for freight transport, however, the problem is already dealt with. In regards to the fact that building modifications on natural water courses are highly sensitive in terms of environmental protection, it is necessary to search for satisfactory solutions with regards to both public interests.

Recommendations for priorities for water transport infrastructure

With regard to current and future demands, the following should be the most immediate measures:

- Improvement of navigational conditions on the regulated section of the lower Elbe – in Děčín;
- Making the Elbe navigable from Chvaletice to Pardubice (in the event of a favourable position of the Ministry of the Environment);
- Construction of a port in Pardubice;
- Completion of making the Vltava navigable in the section Třebenice – České Budějovice.

4.1.5 Combined transport

An important part of the infrastructure for freight transport is comprised of terminals for combined transport, which are normally a part of public multi-modal logistics centres, where outsourced logistical services tailor made for the customer are provided. The main effect is a concentration of transport corridors, which is important for greater use of rail, waterway and combined transport, as well as for optimising road transport use.

In the Czech Republic no multi-modal public logistics centres have been created yet. For supporting their creation, the strategic document has been prepared “Support for Logistics from Public Funds”, which shall be submitted to the Czech government for adoption. Not even the combined transport terminals network is sufficient, both in the location and in equipage and parameters. The largest terminals are concentrated between Prague and Lovosice (Prague-Žižkov, Prague Uhříněves, Mělník and Lovosice). In Moravia there exists practically only one large terminal near Zlín. The problem lies in the fact that based on Czech legislation, combined and multimodal transport terminals are not considered as a part of the transport infrastructure, and therefore cannot be financed as transport infrastructure.

Recommendations for priorities for transport infrastructure of combined transport

With regard to current and future demands, the most urgent measures should include:

- Support for creation of combined transport terminals and multi-modal public logistics centres.

5
Multi-criteria Analysis

5.1 Methodology and parameters of a multi-criteria analysis in the Czech Republic

In the ideal case, it is necessary to find out two facts when deciding on priorities among large infrastructure projects:

1. whether the project is objectively attractive from the socio-economic point of view, or in other words whether the lifecycle benefits exceed the lifecycle costs (absolute attractiveness).

In the case where there are more objectively attractive projects than available resources (nearly always):

2. comparative assessment that will allow to draw an ordered list of priorities (relative attractiveness).

The general method used internationally for assessing the absolute and relative attractiveness of projects within strategic plans is to apply a multi-modal strategic CBA using financial volumes of lifecycle benefits and costs of the assessed projects. Benefits of projects expressed in financial terms include:

1. Time savings;
2. Decrease in operating costs of vehicles, infrastructure and terminals;
3. Decrease of the accident rate;
4. Impacts of shifting transport performance from road to rail transport.

In the Czech Republic, there already exists a standard methodology for financial assessment of steps 1-3 for road and inland waterway infrastructure projects.
Other benefits included in CBA calculations in certain countries (not yet in the CR) are the following:

5. Regional economic benefits brought by the new infrastructure by improving the accessibility / generating new final destination or transit journeys.
6. Decrease in emissions.

There is no doubt that these factors are important, however there are no harmonised definitions yet (even on the international level) of what financial values shall be attributed to these benefits (either due to the difficulty of setting a financial value of the benefit or due to disagreement on what unit costs should be applied).
Several indicators can be reported from the CBA. The indicator B / C (lifecycle discounted benefits / lifecycle discounted costs) is the most suitable to express the absolute and relative attractiveness. If B/C>1, the project is absolutely attractive.
There are also other important benefits/cost that are difficult to express in financial terms for the CBA, as for example:

7. Impact on nature;
8. Impact on public health;
9. Impact on employment.

The CBA is therefore often seen as an objective but selective method as for monitoring the objectives of transport policies and other policies. Multicriteria analyses are therefore applied to build on the top of the CBA or to replace it.

A CBA-based assessment is planned for the Transport Sector Strategies. However it will be only possible once a comparable methodology for analysis of all transport modes containing all the above given points is made available. This is the reason why the MCA method has been used for the assessment of infrastructure projects for the 1st phase of Transport Sector Strategies.

Multi-criteria analysis (MCA) is an instrument for specification of relative priorities between intentions on the basis of scoring of several weighed criteria. This approach is convenient in cases when clear "financial" expression of all benefits or risks of a certain project is impossible and the project fulfils e.g. several objectives related to a binding policy or strategy. Every criterion is scored for each project and the total score of all criteria added together defines the final priority, or contributes to exclusion of a project. This approach may be applied to particular projects as well as to priority areas (such as comparison of intelligent transport systems with construction of a transport network). The key purpose of MCA is general specification of justified and clear criteria and their professional weighing (i.e. specification of percentage share in the result of the evaluation) in the most consensual and logical manner.

This method was preferred over a CBA analysis mainly because in the Czech Republic a standard method of financial enumeration of the following benefits/costs has not yet been established:

- regional economic benefits (generation of new activities and better accessibility)
- decrease of emissions and noise level
- impact on nature and landscape
- impact on public health
- impact on employment

Regarding the current accessibility of the collected basic data of the individual projects of transport infrastructure development the MCA approach (processed in cooperation with the Babtie s.r.o. company) was selected as the best method for strategic assessment of relative attractiveness of particular major projects.
MCA has been performed:

- Only pro projects of the road and railway transport sector where there is a large number of project of "nationwide relevance" in contrast to the water and air transport projects
- In the case of roads only for the main project category in the order of priority of the OP Transport: a) motorways and speedways included in TEN-T and b) speedways not included in TEN-T network and 1st class roads.
- In the case of railways separate analyses were performed for the a) backbone railway sections, backbone railway nodes, electrification of the TEN-T network, and b) major national lines and major regional projects outside TEN-T.

This MCA represents a relative comparison which for the reason of quality of the available quantified data is based more on benefits and strategic relevance than on costs (even if

the costs are considered in that the benefits are related to section lengths and assessment of unit costs).

5.2 MCA analysis for projects of main sectors

Two groups of criteria were used for the MKA analysis:

- attractiveness
- feasibility

For the first group of criteria **attractiveness**, various sets of partial criteria were chosen in the following grouping:

- road projects[9] (motorways, expressways and Class I roads)
- rail projects

These sets of criteria are specified below in chapters 5.2.1. and 5.2.2.
The group of **feasibility** criteria contains the same partial criteria with the understanding that differing weights are established for rail and road projects. Again, see below for more information. As data are not available for all projects, feasibility of these projects was not assessed and is in preparation for the 2nd phase of Transport Sector Strategies. Regarding the projects intended for realization in a short-term horizon, the criterion of feasibility is covered by the "Degree of project preparation" column.

The aim of the MCA does not consist in giving preference to projects agreed beforehand by various political groupings or to those that can be easily built in practise (the method of the least possible resistance), but it is rather to define the medium-term priorities in construction from the point of view of attractiveness, urgency and priorities of specific projects included in various policies and strategies. Despite this, it is still necessary to consider the potential feasibility of preparing and completing the constructions, as there exists the risk of wasting forces and efforts of organisations in charge of preparing the investements. Practical factors such as the first possible date of starting the construction, validity of specific decisions etc. are being applied only once the "theoretical" level of priority has been set.

The MCA is always subjective to a certain extent, be it for the selection of criteria or establishing the weights. It is therefore necessary to present the most objective justification possible and to have the criteria and weights approved by the largest possible expert group so that the MCA can be seen as a credible and broadly supported analysis. It is also necessary to perform the sensitivity analysis on the impacts of individual criteria weights.

The MCA is prepared in the following way: At first, the initial draft of criteria and points system is proposed and submitted for expert comments. Subsequently, a special expert meeting is called to adopt the weights for individual criteria by consensus. At another special expert meeting, certain quantifiable criteria are modelled and assessed and the qualitative criteria are proposed and approved by consensus.

[9] Projects of motorways and expressways and Class I road projects were separated from each others by various weights of partial criteria.

In the Czech Republic, the selection of criteria and their proposed weights for the MCA is done based on several factors:

1. The status of the criterion as an argument for the development of transport infrastructure (primary reason- e.g. improving the accessibility; secondary reason – e.g. decreasing the impact on environment);
2. The standard significance of the factor within the CBA;
3. Specific priorities of the Cohesion Fund as one of the main financing sources for projects included in the MCA;
4. Priorities set by transport policies and other sector policies and strategies (e.g. Territorial Development Policy, Territorial Development Strategy, National Reform Programme);
5. Availability, completeness, quality and quantifiable nature of data for the given criteria.

These objective and practical factors lead to the proposal of two MCAs: one for the development of important road projects (with another subdivision to motorway and road) and another for the development of important rail projects. Both of MCAs assess projects on a relatively comparable basis – see tables D 1 and D2 in Annex 3.

The criteria for railway and road transport are slightly different due to the following:

- The model and quantitative materials were not consistent and available for railways, that is why a more heuristic approach was needed, which, unfortunately, less relies on potential benefits expressed in numbers;
- Railways are preferred in the Transport Policy, especially for the reason of their potential to reduce externalities in comparison to road transport. The transfer of the passenger and goods potential from the road to the railway is therefore significantly represented in the railway MCA;
- In the case of railways most projects are of the modernisation types, where degraded or outdated condition of the current infrastructure is resolved. That is why technical urgency of the project needs to be taken into consideration (among other things);
- In the case of railways, the issue of capacity saturation is not and will not be such an urgent problem;
- In the case of railways the effect of reduced accident rate is not a significant distinctive factor of mutual comparison within the group of railway projects.

A project can have significant impact, but it can also be very expensive. This is way the ratio of benefits to costs is decisive to define the attractiveness of the projects. The MCA attractiveness criteria are therefore expressed in comparison to project costs, in case this is possible to be done in practice.

With regard to feasibility

It is also necessary to consider the feasibility of the project as for the efforts and time needed to complete the preparation and with regard to the risk that after deploying significant efforts and setting of the project as a priority one in the strategic plan the project might not be realised (this should not be the main factor though). This analysis

allows to substract at maximum 25% of the points for reasons of difficult feasibility of a specific project.

Risks related to environment and other factors (general resistance, possibility to obtain a territorial planning decision, technical factors etc.) are considered both for railways and for roads.

Number	Criteria for Roads	Weight (maximum points substracted from attractiveness)	Criteria for Railways	Weight (maximum points substracted from attractiveness)
2.1	Impact on environment (EIA, SEA)	-40	Impact on environment (EIA, SEA)	-20
2.2	Other difficulties related to project	-30	Other difficulties related to project	-50

The criteria for railway and road transport have different weights as the environmental risks are much higher in roads than in railways.

It was not possible to put together all the necessary materials for this part of MCA assessment during the 1st phase of Transport Sector Strategies and it will therefore be carried out during the 2nd phase.

More explanation about the proposed criteria and related weights for both railway and road infrastructure can be found in the following chapter and in the annex. Indicators have been set for each criterion that specifically define how the fulfilment of criteria by the project shall be measured.

The proposal of the MCA has been prepared by experts from companies Babtie, Mott Mc Donald, DHV and CDV and subsequently discussed in working groups with the participation of respective MoT departments, RIA, RMD adn SFTI, including the assessment of projects. The methodology has been prepared and the projects assessed within the GEPARDI project in 2005 and 2006. Due to the time schedule and available capacities, only an update of the projects´ assessment has been performed by CDV and PWC in 2008 and 2009. It is planned to update the MCA methodology and to gradually apply the CBA method more often during the 2nd phase.

5.2.1 MCA for road transport

Motorways and speedways

- **Europe-wide relevance**

The project is evaluated positively is part of the European Priority Corridor pursuant to Regulation 884/2004/EC, of TEN-T network, or a major connection to networks of neighbouring countries and/or subject of international treaty.

- **Improvement of accessibility, time saving and regional relevance**

Positive evaluation of significant time saving. Positive evaluation of significant regional relevance of the connection defined in the sense of categorisation of the urban areas connected by the project realization.

- **Improved quality of traffic**

Positive evaluation of the need of the project implementation in 2010, 2015 for the reason of insufficient capacity on the current line in these two years.

- **Decrease of accident rate**

Positive evaluation of the number and seriousness of accident localities on the route that may be (partly) eliminated by the project.

- **Balanced development of regions**

Positive evaluation of projects in structurally affected or economically weak regions and regions with above-average unemployment.

- **Decrease of impact on the environment and human health**

Positive evaluation of major effect with regard to elimination of above-limit noise values and exceeded emission limits.

- **Unit costs**

Positive evaluation of cheaper project from the unit price point of view for their benefits need not be that high for the whole project to be effective (other benefits are evaluated, where possible and logically justifiable, in relation to the length of the section).

Roads

- **Road subcategory**

Individual sections of the 1st class road network are not identical in relevance. The roads are therefore divided into three basic categories:

a) roads complementing motorway network (of Central European relevance);

b) roads interconnecting regions (roads of nationwide relevance);

c) roads relevant within the region with another more attractive alternative (parallelism with a motorway or another 1st class road (roads of regional relevance).

Higher road category means higher evaluation. The project is evaluated positively is part of the European Priority Corridor pursuant to Regulation 884/2004/EC, of TEN-T network, or a major connection to networks of neighbouring countries and/or subject of international treaty.

- **Improvement of accessibility, time saving and regional relevance**

Positive evaluation of significant time saving. Positive evaluation of significant regional relevance of the connection defined in the sense of categorisation of the urban areas connected by the project realization.

- **Improved quality of traffic**

Positive evaluation of the need of the project implementation in 2010, 2015 for the reason of insufficient capacity on the current line in these two years.

- **Decrease of accident rate**

Positive evaluation of the number and seriousness of accident localities on the route that may be (partly) eliminated by the project.

- **Balanced development of regions**

Positive evaluation of projects in structurally affected or economically weak regions and regions with above-average unemployment.

- **Decrease of impact on the environment and human health**

Positive evaluation of major effect with regard to elimination of above-limit noise values and exceeded emission limits.

- **Unit costs**

Positive evaluation of cheaper project from the unit price point of view for their benefits need not be that high for the whole project to be effective (other benefits are evaluated, where possible and logically justifiable, in relation to the length of the section).

Table 2 MCA criteria for evaluation – Roads

Serial No.	MCA Criteria for Road Transport	Motorways – weight of criterion (%)	1st class roads– weight of criterion (%)
1.1	Europe-wide relevance/ Relevance of Class I Roads	13	13
1.2	Improvement of accessibility, time saving and regional relevance	26	26
1.3	Improved quality of traffic	15	15
1.4	Decrease of accident rate	13	13
1.5	Balanced development of regions	10	10
1.6	Decrease of impact on the environment and human health	7	7
1.7	Unit costs	16	16
	Attractiveness in total	100	100

5.2.2 MCA for rail transport

- **Europe-wide relevance**

The project is evaluated positively is part of the European Priority Corridor pursuant to Regulation 884/2004/EC, of TEN-T network, or a major connection to networks of neighbouring countries and/or subject of international treaty.

- **Relevance for accessibility and change of division of transport labour**

Positive evaluation of significant local relevance of the connection based on the description of the road project attractiveness. Key data on demand for railway transport were not available.

- **Technical urgency**

In the case of development of the Czech railway network most of the modernisation projects not only increase the line parameters but also solve the acute degraded status of the current infrastructure. That is why technical urgency of the projects for the reason of safety, reliability and operation costs is evaluated positively.

- **Urgency in the context of sustainable development of transport network**

In the case of railways the main priority of Czech and European transport policy and strategy of sustainable development is transfer of traffic streams onto the railway transport for the reason of decrease of the negative effects of transport (externality). Positive evaluation of projects with existing or planned high-standard road alternative (threat of passenger outflow from the railway) or projects forming the principal part of the sustainable development strategy for regional/city transport where the externalities of road transport are higher than in the nonurban areas.

- **Balanced development of regions**

Positive evaluation of projects in structurally affected or economically weak regions and regions with above-average unemployment.

- **Decrease of impact on the environment and human health**

Positive evaluation of major effect with regard to elimination of above-limit noise values and exceeded emission limits.

- **Unit costs**

Positive evaluation of cheaper project from the unit price point of view for their benefits need not be that high for the whole project to be effective (other benefits are evaluated, where possible and logically justifiable, in relation to the length of the section).

Table 3 MCA criteria for evaluation – Railways

Serial No.	MCA Criteria for Rail Transport	Weight of criterion (%)
1.1	Europe-wide relevance	12
1.2	Relevance for accessibility and change of division of transport labour	27
1.3	Technical urgency	13
1.4	Urgency in the context of sustainable development of transport network	18
1.5	Balanced development of regions	9
1.6	Decrease of impact on the environment and human health	5
1.7	Unit costs	16
	Attractiveness in total	100

5.3 Prioritization of selected projects – establishing importance of projects

On the basis of the defined MCA methodology a selected group of road and railway projects has been assessed[10]. The projects for MCA assessment were selected on the basis of the performed analysis of the condition of the bottlenecks and missing sections of transport infrastructure and on the basis of prediction of transport performances. The list of projects is included in the annex together with the results of the MCA evaluation – separately for the railway and the road infrastructure. The results table shows the individual projects in the order of importance. Proposed financing of individual projects split into years is listed in a separate table.

The following text includes the main characteristics of the major projects designed for implementation.

5.3.1 Rail transport projects

The tabulated list of railway projects is ordered on the basis of three criteria. The first group includes projects related to the TEN-T network. The second group includes projects outside the TEN-T network. In the context of these groups the projects are further ordered on the basis of their preparedness level into six groups. And lastly the projects are ordered on the basis of the MCA scoring.

The key railway projects are parts of transit corridors. All four transit railway corridors are part of routes based on international agreements. These agreements include in particular:

[10] For order of road and rail transport projects see Annex 4

- Decision of European Parliament no 884/2004/EC – List of 30 Projects of European Interest
- Agreement AGC – European Agreement on Main International Railway Lines - (31 May 1985 - EEC/UN), accession of the Czechoslovak Socialist Republic approved by the government on 8 February 1990 under no 78/90 and is also included in Act no 266 / 1994 Coll., on Railways.
- Agreement AGTC – European Agreement on Important International Combined Transport Lines and Related Installations - (1 Feb 1991 -EEC/UN), on behalf of the Federative Republic of Czechoslovakia executed in Prague on 30 October 1991 and for the successor Czech Republic came into legal force on 20 November 1994 and is also included in Act no 35 / 1995 Coll.

In addition to the relevance for international transport relations the transit railway corridors also form the backbone railway network for national needs. These four lines connect the main part of the economic and social centres of the Czech Republic. They implement the main transport relations in long-distance passenger transport, suburban transport and national and international freight transport.

The route of corridor 1 is double or multiple track line and electrified across its full length. Most of the route has been modernised, with the exception of a couple of short sections and railway nodes. The incomplete constructions include in particular the Prague node throughfare. The sections under construction include the Prague Libeň – Úvaly one. The sections under preparation for construction include the Prague Libeň – Prague Bubeneč section. Another section under construction is the reconstructed Břeclav node with the adjacent section to the Slovak frontier. The constructions not yet commenced include modernisation of the railway station of Kralupy nad Vltavou with the adjacent section with the Nelahozeves tunnels, as well as the reconstruction of the Děčín tunnels. The last longer section of corridor 1 awaiting reconstruction is the section between stations Brandýs nad Orlicí and Ústí nad Orlicí. Further nodes on the corridor 1 under construction include Kolín, and Česká Třebová, which has not been started yet. The largest construction will be represented by the Brno node where some parts are already under construction.

Modernization of the 2nd corridor from the border with Poland to the border with Austria is also already practically finished. Currently modernization of the Břeclav junction is completed, and it is still necessary to complete modernization of the junctions of Přerov and Ostrava.

Outside the railway corridor 2 but part of the European priority project no 23 is the Brno – Blažovice – Přerov line, still single track one for the most part and absolutely insufficient in capacity with regard to the current requirements, especially of passenger transport, for the line is the backbone of Moravia connecting Brno with the other Moravian regional capitals Ostrava, Olomouc and Zlín. In the future, after completion of the high-speed connection between Prague and Brno, the line should also connect Prague and Ostrava with Warsaw and Vienna. The project is large and its implementation has already begun. Regarding the size of the project the preparation is complicated and that is why the project has been ranked 34th in he final hierarchy.

With regard to relevance the corridor 3 may be divided to two sections, one from Prague to Ostrava and further to Slovakia, and the other from Prague to Plzen and Germany. In the section between Česká Třebová and Přerov modernisation of the main nodes of

České Třebová, Olomouc and Přerov remains to be completed. In the Prague – Plzen – German boundary section construction works are in progress in the section Plzen – Cheb, where one more track will be added in part of the line. The most demanding constructions will take place in the section from Prague to Plzen, mainly in the section from Prague to Beroun where construction has not been commenced yet.

In the case of the 4th corridor, its northern part (congruent to route of 1st corridor Děčín national border – Prague) is practically finished, modernization of several sections is presently underway in the southern part between Prague and České Budějovice. After modernisation the whole section will be double track including achievement of all parameters in conformity with the relevant international agreements.

Business relationships of the Czech Republic with the western countries keep strengthening and that is why the current status of the railways is unacceptable: The Czech Republic and Germany are only interconnected with a sole high-capacity frontier crossing between Děčín and Dresden. That is why the Czech Republic and the Federal Republic of Germany, or the Bavaria federal republic, have commenced negotiations about building another high-capacity line including not only connection to Nuremberg but also crossing of two priority European projects in Munich. That would provide for quality railway connection not only between the Czech Republic and Germany, but also to Italy and Switzerland. The negotiations are still in progress. The most convenient variant seems to be a new high-capacity line between Plzen and Česká Kubice continuing to Regensburg.

Deployment of the European system for railway transport control ETCS has been implemented as a separate project. The project is part of the large programme of interoperability of railway infrastructure. At present two projects of the programme are in progress, covering two adjacent section of Kolín – Břeclav – state frontier with Austria, and state frontier with Germany – Dolní Žleb – Praha Libeň – Kolín. Implementation of these projects is necessary for the possibility to make use of the full potential of the modernised infrastructure in international transport and for compliance of the infrastructure with European interoperability standards and for full integration of the system to the unified European railway transport system.

The constructions in progress outside the main corridors include electrification and modernisation of the section Letohrad – Lichkov – state frontier with Poland (nearly completed). This is part of line C 59 Swinoujscie – Szczecin – Wroclaw – Miedzylesie – Lichkov – Česká Třebová according to AGTC agreement. The connection is mainly relevant for freight transport. The line should provide for the main connection of the Czech Republic with the western part of Poland and especially with the Baltic harbours.

Further non-corridor constructions needing completion include the modernisation and electrification of the sections of České Budějovice – České Velenice – state frontier with Austria and Veselí nad Lužnicí – České Velenice. These sections are connected to corridor 4 forming parallel connection to Austria towards the route via Summerau.

Among the projects included in Priority Axis 3 of OP Transport (projects outside the TEN-T network) the projects for suburban transport in Ostrava region are awaiting completion (the population of the Ostrava agglomeration has exceeded one million). The project of traffic rationalization on the Zdice – Protivín line, which is currently implemented, will lead to significant operation cost saving after its completion. The electrification project implemented on the line Znojmo – Retz is a cross border project.

The most important project outside the TEN-T network is the connection of the Prague-Ruzyně airport to the railway network, also including connection of the largest satellite city of the Prague agglomeration, Kladno, and Prague. This is a demanding project with a complex preparation. Even though the line itself is not a TEN-T network line, it will interconnect the TEN-T railway network with the TEN-T airport of international relevance with predicted annual output of 20 million checked in/out passengers. Another project under preparation is connection of the Ostrava Leoš Janáček airport to the railway network (TEN-T airport of regional relevance).

Further evaluated projects include important projects for suburban transport in major agglomerations (Prague – Karlštejn – Beroun, Prague – Lysá n/L, Hradec Králové – Pardubice – Chrudim, Ostrava – Frýdlant n/O, Otrokovice – Zlín – Vizovice, Liberec – Tanvald).

Further important projects evaluated in this context include the project of capacity and speed increase in the section Libice n/C – Hradec Králové (the connecting line between Prague and– Hradec Králové), especially in connection with commenced operation of the D11 motorway for the parallel railway line would lose competitiveness in passenger transport in this important section without the project implementation.

Lower ranking was allocated to another important project whose ranking is mainly due to the low level of preparation, which in itself will be a very long process, which is why the project implementation will only be possible after 2015. The project concerns connection of Prague to the last region of the Czech Republic still lacking adequate railway infrastructure, the Liberec region. The route will be significant for both passenger and freight transport, the latter serving the industrial areas of Mladá Boleslav and Liberec regions. Mladá Boleslav has been the seat of the largest Czech industrial enterprise Škoda Auto, whose connection to the railway system is absolutely inconvenient, and that is why the vast majority of all transport to and from the plant has been implemented on the road (in a much larger extent than would be necessary in the case of existence of a functioning high-capacity railway connection). The region also houses a number of other primary manufacturing plants for automotive industry and includes the town of Vrchlabí where a new manufacturing plant of Škoda Auto is to be constructed. From the passenger transport viewpoint the line would not only connect Prague to Mladá Boleslav and Liberec regions but also provide for an important recreation transport function with international relevance (Krkonoše, Jizerské and Lužické mounatins, Český ráj, Máchův kraj). Future relevance can also be seen in the connection of Bavaria, Upper Austria and Bohemia to the central axis and multimodal corridor III (Dresden – Wroclaw – Katowice – Ukraine).

Further evaluated projects include minor projects of regional nature, including renewal of the formerly closed border crossings.

The MCA did not evaluate the high-speed network of the Czech Republic, planned to be implemented after 2018, whose concept is under update procedure right now. However, without implementation of the major high-speed sections the problem of insufficient capacity of certain sections would never be resolved. These sections include the surroundings of Prague, but also other major agglomerations. The high-speed lines will also help create sufficient space for freight transport in all required directions.

5.3.2 Road transport projects

The order of importance of the projects based on the results of MCA was specified in the first place on the basis of relation to TEN-T network, in the second place on the basis of the state of preparation, or construction preparedness, and in the third place on the basis of the attractiveness score following from the results of application of the individual attractiveness criteria and their weights pursuant to the MCA methodology.

The leading priority positions are therefore occupied by TEN-T network projects before completion or under construction. These are followed by projects ranked pursuant to the respective preparation stage they are in and the attractiveness score. Further positions of the hierarchy are occupied by projects concerning construction and modernisation of speedways outside the TEN-T network and other 1st class roads.

The project ranking is significantly affected by the readiness or non-readiness stage of the individual projects (constructions), which some times cause that even high-priority projects rank lower than would correspond to their relevance. A typical example is the speedway R 35. Even though the relevance of R 35 corresponds to top priority projects of road infrastructure construction, as a parallel connection of Czech lands with central Moravia and Silesia, and further North Moravia and Silesia, which should relieve the currently overloaded sections of D1 motorway, the state of readiness places the project to a position objectively not adequate for it. This mainly concerns the sections Opatovice – Zámrsk and Zámrsk – Mohelnice. The only section of R35 currently under construction is the section Sedlice - Opatovice, connecting D11 motorway section Prague – Hradec Králové and road I/37 Pardubice – Hradec Králové.

The most important section under construction seems to be the Prague ring road (SOKP), primarily completion of the ongoing constructions of the sections Lahovice - Slivenec, D1 – Vestec and Vestec – Lahovice – the transport constructions that will significantly affect the whole Prague transport system and the situation of all the surrounding agglomerations. The construction interconnects the motorway and speedway lines and radial 1st and 2nd class roads towards the capital city. The transport relevance of the whole Prague ring road lies mainly in the fact that the overloaded city streets will be relieved and transit across Prague will be significantly reduced. The ring will allow for dispersion of radial transport to the individual parts of the city thus reducing transit through the residential quarters of Prague and municipalities in the surroundings. At the same time the traffic intensity on road II/101 will be reduced which will significantly improve the environment of the municipalities along the road. With regard to international transport the ring will positively affect transit truck transport and supply to warehouses and logistic plants along the ring.
A leading position in the hierarchy of importance is also occupied by the section of motorway D1 Mořice – Hulín, or Kroměříž east, which has been operational since 17 September 2009. D1 forms the backbone of the basic motorway and speedway system of the Czech Republic. Completion of the whole D1 motorway including the sections of the existing D47 connecting the main industrial and residential centres along the Prague – Brno – Ostrava axes has been one of the basic conditions for further development of Czech economy and effective connection to the EU infrastructure. When the section under construction is put into operation traffic will be declined from the residential areas especially of Kroměříž and Hulín, which will significantly improve the environment of the towns and eventually also the environment of Přerov after completion of another section under construction between Kroměříž and Přerov. Important

investment projects in the context of D1, in addition to completion of the whole motorway Prague – Ostrava – Polish frontier, also include extension to 6 lanes around Brno in the Kývalka – Holubice section. This project, solving the increased intensity of traffic along D1 around Brno, is under preparation.

Another important line under construction is the D47 motorway, which will become part of D1 motorway after completion. From the international point of view D47 is a significant part of the European motorway network allowing for the north-south connection from Baltic harbours to Middle East. In the territory of the Czech Republic D47 motorway is interconnected with the west European road network via D1 motorway across Prague and D5 and D8 motorways. On the Polish side of the border, the motorway will be connected to the future Polish motorway A1 currently under construction and situated across Poland to reach Gdansk. The inland relevance of D47 will mainly lie in access to the Ostrava-Karviná region. The access is expected to revive the economy of the region and to improve the region accessibility. The motorway is a technically demanding construction meeting the increasing demand for harmonisation with the landscape and minimisation of environmental load. The project of more than 80 km long motorway includes more than 2000 structures, including 14 large bridges and 14 multilevel crossings, one driven tunnel (1.08 km long) and 13 % of the route length formed by bridges and flyovers. The motorway will be connected to five development complexes including commercial centres, filling stations, logistic centres and services.

Highly urgent as well is the construction of D3 – consisting of the current road I/3 - generally considered as one of the worst road sections in the Czech Republic as for traffic load. The traffic intensity surveys of 2005 show that the existing road I/3 between Mirošovice and Benešov is unacceptable for capacity reasons. Daily intensity in this section in 2005 reached over 24 thousand vehicles/day in both directions. In this context the new connection may be expected to affect accident prevention for increased safety of the road traffic in the area (roads of motorway type show the load/accident rate about four times more favourable than ordinary 1st class roads). Regarding the problems related to the approval of route location the first part of the motorway from Prague to the boundary of the Central Bohemia region, about 60 km long, will be implemented last.

The currently commenced construction of D3 is to connect Prague to South Bohemia and Tábor and České Budějovice regions to the national motorway network. At its southern end in the form of the adjacent speedway R3 the road will be connected to the Austrian road network at the Dolní Dvořiště frontier crossing. The connection will be implemented to the high-capacity road S10 under construction to Unterweitersdorf, where Austrian motorway A7 begins. The designed route of D3 (in linkage to D8) will become part of the European transport corridors after completion, situated on the main international road E55, from Scandinavia via Germany, Czech Republic, Austria and Italy to Greece. The total length of the D3 motorway route and the connected speedway R3 route between Prague and the Austrian frontier is 171.40 km.

In October 2008 construction was commenced of the 25 km long section between Tábor and Veselí nad Lužnicí, which is a part of the section Tábor – Bošilec including 3 bridges. In 2011 thus a compact 40 km long section will come into existence between Nová Hospoda and Veselí nad Lužnicí.

The speedway R6 aims at creation of a high-capacity transport connection of Prague and the transport relevant localities in North-Western Bohemia and future connection to the German motorway network. It has to be emphasized that the area of North-West Bohemia has been the most problematic region of the Czech Republic, significantly structurally

affected, economically weak and with high unemployment rate. The significant reasons for acceleration of the construction include the quickly increasing traffic intensity, which, except of the most critical section between Pavlov and the Prague ring road SOKP, reaches 13 thousand vehicles/24 hrs near Kladno and 17 thousand vehicles/24 hrs near Cheb, with somewhat lower intensities between Karlovy Vary and Řevničov. The speedway R6 is planned in the section Nové Strašecí - Karlovy Vary - Cheb – German state frontier. The total length of the speedway will be 168 km. The whole section Prague - Pavlov - Nové Strašecí is 32.4 km long; including the western throughfare in Karlovy Vary (5.5 km in the full profile under operation since 2007) and about 7 km long ring road around Cheb the whole mileage of R6 in operation is 49.5 km long.

At present the section Prague – Pavlov 10.5 km long is already operational and should become the most loaded section of the R6 motorway. The construction also includes 10 bridges and 1 railway bridge. Four construction projects are under construction in the section Kamenný Dvůr – Jenišov (Karlovy Vary). Their implementation will result in connection of Karlovy Vary and Cheb with a high-capacity four-lane speedway. When this section is put into operation the traffic between Karlovy Vary and Cheb will become smoother and quicker.

Another important section under construction is the section Lovosice – Řehlovice on D8 route. This is the last section under construction of the motorway route between Prague and state frontier between the Czech Republic and Germany. In the future, after completion of D3 and the ring road around Prague the section of the Czech motorway system will connect the North Bohemian and the Prague agglomerations with the Tábor and the České Budějovice regions. The construction runs through the České Středohoří protected landscape area and includes 2 tunnels and 4 bridges. Due to various activities of environmentalists this section has only been under construction since autumn 2007, although according to the original plan the section was to be completed before the section across the Krušné hory Trmice – German frontier, completed in 2006 and 23 km long.

The speedway R 49 is connected to D1 motorway inside the multilevel crossing at Hulín, where the speedways R 55 and R 49 meet with the backbone motorway route of the Czech Republic. R 49 forms the basis of the transport skeleton of the Zlínský region. The road runs from Hulín via Fryšták, Slušovice, Vizovice towards Slovak frontier. On the territory of Slovakia it continues as R6 towards Púchov, where is connects to the Slovak motorway D1. The existing road network does not meet the requirements of the dynamically developing needs of the region any more. The increased traffic load of 2nd class roads in the direction of the future R 49 is caused, among other things, by the increasing number of vehicles coming from the Zlín agglomeration and using the route via Fryšták, Holešov and Hulín for connection to D1 motorway near Kroměříž due to the overloaded through pass I/55 in Otrokovice, which is at the limit of permeability of the existing I/55 road. The purpose of the new R 49 will be construction of a high-capacity road allowing for transfer of a considerable part of the road transport from roads crossing the urban areas of Zlín, Otrokovice, Holešov, Hulín and all other municipalities along the existing route of I/49, I/55, II/490 and II/432 roads in the Kroměříž and Zlín districts. This will improve the environment of the affected agglomerations and municipalities and will increase safety and continuity of traffic.

Overburdened road routes in the relatively densely populated area along the Morava river have forced construction of the expressway R55. Many municipalities lay along the route of the existing road I/55 and transport between them is led to their centres (Napajedla, Uherské Hradiště, Veselí nad Moravou). The transport intensity in this area is already

high. The section Hulín – Skalka (Otrokovice) is currently under construction, which, along with the sections of D1 motorway being built (construction work links to construction work of motorway D1 Kroměříž – Říkovice) and the already operational north-east bypass of Otrokovice, shall contribute to better connection of the Zlín Region to the national network of motorways and expressways.

The speedway R 48 is a part of the European priority project no 25. It represents a significant connection for long-distance transport (to Poland via the Chotěbuz border crossing). The R48 will also form part of the third high-capacity connection between the Czech Republic and Slovakia. Together with roads I/68 and I/11 the speedway creates a transport link between Frýdek-Místek and the Slovak city of Žilina. At present two compact sections of R48 are in operation. The first, about 4.5 km long, interconnects the existing four-lane road I/48 and the motorway D1 (project D47) and at the same time bypasses Bělotín. This section was put into operation in 2007 and 2008. The second operated section, 25 km long, connects Frýdek-Místek and Český Těšín, or the Polish speedway S1 direction Katowice. The section was put into operation within 1995 – 2007. The last 5 km of R48 forming the bypass of Český Těšín and connection to the Polish S1 is not marked as speedway. The remaining part of R48 between Frýdek-Místek and Bělotín is prepared for construction in the section Rychaltice – Frýdek-Místek. The hottest issue of R48 has been the permanently postponed construction of the ring road around Frýdek-Místek, where the construction commencement has been delayed by continuous appeals of various civic associations. Under preparation is also the construction of flyover crossing in Nošovice by the already operated section of Dobrá – Nošovice, connecting the Nošovice industrial zone.

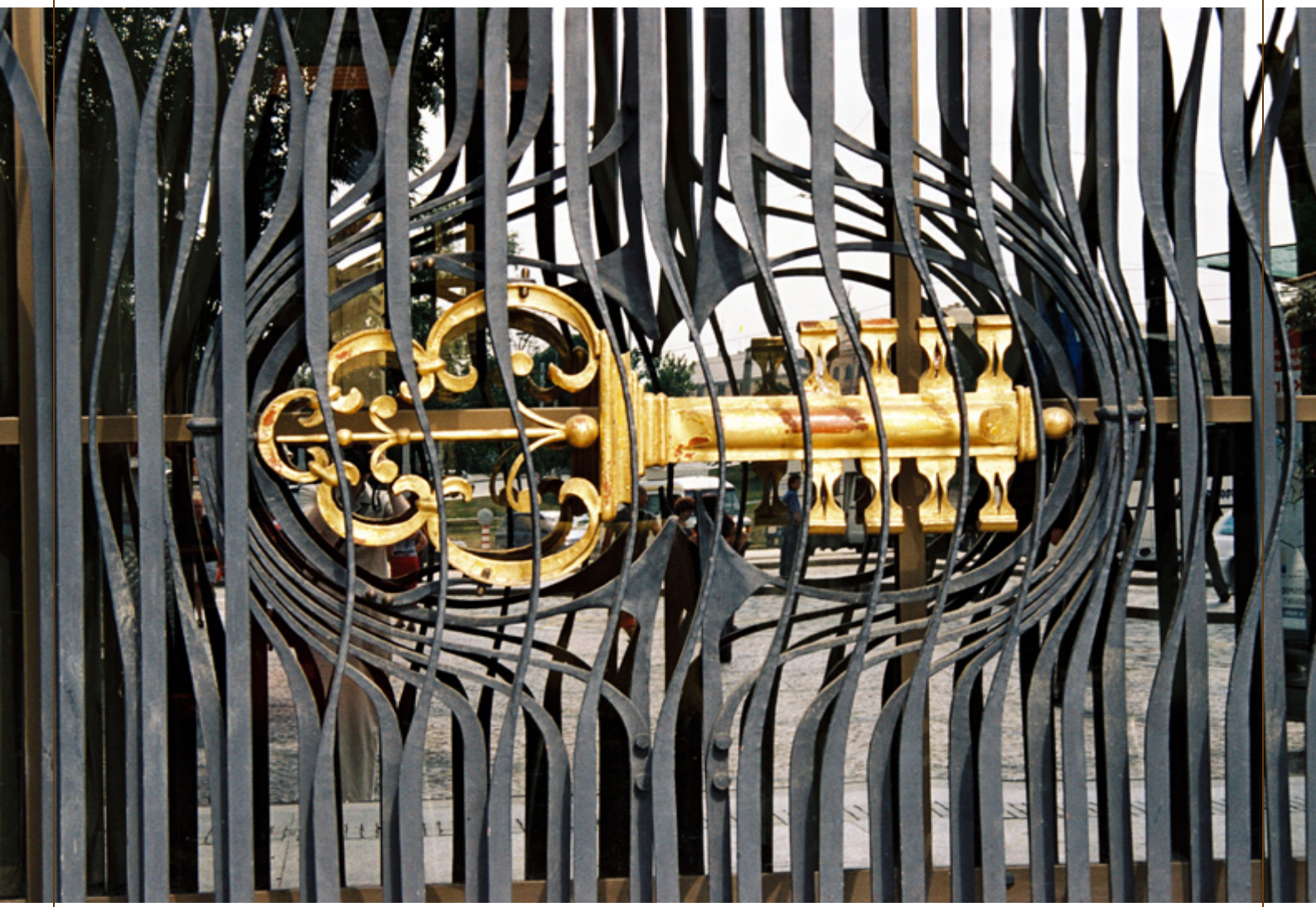
The D11 motorway section Prague – Jaroměř and the adjacent section Jaroměř – Trutnov – Polish border, prepared as speedway R11, will connect to the planned Polish motorway A3 via speedway S3. The motorway has been completed between Prague and the provisional end in front of Hradec Králové near Praskačka. The completion of the remaining section as far as Hradec Králové has been delayed by various property rights disputes concerning land plots in the designed motorway route. The provisional end of D11 near Hradec Králové will become a motorway crossing Sedlice R35–D11 (R35 direction Olomouc). Around Hradec Králové the motorway D11 will join R35 and the two will run together as far as the second motorway crossing R35–D11 where R35 will depart to head towards Liberec.

The evaluated 1st class road sections mainly focus on solutions of the most critical sections, especially including municipality throughfares and access roads to the existing motorways and motorways sections under construction.

Traffic situation in municipalities is most frequently solved by bypasses. Within the MCA only the most signifficant cases with investment costs exceeding half billion CZK are assessed. Bypasses of municipalities represent a separate issue requiring preparation of a concept based on a detailed analysis of current situation.

6

Financing Resources



6.1 Resources for Financing Transport Projects in the Czech Republic (General Summary)

The following chapter describes all available resources of funding determined for financing transport projects. The description is also aimed at resources that are determined for development projects and modernization of the transport infrastructure. Annex No. 6 contains a table with detailed identification of individual components of resources of financing, including a short-term prediction and a long-term prognosis of their development.

6.1.1 State Fund for Transport Infrastructure

The vast majority of expenditures for transport in the Czech Republic are implemented by the State Fund for Transport Infrastructure (SFTI), which was created based on Act No. 104/2000 Coll. as a legal entity subordinate to the Ministry of Transport of the Czech Republic. The purpose of the Fund is to secure the funding for development, construction, maintenance and modernization of roads and motorways, inland waterways and railway transport lines. By virtue of adoption of the Act on Budgetary Allocation of Taxes, in 2005, financing of Class II and III roads came under the competency of the regions. Aside from the actual financing of construction and maintenance, the Fund also provides contributions for research and design works, study and expert activities aimed at the transport infrastructure, and it supports development of the cycling line network. But SFTI does not finance repairs and maintenance of local roads, repairs and maintenance of inland waterways, air transport infrastructure, development of Prague's metro system and construction and operation of infrastructure of intelligent transport systems and services.

Projects financed from structural funds are also financed via the State Fund for Transport Infrastructure.

Another resource is represented by the revenues from fees for using railway transport infrastructure (the price for using railway lines). The revenues go directly to the Railway Infrastructure Administration, not to the State Fund for Transport Infrastructure.

6.1.2 Regional budgets

Since 2005 in consequence of adoption of an amendment to Act no. 234/2000 Coll. on Budgetary Allocation of Taxes, all expenditures for development of infrastructure of Class II and III roads are financed from regional budgets.

6.1.3 Private resources

The system of interconnecting capacities of the private and public sector (PPP – Public Private Partnership), may become one of the most important instruments for financing projects aimed at developing the transport infrastructure in the future. It is based on wide-ranging engagement of private resources into financing a project and operating public services on the part of a private entity, whereas it shall be consequently compensated by the public sector using one of the following methods:

- fee for availability of public service,
- fee for the provided scope of public service, or
- concessions for direct collection of a fee from the public.

Currently this instrument is not sufficiently proliferated and employed in the Czech Republic. The situation is such that pilot projects are being prepared. In 2005 the Czech Government also adopted the following transport projects within the framework of two waves of PPP pilot projects:

- AirCon (Airport Connection)

The project includes "modernization, operation and maintenance of the railway line in the section Prague, Masaryk Station – Railway Station Prague Ruzyně and construction of a new segment, including operation and maintenance, in the section of the railway station Prague Ruzyně – Airport Ruzyně"[11].

- The project of motorway D3 in the segment Nová Hospoda – Tábor – České Budějovice – state border

This project is comprised of "construction and financing of motorway D3 segments 0308 C to 0312 (Veselí nad Lužnicí – state border) and operation and maintenance of segments 0305/II to 0312 (Nová Hospoda – state border)[12]".

Nevertheless, the investment part of these projects has not yet been initiated.

6.1.4 EIB resources

The European Investment Bank was created for the purpose of co-financing projects, which lead to securing economic and social priorities of the European Union. Development of transnational networks and thus even transport and transport infrastructure is one of the priorities of the European Union in the programming period 2007 – 2013. Funding provided by the EIB is determined for providing the national part for co-financing projects implemented in the Czech Republic financed from EU resources by means of the Operational Programme Transport. These funds are provided on the basis of a loan agreement concluded in 2007 between the EIB and the Ministry of Finance of the Czech Republic. In the programming period 2007 – 2013 the Czech Republic is expected to draw EIB loans in a total amount of CZK 34 billion. As this loan should be paid back at the beginning of 2011, it is planned to start in 2011 the drawing of another loan of CZK 25 bn to cover the operations of OP Transport.

[11] Resolution of the Government of the Czech Republic of 19 January 2005 number 76
[12] Resolution of the Government of the Czech Republic of 2 June 2008 number 672

6.2 Prediction of Available Resources for Transport Infrastructure Projects in 2010 – 2030

Compilation of an investment plan for transport infrastructure projects in the years 2010 – 2030 took place in the following manner.

Step 0 (see chapter 5)

Based on the Multi-Criteria Analysis, the sequence of road and railway projects was established. The sequence of projects for inland waterway transport projects was established based on data from the Directorate of Waterways. Also the needs for building high-speeds line have been placed above these projects into the needs of railway projects.

Step 1 (see chapter 6.2.1)

Establishing relevant groups of revenues for financing infrastructure projects (type of projects listed in the MC analysis)[13].

Step 2 (see chapter 6.2.2)

In the second step, planned resources for 2010 – 2012 or possibly 2010 – 2015 were added (drawing from EU funds and EIB loans) from known sources. Planned resources are derived from the following documents.

- SFTI budget for 2010, SFTI medium-term outlook to 2012 (September 2009);
- Total expenditures in infrastructure 2004–2015;
- Expansion of performance-based fees and their influence on the entrepreneurial environment (Czech Technical University in Prague - ČVUT);
- Timetable for construction of transport infrastructure (September 2009).

Step 3 (see chapter 6.2.2)

Estimate on development of resources for the years for which no prediction is available. Estimates are performed in three scenarios in the variants: restrictive, minimalist and development.

Step 4 (see chapter 6.2.3)

Purging resources of operational costs and projects not evaluated by the MC analysis.

Step 5 (see chapter 7)

[13] Road and railway transport projects from the MC analysis, where in part it concerns projects of the TEN-T network and projects of higher importance aside from these networks, and also inland waterway transport projects based on materials from the Directorate of Waterways

Compilation of an investment plan by interconnecting a prediction of resources for individual years and needs of projects evaluated in the multi-criteria analysis.

Step 6 (consequent document control)

The compiled investment plan should be updated progressively to the current date in correlation to changes of the current situation and also specification of data in the future. This shall therefore lead to prolongation of the most distant possible date to be covered by the plan. Upon using a five-year period for example, the next investment plan would be comprised in 2014 for the period 2015-2035, etc.

6.2.1 Summary of relevant revenue groups for projects (step 1)

Relevant revenue groups were established as follows:

- Direct operational infrastructure revenues

Fees for use of roads – motorway stamps and electronic toll collection

Fees for using waterways

- Budgetary / tax resources

Road tax

Mineral oil tax

Contributions from the state budget, specific subsidies

- EU subsidies
- EIB loans
- Private resources

The following are determined as resources that were not included due to their lack of relevance for projects of the MC analysis:

- Resources that are a part of regional budgets, from which roads of lower classes are financed, mainly their maintenance and renewal;
- Resources that are a part of municipal budgets, such as collection of fees for entering zones determined by the city, and parking in general;
- Revenues from using railway lines (Railway Infrastructure Administration - RIA), which go directly into the RIA budget and from which operational expenditures of railway infrastructure are financed.

6.2.2 Establishing the amount of resources for individual revenue groups (steps 2 and 3)

The prediction is derived from the fact that source groups remain the same for the period until 2030. The sole exception is formed by revenues from structural funds and other revenues from the EU, which the scenario is only considering until the end of the programming period 2014 – 2021.

6.2.2.1 Direct operational infrastructure revenues

Fees for using roads – motorway stamps and electronic toll collection

The method of applying fees in the Czech Republic differs based on vehicle category. Three categories have been distinguished:

- Vehicles up to 3.5 (metric) tons;
- Vehicles ranging from 3.5 to 12 tons;
- Vehicles over 12 tons.

The category of vehicles over 12 tons has been charged tolls since 2007 based on the performance approach by means of electronic toll collection. Operation of vehicles falling into this category are thus charged fees in relation to vehicle parameters (see table below) and driven km.

For the other two categories (up to 3.5 tons; over 3.5 tons up to 12 tons), a system was used in 2009 of so-called fee-for-period by means of motorway stamps.

Table 4 Toll rates for individual groups of automobiles and road types

	up to Euro2			from Euro3		
length of segment	2 axles	3 axles	4 axles and more	2 axles	3 axles	4 axles and more
D+R	2.30 CZK/km	3.70 CZK/km	5.40 CZK/km	1.70 CZK/km	2.90 CZK/km	4.20 CZK/km
I	1.10 CZK/km	1.80 CZK/km	2.60 CZK/km	0.80 CZK/km	1.40 CZK/km	2.00 CZK/km

Key: D+R – motorways and expressways; I – Class I roads

Source: Road and Motorway Directorate of the CR

As of 1. 1. 2010, tolls shall be assessed on the basis of performance approach also of the category of vehicles from 3.5 tons up to 12 tons. Also as of 2011 motorway stamps shall be replaced with portable toll electronic devices.

Upon estimating the development it is necessary to take into consideration that the prediction of development of these two revenue sides is complementary. Therefore it is necessary to consider these revenue groups together in individual variant. Toll application on the category of vehicles from 3.5 tons to 12 tons as of 1. 1. 2010, thus on one hand

shall carry with it an increase in revenues from tolls, and on the other hand revenues from sales of motorway stamps shall decline. According to a study by Czech Technical University in Prague - ČVUT[14] , a slight growth in revenues is expected as a result of this change (see table below).

Table 5 Comparison of revenues of performance-based and period-based toll application for category of vehicles over 3.5 to 12 tons

Year	2010	2011	2012
	mil. CZK	mil. CZK	mil. CZK
Toll collection for vehicles over 3.5 to 12 tons registered in the CR	446	456	468
Sale of stamps for vehicles over 3.5 to 12 tons registered in the CR	312	317	324

Source: Study by Czech Technical University in Prague - ČVUT

For individual variants the following is expected:

- Throughout the entire period performance-based tolls shall remain preserved for the category of vehicles from 3.5 tons to 12 tons and above 12 tons. For the category of vehicles up to 3.5 tons, a time-based toll collection system shall be applied by means of motorway stamps.
- The length and type of toll segments shall remain the same.
- Growth shall occur in toll rates. Individual scenarios shall differentiate from one another in relation to the growth in fees in the following manner to increase year on year:

- ***RESTRICTIVE*** in accordance with inflation,
- ***MINIMALIST*** in accordance with the growth in GDP,
- ***PROGRESSIVE*** by 2.5% over GDP growth.

Fees for using waterways

Waterways in the Czech Republic, as is the case in other European countries, are not subject to tolls. The reason is to support an ecologically desirable type of transport. Their introduction is not considered in any of the variants.

6.2.2.2 Budgetary / tax resources

Road tax

Vehicles which are used for business purposes are subject to paying road tax with the stipulation that vehicles over 12 tons[15] are always subject to this tax. For prediction it is

[14] Expansion of the performance-based toll for vehicles over 3.5 to 12 tons, and the influence on the business climate in the Czech Republic; September2009 (ČVUT)
[15] From 1. 1. 2009

expected that this fee shall remain preserved and that the number of vehicles shall not grow in the future.

Individual scenarios expect the following growth:

- ***RES*** growth in accordance with inflation,
- ***MIN*** growth in accordance with the growth in GDP,
- ***PRO*** growth by 2.5% over GDP growth.

Mineral oil tax

Currently 9.1% of the revenues from mineral oil tax are relocated into transport projects by means of the SFTI budget. Individual variants of development that accordantly expect that the consumer tax shall grow in accordance with the GDP differ from one another by the share of the consumer tax, which shall be allocated into the SFTI budget:

- ***RES*** considers the existing share of 9.1% throughout the entire period,
- ***MIN*** share is considered from 2013 in the amount of 20%,
- ***PRO*** share is considered from 2013 in the amount of 30%,

For the period 2010-12 data was used from the “Medium-term Outlook of SDI until 2012” of September 2009.

The prediction as of 2013 is established against the average of the years 2010-12.

Contributions from the state budget, specific subsidies

For the period 2010-12 data was used from the “Medium-term Outlook of SDI until 2012” of September 2009.

The prediction as of 2013 expects throughout the entire period a contribution from the state budget in the following development against the average of the years 2010 – 2012.

- ***RES*** growth in accordance with inflation as of 2013,
- ***RES*** growth in accordance with GDP growth as of 2013,
- ***PRO*** growth by 2.5% over GDP growth as of 2013.

This contribution should compensate the missing remainder of resources.

Specific subsidies are planned in the model only for 2010, when a subsidy was approved from the state budget from emissions of state bonds pursuant to Act no. 220/2003 Coll. in the amount of CZK 11.65 billion.

6.2.2.3 EU Subsidies

The expected drawing of the EU subsidy in the programming period 2007 – 2013 in the years 2010 – 2015 was taken from the document "Total Expenditures in Transport Infrastructure 2004 – 2015".

For the programming period 2014–20 varying levels of decreasing the subsidy as opposed to the programming period 2007 – 2013 are considered in individual scenarios:

- ***RES*** revenues from the EU for 25% of total revenues for the period 2007 – 2013,
- ***MIN*** revenues from the EU for 30% of total revenues for the period 2007 – 2013,
- ***PRO*** revenues from the EU for 40% of total revenues for the period 2007 – 2013.

The starting curve stipulates a gradually growing level of drawing the subsidy during the programming period 2014 – 2021. The model considers drawing the subsidy until 2023 in accordance with the rule n+2.

In the following programming periods there is the expectation that the Czech Republic shall exceed the average EU GDP, and revenues for transport infrastructure shall be significantly limited and even halted. Thus in these periods these resources are not considered in any of the variants.

6.2.2.4 EIB loans

The prediction of the amount of provided loans is derived from the document "Total Expenditures in Transport Infrastructure in 2004 – 2015", from which data was used for years 2010 – 2015.

The following scenarios have been established for the period starting in 2016:

- ***RES*** loans are not considered from the part of the EIB,
- ***MIN*** loans on the level of 50% of the annual average of provided loans in the period 2010 – 2015,
- ***PRO*** loans on the level of 70% of the annual average of provided loans in the period 2010 – 2015,

6.2.2.5 Private resources[16]

[16] The above given presumptions of course represent a simplification for the purpose of this survey. The distribution of resources in time is in reality uneven and is directly linked to specific projects: the resources are provided by the private entities during the limited implementation period of the project/construction and the repayment starts only once the implementation is completed. In the period to 2013, it is planned to use PPP to build the D3 motorway. Projects to be implemented using PPP after 2013 shall be addressed in the GEPARDI II document.

The starting curve (see Fig. 7) as of 2001 expects a gradually growing level of engagement of private resources in the following expected level, which shall be achieved in 2016[17]:

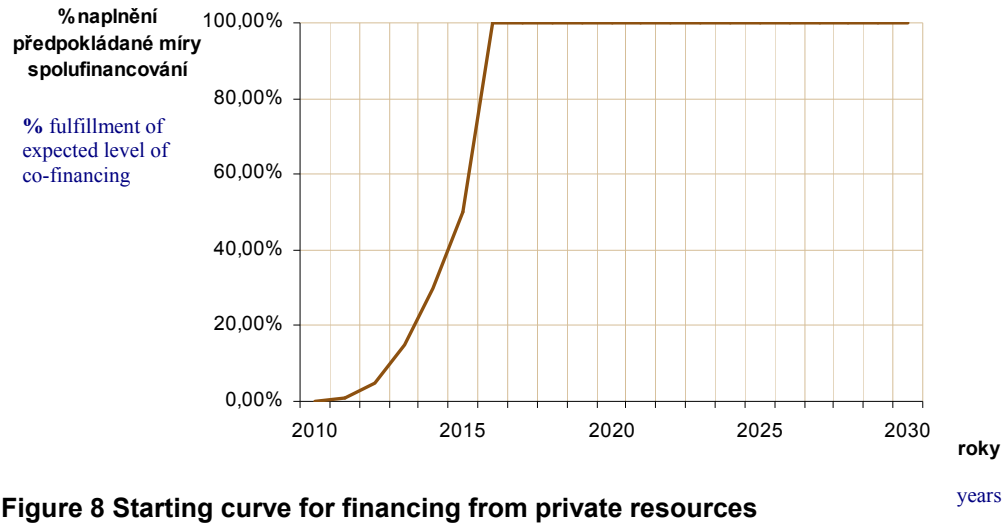


Figure 8 Starting curve for financing from private resources

- ***RES*** PPP funds are not considered,
- ***MIN*** 2016 engagement of all resources in the amount of 15% of all resources,
- ***PRO*** as of 2016 engagement of all resources in the amount of 30% of all resources.

Instalments are established at 4 % annually.

6.2.3 Purging available resources of irrelevant expenditures (step 4)

From resources established on the basis of steps 2 and 3, expenditures for repairs and maintenance were deducted, as were expenditures for smaller infrastructure projects not analyzed in the MC analysis. Expenditures for repairs and maintenance of infrastructure in the years 2016 – 2030 were established in the same amount for all scenarios in all years, which is on the level of the average for 2010 – 2015. This approach takes account of the fact that expenditures for maintenance are a necessary and relatively constant cost, which must be given preference in necessary extent over new infrastructure construction projects).

[17] With the exception of the restrictive variant where private resources are not considered

6.2.4 Medium-term and long-term outlook on resources

On the basis of the methodology described above, values were established for three development scenarios. Total resources of individual scenarios are compared in the graph below.

In the period 2010 – 2012 resources for all variants are in accordance, which is obvious from the common curve. In this period a decrease shall occur in total available funding resources.

From 2013 on, varying development of individual variants starts to occur. In the case of the restrictive variant resources continue their decline. Reversal and resulting mild growth shall not come until around 2016/2017. Robust growth in resources in the minimalist and progressive variants in 2013 is caused mainly by an increase in the share of revenues from mineral oil tax for SFTI (for 20% or 30% of the selected volume).

The curves show drawing of EU subsidies in the programming period 2014 – 2021. Drawing was established in this period by the starting curve, which means in the first years of the period drawing on subsidies is at a low level and continues growing to the end of the period. A drop in resources in 2022 is caused by the fact that in that and consequent programming periods, EU resources shall not be used.

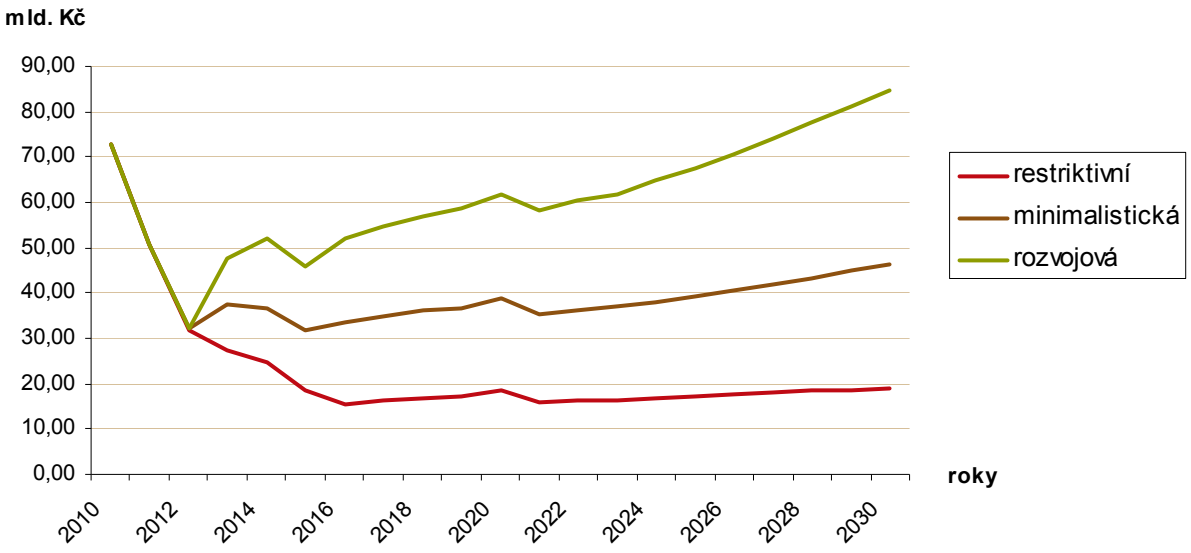


Figure 9 Individual development scenarios for the period 2010 – 2030, available resources for infrastructure projects

mld Kč	billion CZK
roky	years
restriktivní	restrictive
minimalistická	minimalist
rozvojová	progressive

Table 6 Overview of predicted resources in individual variants (CZK bn)[18]

variant	2 010	2 015	2 020	2 025	2 030
restrictive	74,11	21,88	20,56	17,36	19,05
minimalist	74,11	35,40	42,34	42,02	48,43
progressive	74,11	49,75	67,02	72,47	89,09

[18] A detailed overview for individual years including a breakdown of individual revenue groups is listed in Annex No. 6

7

Implementation and Investment Plan

7.1 Needs for Financing Planned Projects

The total amount of needs for financing projects of transport infrastructure was determined by the sum of expected costs starting in 2010 for all projects that were included in the MC analysis and expected costs for planned waterway projects[19]. Their proportion expresses the share of the specific segment in these total costs. Upon determining proportions, the structure of dividing projects into areas based on their separation in the MC analysis was maintained as well, e.g. basic separation based on transport sectors into road, railway and waterway and also for road and railway transport for projects that are part of the TEN-T networks and those which are not. Table 7 illustrates a summary of proportions in individual segments and their parts.

Table 7 Needs for financing in transport sectors

mil. Kč

Potřeby financování celkem	**853 712**	**%**
silniční v tom:	**516 952**	**61%**
Výstavba a modernizace dálniční a silniční sítě TEN-T	391 101	46%
Modernizace silnic I. třídy mimo TEN-T	125 851	15%
železniční v tom:	**319 595**	**37%**
Modernizace železniční sítě TEN-T	209 226	25%
Modernizace železniční sítě mimo síť TEN-T	110 369	13%
vodní	**17 165**	**2%**

mil. CZK

Total financing needs	853,712	%
roads including:	516,952	61%
Construction and upgrading of the motorway and road network TEN-T	391,101	46%
Upgrading of Class I roads outside of TEN-T	125,851	15%
railways including:	319,595	37%
Upgrading of TEN-T railway network	209,226	25%
Upgrading of railway network outside of TEN-T	110,369	13%
waterways	17,165	2%

If we compare the amount of financial needs in railway and waterway transport in relation to road transport as the most financially demanding sector, the needs of road transport represent around 1.6 times the needs for railway transport, and 30.1 times that of waterway transport[20].

Data on costs of individual projects as at end 2009 were obtained from individual investors – operators of transport infrastructure. As the cost estimates are being more and

[19] Data on costs of planned projects in the sector of water and river lines were drawn from the documentation of the Waterways Directorate.

[20] Railway transport projects do not include yet the high-speed line Dresden – Prague – Brno, as its koncept is only being prepared and it will be included in the assessment of the 2nd phase of Transport Sector Strategies.

more precised as the preparation process advances, these costs can differ from data given in other overviews.

7.2 Action Plan for Implementing Selected Projects (Starting Points of Model)

Allocating resources to individual segments. The proportions established for all transport sectors and their parts based on their share on the overall financing needs (see table no 7) were the starting point for dividing resources available for their financing (a description of establishing the prediction of the overall amount of resources in the years 2010-2030 is included in chapter 6).

Allocating resources to specific projects in individual segments and their parts took place always in relation to the overall amount of resources for the given part, into which the project was included. The model for allocating funds to individual projects is derived from the following premises:

- The sequence of allocating resources to individual projects. The sequence of projects based on importance established by the MC analysis was used, which also reflects the degree of preparation and implementation of projects – funds were allocated to projects based on availability gradually in this sequence;
- Ties between individual projects. For simplification, projects were mainly considered, just as in the MC analysis, as independent sections and ties between them concerning for example the need for chronological correlation of construction, etc., were taken into account only in specific cases for preserving the realism of the projection;
- Division of total costs of projects into individual years. Division was used based on data from the MC analysis. Linear division was used into individual years where data was not available;
- Financing projects without stoppages. Funds were allocated to projects only in the case where their financing was enabled in consequential time lines without interruption.

7.3 Purpose and Use of the Action Plan

In regards to the fact that the applied model logically must contain simplified presumptions, it cannot cover all facts that influence the sequence of construction of individual transport infrastructure projects. This concerns for example

- Already established commitments arising for example from internationally concluded agreements, etc.;
- Differences in the current state of preparation of projects within the framework of established categories of the MC analysis;
- Facts that occur in the future and that influence the possibility of commencing individual construction works such as complications during land-use planning proceedings, purchase of grounds, etc.

- Other.

The action plan must thus be perceived not as a means for detailed planning of individual transport construction, but rather mainly as a means providing:

- Framework summary of coverage of needs in medium-term to long-term horizon;
- Information on the impact of a change in overall resources to current needs (comparison of three scenarios);
- Other.

Eventhough the 1st phase of Transport Sector Strategies is targeted at the short-term period to 2013, the time schedule has been prepared with an outlook until 2030. A detailed plan has been prepared for the period till 2013 and the more distant outlook should provide a forecast, based on the current knowledge, when it will be possible to implement important identified projects. This will allow to assess the impacts of insufficience of financial resources caused mainly by the economic crisis.

7.4 Development Scenarios

In regards to the length of the predicted period and sensitivity of the amount of available resources with regard to development of budget revenue items, it is not possible to establish an absolute scenario for financing planned transport infrastructure projects. For providing a complex view, three possible scenarios of development of resources have been outlined, and thus the development in financing transport projects as well. Individual proposed variants differ from one another mainly in the expected development of available resources, which are dependent upon the varying expectations for development of revenue budget line items (see chapter 6).

For clarity's sake variants in the entire document are differentiated by colour[21]. A detailed investment plan in all variants, including specification of basic expectations and inputs for establishing the amount of resources is included in Annexes No 7, 8 and 9.

The current lack of financial resources caused, together with chosen methodology of the programme, that the priority project of waterways development, which is supposed to dissolve the critical bottleneck at the Elbe River by the state border with Germany – navigation part Decin, was postponed in all versions of the investment plan behind the year 2013. With respect to the urgent need of implementation of this priority project of waterways development in the CR, this project will be, in case the realization of the construction will be prepared before 2013, prioritized against other projects. This prioritization is possible because of the relatively small volume of waterways investments in relation to the total volume of traffic infrastructure investments and also thanks to the possibility to redistribute planned financial resources without negative impact on investments in the area of road and railway infrastructure.

[21] Progressive variant – green; minimalist variant – brown; restrictive variant - red

Restrictive variant

The restrictive variant of financing products is developed from the most pessimistic prediction of available resources in the period 2016 – 2030. The variant stipulates that revenues from time-based and performance-based fees and revenues from consumer tax shall be around the level of inflation, and their real value shall thus be constant. The variant also does not consider any additional private resources within the framework of a PPP project, and no revenues are considered from privatization, or from the EIB. EU subsidies for financing projects represent in the years 2014-2020 25% of the average of drawing in the programming period 2007 – 2013 and after 2021 they are not considered whatsoever. Development of total available resources thus has from the beginning a declining and after 2016 stagnating tendency.

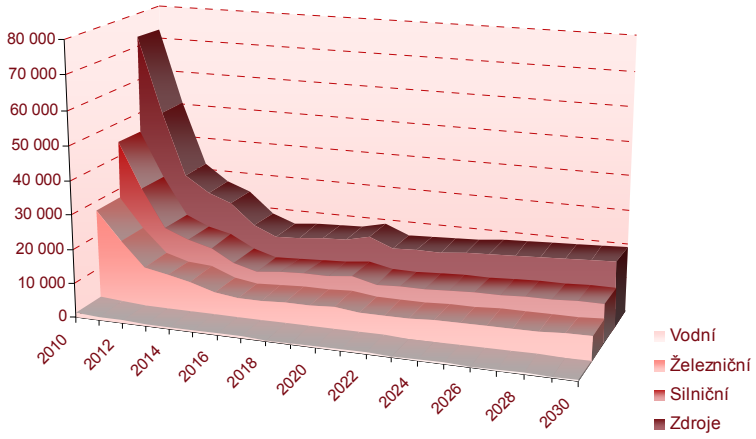


Figure 10 Financing transport infrastructure projects – restrictive variant

Vodní	Waterway
Železniční	Rail
Silniční	Road
Zdroje	Resources

The lack of revenue line items in the budget forms a relatively large deficit of available resources, which shall appear in insufficient coverage of financial needs of planned projects. In the restrictive variant, total coverage of needs by available resources only represents 57%.

Minimalist variant

The minimalist variant is derived from the slightly positive development trend of most revenue factors of the budget. Revenues from time-based and performance-based fees as well as revenues from taxing roads grow at the same pace as the GDP in the given year. The share in the consumer tax for the SDFI represents 20%, and 15% of engagement of private resources is expected. The variant further stipulates drawing funding from European resources (30% of the average drawing in 2007 – 2013 for the period 2014 – 2020, no subsidies after 2021) and loans from the EIB. Total available

resources thus have, after an initial significant drop, a slight growth development until 2015.

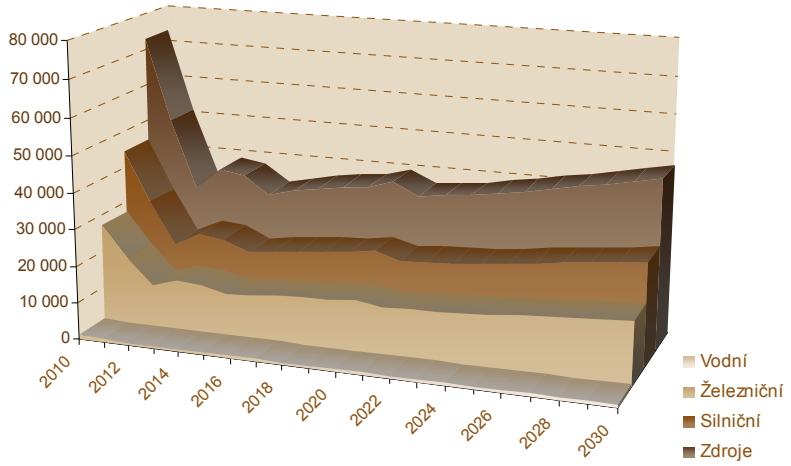


Figure 11 Financing transport infrastructure projects – minimalist variant

Vodní	Waterway
Železniční	Rail
Silniční	Road
Zdroje	Resources

Due to increasing available sources, as opposed to the restrictive variant, an improvement of coverage of planned projects shall occur, which in the minimalist variant is at a level of 99%. The minimalist variant thus covers the established needs in the 2010 – 2030 timeframe.

Progressive variant

The progressive variant is founded upon the most optimistic development expectation of budget factors and available resources. All revenue factors are developing at an intense pace, which is also marked by positive development of available resources. Also this variant stipulates important engagement of resources from EIB loans and important engagement of private resources in the form of PPP projects.

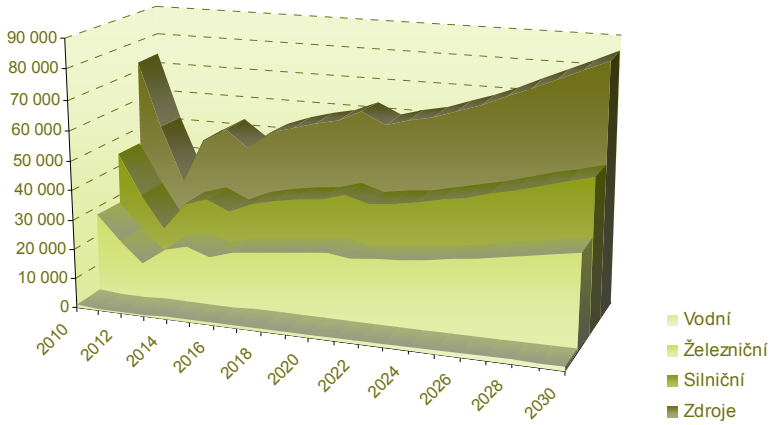


Figure 12 Financing transport infrastructure projects – progressive variant

Vodní	Waterway
Železniční	Rail
Silniční	Road
Zdroje	Resources

After a significant drop in available resources in the period 2010 – 2015 they should again increase with further growing tendencies thanks to the expected positive development of revenue factors in the progressive variant with further growing tendencies after 2016. Due to this tendency around 2026 room shall be created for including new additional projects to be financed, such as needs for high-speed lines.

8

Conclusion

The main objective of the document "Transport Sector Strategies – 1st phase" was mainly to define more precisely the expected plan of implementation of steps for fulfilling key aims in the area of transport established in the OP Transport, and determination of a medium-term and short-term outlook of the possibilities of financing specific transport infrastructure projects complying with the principles set by the objectives and measures of the Transport Policy of the CR.

By thorough judgment of the existing situation in the given sphere and its comparison with the concept of basic services, the current needs were evaluated and basic problem areas were identified, to which increased attention must be paid in the coming period. **These findings in principle confirmed the objectives and priorities set forth already by the Operational Programme Transport in the short-term horizon (until 2013) as well as by the Transport Policy of the CR.** After evaluation of all key aspects having influence on the development in the given area, another plan was also outlined for implementing transport infrastructure construction projects (as a means for achieving longer-term term objectives) after completion of the current programming period until 2030. This long-term vision however does not represent a comlex plan, its aim is to show how the implementation of certain projects will be postponed that were originally planned for the short-term period due to lack of financial resources for implementation caused by the current economic crisis. A more detailed plan for the medium-term with a long-term outlook and an update of the short-term plan shall be prepared within the 2nd phase of Transport Sector Strategies.

The transport infrastructure project financing plan is derived from the development of available resources, the amount of which is determined by development of direct budget revenue items. Each of the proposed variants at the same time is derived from various input parameters for individual revenue line items in the course of the entire period. By comparing all variants (see Annexes no 8, 9 and 10), the structure of revenue line items in the minimalist variant that secure 100% coverage of financing the needs of projects (in global measure) appear to be the most advantageous, or the development variant, which enables financing other needs at the end of the period 2010 - 2030. As opposed to this, the restrictive variant cannot be recommended in regards to the limited coverage of needs. With regards to planning resources, it shall mainly be appropriate in the future to specify a prognosis and compile a sensitivity analysis of individual revenue groups, and on the basis of this, to plan necessary measures for securing funding. This shall also be part of the 2nd phase of the project and its following updates.

From the nature of the used input data and information that was used upon compiling individual chapters it is apparent that the document "Transport Sector Strategies" represents a "live" document, where regular updating is necessary in relation to the needs of current political and economic development. This updating should contribute to securing the expressive capability of the document.

Not the least of which it is necessary to point out that the final output of the 1st phase should be finalized within the 2nd phase, so that the resulting document fulfils all conditions necessary for its submission to the Czech Goverment for approval. For full completion of the document, it is necessary to compile or secure the following points that are difficult in terms of time:

- Elaboration of an SEA assessment and impact on Natura 2000

The process of evaluating the impact by the strategic environmental assessment has not been started during the 1st phase, as it would not be possible to comply with time schedule of the process set by legislation. In order to carry out the process, it is also necessary to tender the consultant for SEA drafting. The process is therefore proposed to be done during the 2nd phase.

- Update of prognosis models of shipping and transport corridors for all types of transport,

  Many prognostic models prepared for various reasons exist in the Czech Republic. In most cases, these are partial models that do not cover the entire transport sector, i.e. all transport modes, freight transport, individual car transport and public passenger transport. It is also necessary to ensure a close interconnection with macro-economic models. It is important to prepare the models using suitable technical and information tools and to maintain continuously their data base. It is a process that is difficult to put into functioning and due to its complicated nature it was not possible to resolve the issue during the 1st phase. It shall therefore be addressed during the 2nd phase.

- Incorporation of outputs of the European transport policy and TEN-T policy, which are still in the state of negotiations,

  2010 will be an important year with regard to the preparation and updating of important European strategic documents and policies. Apart from a significant review of the trans-European transport networks policy and a new European transport policy for the next decade, the medium-term evaluation and update of the Freight Transport Logistics Action Plan is also expected. It is also necessary to mention the preparation of a new strategy that will follow on the existing Renewed EU Sustainable Development Strategy. The new European Cohesion Policy will also be very important. The final form of the strategies and policies will have a significant impact on transport policy planning in the Czech Republic as well as on the issues addressed by the Transport Sector Strategies. In this regard, the 2nd phase will be a major update of the 1st phase.

- Incorporation of main outputs resulting from the update of the Czech Transport Policy

  During 2010, important strategic documents and policies will also be adopted on national level. This will be mainly the upade of the Transport Policy of the CR or the new Strategic Sustainable Development Framework of the Czech Republic.

- Providing more precise forecasts of financial resources for financing of transport infrastructure by individual sources

  The economic crisis has a strong impact on public budgets that are one of the main financing sources. Other financing sources have been hit by the crisis as well. As it was not possible to find out during the drafting of the 1st phase of Transport Sector Strategies what will be the real impact of the economic crisis on the next period, the provided forecasts reflect a higher level of uncertainty. 2010 should be the turning year as for economic development and it should therefore be possible to significantly add precision to the potential financial estimates.

- As for the evaluation of needs, during the 1st phase it was possible to evaluate individual projects such as prepared by individual investors. During the 2nd phase, the process shall also include a re-evaluation of project costs. In this context, it is

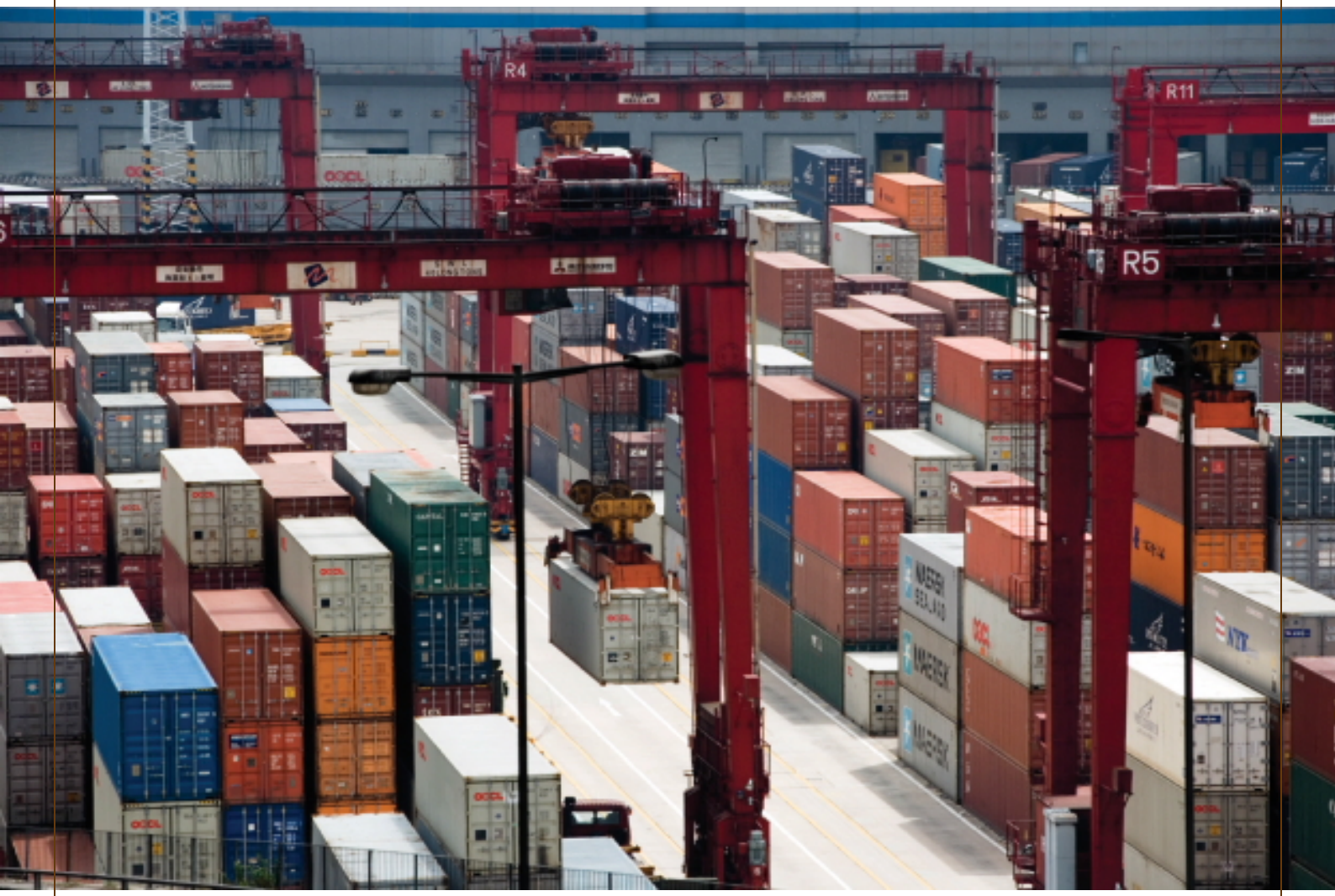
necessary to define a uniform methodology for setting reference prices for cost of building transport infrastructure and to review the methodologies used in individual transport modes for the CBA so that it can gradually replace the current multi-criteria assessment of projects.

It will thus be possible to complete he document only in the second phase, which shall be aimed at the medium-term and long-term outlook.

The document “Evaluating the efficiency of the Transport Policy of the Czech Republic for 2005-2013 in 2009” is also being drafted currently. Its aim is to analyse new important strategic European and national documents influencing the transport policy planning process and the stage of fulfilment of individual measures set by the Transport Policy of the CR. The outputs of the 1st phase of Transport Sector Strategies shall also be used for the updating of the Transport Policy of the CR that will be done in 2010. The review of Transport Policy indicators based on the outputs of Transport Sector Strategies shall also be done in 2010 in such a way so that it is possible to use these indicators during the next evalution of transport policy effieciency in 2011 to assess the overall efficiency of the Transport Policy of the CR including all related sector strategies. Transport Policy indicators are set up in such a way as to enable the evalution of results for 2010 (i.e. within the evalution in 2011 when the statistical data for 2010 are available).

9

Lists



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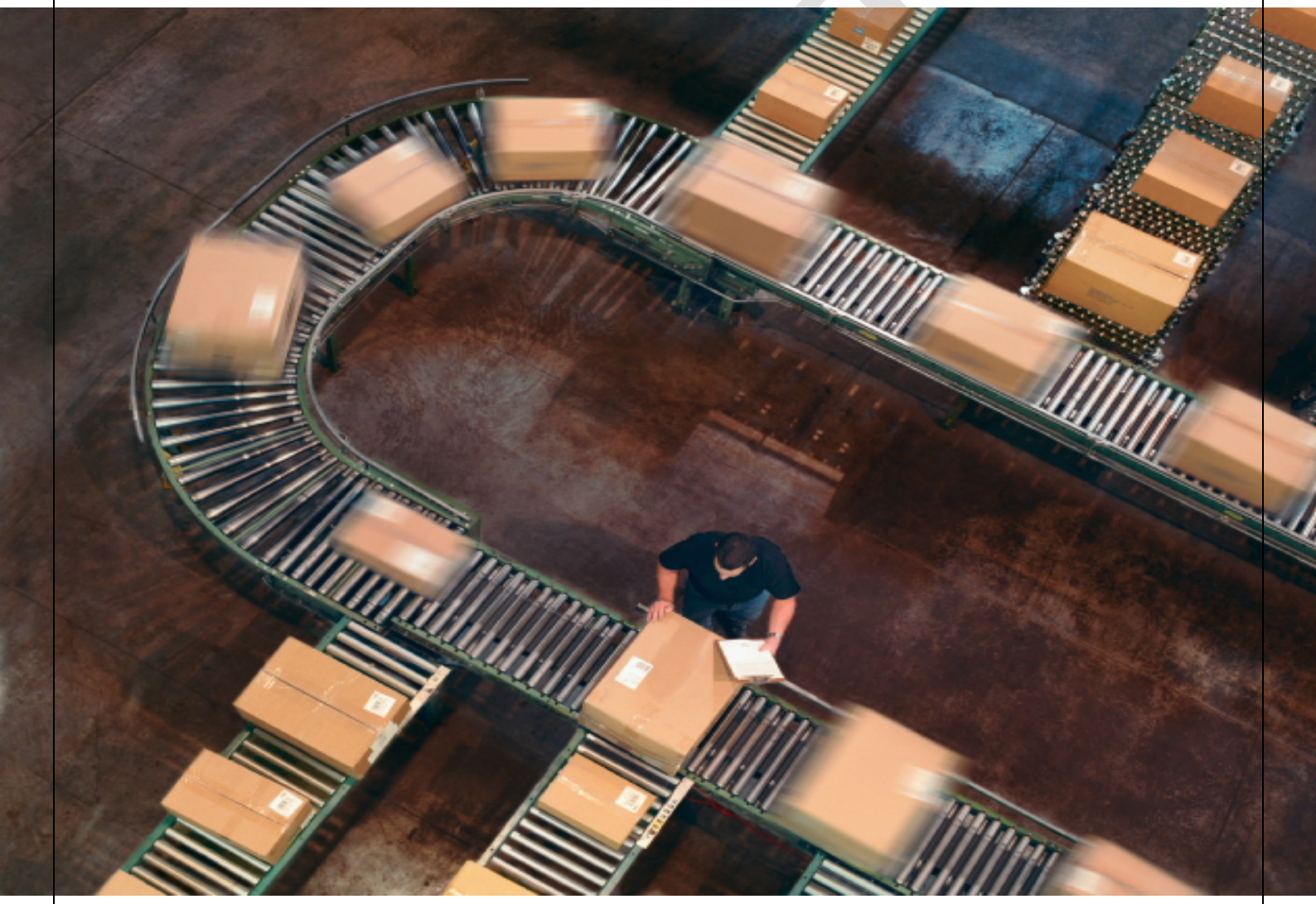
9.4 List of Abbreviations

AirCon	Airport Connection
ARI	Academic and Research Institutes
CBA	Cost and Benefit Analysis
AGC Agreement	European Agreement on Main International Railway Lines
AGN Agreement	European Agreement on Main Inland Waterways of International Importance
AGTC Agreement	European Agreement on Important International Combined Transport Lines and Related Installations
ISRC	Interlocking System Remote Control
ETP	European Transport Policy
EIB	European Investment Bank
EC	European Commission
CF	Cohesion Fund
GEPARDI	General Plan for Transport Infrastructure Development
GDP	Gross Domestic Product
IAT	Individual Automobile Transport
ITS	Intelligent Transport Systems
AT	Air travel
MT	Ministry of Transport
MCA	Multi-Criteria Analysis
MRD	Ministry for Regional Development
MB	Majority beneficiary
MUK	Flyover crossing
ME	Ministry of the Environment
NDP	National Development Plan
OPT	Operational Programme Transport
PPP	Public Private Partnership
RDP	Regional Development Programmes
RDP	Regional Development Policy
WD	Waterways Directorate
SD	Road transport
SFTI	State Fund for Transportation Infrastructure
CIS	Commonwealth of Independent States
PRR	Prague Ring Road
JSC	Joint Steering Committee
STRAPODOU	Support Strategy for Territorial Transport Serviceability
TDS	Territorial Development Strategy
RIA	Railway Infrastructure Administration
TEN-T	Trans-European Transport Network
UA	Urbanisation area
PLC	Public logistics centre
HSL	High-speed line
IWT	Inland waterway transport
IO	Interest organization
RT	Railway transport
ENV	The environment

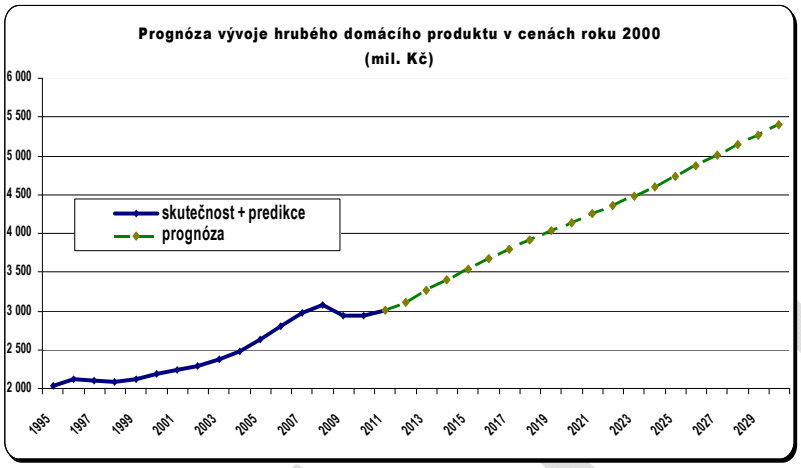
10

Annexes



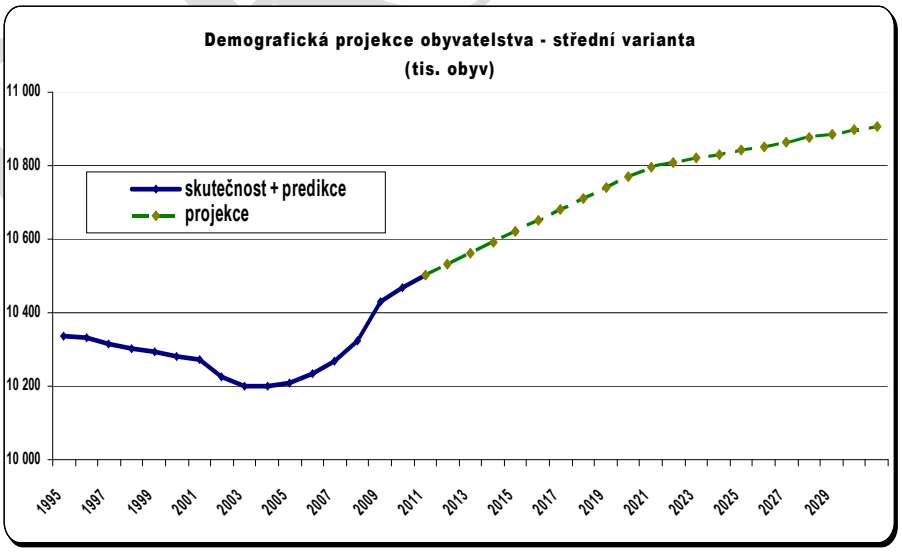
Annex 1 Prognosis of Development of Basic Volume and Performance Indicators[22] in the Czech Republic in Medium-term and Long-term Variants

Czech	English
Prognóza vývoje hrubého domácího produktu v cenách roku 2009	Prognosis on Development of Gross Domestic Product in Prices for 2009
(mil. CZK)	(mil. CZK)
skutečnost + predikce	reality + prediction
prognóza	prognosis
Zdroj: MF	Source: MF



Source: Ministry of Finance

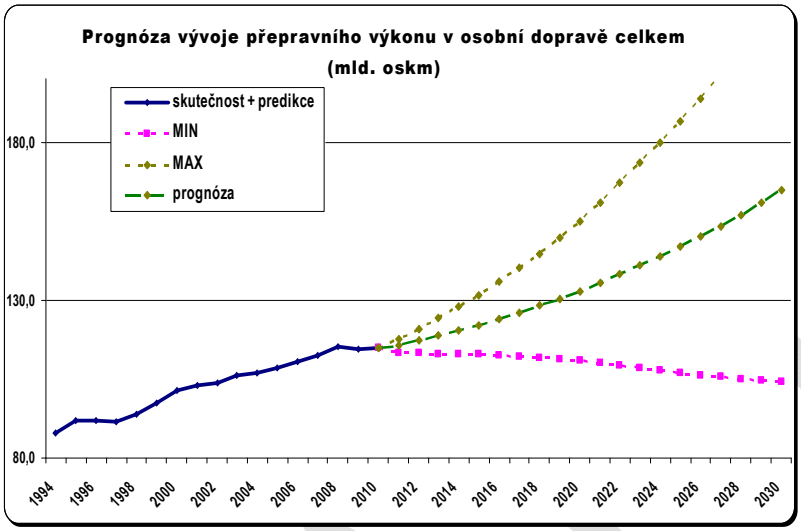
Czech	English
Demografická projekce obyvatelsva – střední varianta	Demographic Projection of the Population – Medium Variation
(tis. obyv)	(in thousands of inhabitants)
skutečnost + predikce	reality + prediction
prognóza	prognosis
Zdroj: ČSÚ	Source: Czech Statistical Office



Source: Czech Statistical Office

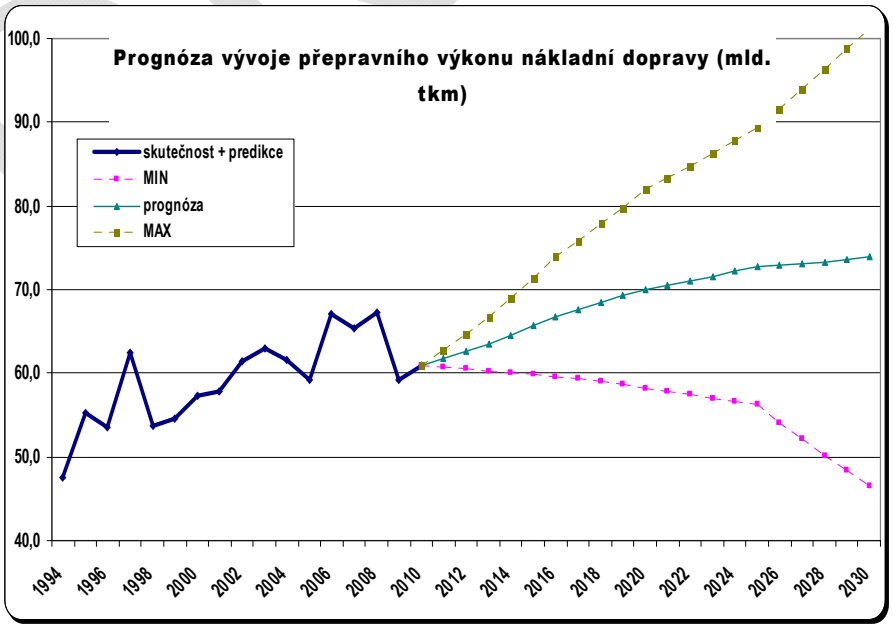
[22] Rail passenger and freight, road freight, bus, city mass, inland water freight and air passenger and freight transport

Czech	English
Prognóza vývoje přepravního výkonu v osobní dopravě celkem	Prognosis of Development of Transport Performance in Passenger Transport in Total
(v mld. oskm)	(billions of passenger kilometres)
skutečnost + predikce	reality + prediction
MIN	MAX
MAX	MIN
prognóza	prognosis



Source: Prediction by the Transport Research Centre (CDV)

Czech	English
Prognóza vývoje přepravního výkonu nákladní dopravy	Prognosis of Development of Transport Performance in Freight Transport
(mld. t km)	(billions of metric tons/kilometres)
skutečnost + predikce	reality + prediction
MIN	MAX
MAX	MIN
prognóza	prognosis



Source: Prediction by the Transport Research Centre (CDV)

Prognosis of Development of Passenger Transport in the Czech Republic (only transporters registered in the CR)

Indicator	Unit	Reality			Estimate	Prediction			Prognosis			
		2006	2007	2008	2009	2010	2011	2012	2015	2020	2025	2030
Transport of persons												
total	**mil. persons**	**4 975.5**	**5 034.6**	**5 160.1**	**5 089.9**	**5 101.8**	**5 111.0**	**5 153.8**	**5 323.9**	**5 718.9**	**6 350.0**	**7 171.6**
In this transport												
Public total	**mil. persons**	**2 815.5**	**2 824.6**	**2 910.1**	**2 839.9**	**2 841.8**	**2 848.4**	**2 872.8**	**2 967.4**	**3 196.3**	**3 524.1**	**3 975.9**
In this transport												
Rail	**mil. persons**	183.0	184.2	177.4	169.7	168.0	171.1	173.5	186.4	205.3	230.8	270.4
Bus	**mil. persons**	387.7	375.0	401.7	377.2	378.0	379.9	383.0	399.8	430.1	464.2	525.7
Urban mass transport	**mil. persons**	2 238.0	2 258.4	2 323.8	2 286.0	2 288.8	2 290.4	2 308.9	2 373.7	2 552.3	2 819.6	3 169.1
Air	**mil. persons**	6.7	7.0	7.2	7.0	7.0	7.1	7.3	7.6	8.6	9.5	10.8
IAD [1)] **total**	**mil. persons**	2 160.0	2 210.0	2 250.0	2 250.0	2 260.0	2 262.6	2 280.9	2 356.4	2 522.6	2 825.9	3 195.7
Transport performance												
total	**bil. passenger km**	**110.6**	**112.5**	**115.2**	**114.6**	**114.9**	**116.1**	**116.4**	**121.8**	**132.1**	**146.0**	**163.9**
In this transport												
Public total	**bil. passenger km**	**41.0**	**41.2**	**42.8**	**42.0**	**41.8**	**42.3**	**43.0**	**45.0**	**49.7**	**54.6**	**60.7**
In this transport												
Rail	**bil. passenger km**	6.9	6.9	6.8	6.6	6.5	6.6	6.7	7.2	8.0	8.9	10.4
Bus	**bil. passenger km**	9.5	9.5	9.4	9.2	9.2	9.3	9.4	9.8	10.8	12.0	13.4
Urban mass transport	**bil. passenger km**	14.3	14.4	15.9	15.7	15.7	15.7	15.9	16.5	17.7	19.1	20.6
Air	**bil. passenger**	10.2	10.5	10.7	10.5	10.5	10.7	11.0	11.5	13.1	14.6	16.4

		km										
IAD [1)]	**total**	**bil. passenger km**	69.6	71.2	72.4	72.6	73.1	73.8	73.4	76.8	82.4	91.4	103.2
Shares in transport performances													
Public transport	**total**	**%**	**37.04**	**36.67**	**37.15**	**36.62**	**36.41**	**36.41**	**36.95**	**36.96**	**37.60**	**37.38**	**37.04**
In this transport													
Rail		**%**	6.26	6.13	5.91	5.76	5.66	5.65	5.76	5.92	6.09	6.11	6.36
Bus		**%**	8.59	8.46	8.12	8.01	8.01	7.98	8.07	8.06	8.19	8.21	8.16
Urban mass transport within framework of Integrated Transport System		**%**	12.94	12.76	13.79	13.69	13.62	13.55	13.64	13.54	13.40	13.08	12.54
Air		**%**	9.25	9.31	9.33	9.16	9.13	9.23	9.48	9.44	9.93	9.98	9.98
IAD [1)]	**total**	**%**	**62.96**	**63.33**	**62.85**	**63.38**	**63.59**	**63.59**	**63.05**	**63.04**	**62.40**	**62.62**	**62.96**

Note: 1) expert estimate

Compiled by: 7.9.2009

Prognosis on Development of Freight Transport in the Czech Republic
(only transporters registered in the CR)

Indicator	Unit	Reality			Estimate	Prediction			Prognosis			
		2006	2007	2008	2009	2010	2011	2012	2015	2020	2025	2030
Transport of goods												
total	**mil. m. ton**	**544.1**	**555.6**	**528.9**	**466.9**	**482.7**	**490.6**	**498.4**	**524.6**	**559.8**	**599.4**	**645.5**
In this transport												
Rail	**mil. m. ton**	97.5	99.8	95.1	78.8	80.4	83.3	84.8	94.0	104.8	113.7	125.8
Road	**mil. m. ton**	444.6	453.5	431.9	386.3	400.5	405.7	411.9	428.8	452.9	483.3	516.9
Inland water	**mil. m. ton**	2.03	2.24	1.91	1.72	1.70	1.60	1.68	1.82	2.12	2.34	2.68
Air	**mil. m. ton**	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.04	0.05
Transport performance												
total	**bil. m ton/km**	**67.0**	**65.4**	**67.2**	**59.2**	**60.8**	**61.7**	**62.6**	**65.6**	**70.1**	**72.8**	**73.9**
In this transport												
Rail	**bil. m ton/km**	15.8	16.3	15.4	13.1	13.4	14.1	14.3	15.6	17.6	19.2	20.4
Road	**bil. m ton/km**	50.4	48.1	50.9	45.3	46.6	46.7	47.4	49.1	51.5	52.4	52.2
Inland water	**bil. m ton/km**	0.82	0.90	0.86	0.81	0.80	0.81	0.83	0.88	0.98	1.11	1.27
Air	**bil. m ton/km**	0.05	0.04	0.04	0.03	0.04	0.04	0.04	0.05	0.06	0.07	0.08
Shares in transport performances												
In this transport												
Rail	**%**	23.55	24.94	22.97	22.06	22.03	22.91	22.91	23.81	25.06	26.43	27.56
Road	**%**	75.16	73.63	75.69	76.52	76.60	75.71	75.70	74.79	73.47	71.96	70.61
Inland water	**%**	1.22	1.37	1.28	1.37	1.31	1.32	1.33	1.34	1.40	1.52	1.73
Air	**%**	0.07	0.06	0.05	0.05	0.06	0.06	0.07	0.07	0.08	0.10	0.11

Compiled by: 7.9.2009

Annex 2 Core Services

Market segment	Individual market segment	Core service	No. of measure	Measure	I / N	Segment			
Passenger transport	Passengers in general	Improving conditions in transport	1	Introducing integrated transport systems in passenger transport, enlarging their territorial coverage and ensuring the coordination of activities of individual contracting authorities of public services of identical and different levels;	N	SD	ŽD		
			2	Supporting the links of individual types of mass transportation.	I / N	SD	ŽD		
			3	Preparing conditions for service coverage so that rail transport represents the backbone of public passenger transport;	I / N	ŽD			
			4	Improving the awareness of passenger transport users by developing a comprehensive information system.	N	TRANSPORT			
			5	Making all types of transport accessible to persons with limited mobility or orientation capacities;	N	SD	ŽD		
	Passengers of long-distance transport (travel over longer distances, mainly of business or leisure type)	Connecting centres of international importance	6	Preparing conditions for increasing the capacity of Praha - Ruzyne airport;	I	LD			
			7	Creating conditions for upgrading technical airport infrastructure of public airports leading to an increase in air traffic capacity, quality and safety.	I / N	LD			
			8	Continue in building the sections of the trans-European TEN-T network in the Czech Republic;	I	SD	ŽD		
			9	Connecting all regions to a quality network of motorways and expressways; expressways on less heavily trafficked sections should be built only as half-profile in the first stage;	I	SD			
			10	Completing the modernisation of transit corridors (III. and IV. corridor); upgrading the key railway junctions, including the interconnection of corridors in the Prague railway junction;	I	ŽD			
			11	Implementing intelligent transport systems on the motorway network;	I / N	SD			
			12	Supporting the development of cross-border railway transport projects;	I / N	ŽD			
			13	Contributing to resolving the issue of increased air transport over shorter distances by developing railway transport services;	N	ŽD			
	Passengers of inter-regional transport	Connecting local regional centres	7	Creating conditions for upgrading technical airport infrastructure of public airports leading to an increase in capacity, quality and air traffic safety.	I / N	LD			
			8	Continue in building the sections of the trans-European TEN-T network in the Czech Republic;	I	SD	ŽD		

			9	Connecting all regions to a quality network of motorways and expressways; expressways on less heavily trafficked sections should be built only as half-profile in the first stage;	I	SD			
			10	Completing the modernisation of transit corridors (III. and IV. corridor); upgrading the key railway junctions, including the interconnection of corridors in the Prague railway junction;	I	ŽD			
			11	Implementing intelligent transport systems on the motorway network;	I / N	SD			
			13	Contributing to resolving the issue of increased air transport on shorter distances by developing railway transport services;	N	ŽD			
	Passengers of the regional transport backbone (travelling for services within the regional, ex. to the regional centre)	Providing for suburban transport	14	Supporting the systems of P+R parking and connections between individual car transport and mass public transport;	I / N	SD	ŽD		
			15	Building infrastructure for bicycle transport with the aim of better incorporating bicycle transport into the system of short-distance passenger transport;	I	SD			
			16	Physically separating bicycling from other modes of transport in order to decrease the number of road traffic accidents involving cyclists.	I	SD			
			17	Better definition of standards in public passenger transport that will be used for selecting the transporter to provide for the core service coverage of the territory.	N	SD	ŽD		
			11	Implementing intelligent transport systems on the motorway network;	I / N	SD			
		Interconnecting larger municipalities with regional centres (the radial network)	17	Better definition of standards in public passenger transport that will be used for selecting the transporter to provide for the core service coverage of the territory.	N	SD	ŽD		
	Passengers of short distance transport (daily commuting to work, school, normal services etc.)	Providing for urban mass transport	14	Supporting the systems of P+R parking and connections between individual car transport and mass public transport;	I / N	SD	ŽD		
		Interconnecting smaller municipalities and connecting them to the backbone network	17	Better definition of standards in public passenger transport that will be used for selecting the transporter to provide for the core service coverage of the territory.	N	SD	ŽD		
		Providing for conditions for recreational transport	18	Preparing projects for installing additional infrastructure for recreational navigation on important transport routes.		VVD			
			15	Building infrastructure for bicycle transport with the aim of better incorporating bicycle transport into the system of short-distance passenger transport;	I	SD			
			16	Physically separating bicycling from other modes of transport in order to decrease the number of road traffic accidents involving cyclists.	I	SD			

			12	Supporting the development of cross-border railway transport projects;	I / N	ŽD			
Freight transport	Transporters in general	Supporting sustainability in freight transport	19	Support to introducing the co-modality principle and benefiting from comparative advantages of individual transport modes;	N	SD	ŽD	LD	VVD
			20	Optimising logistic processes;	N	SD	ŽD	LD	VVD
	Transporters of bulk goods	Providing optimum conditions for transport	21	Dealing with the issue of navigability on waterways used for transport and other waterways, the development and upgrading of which are in the public interest;	I	VVD			
			22	Upgrading the waterways infrastructure - additional equipment of waterways and ports with anti-flood measures, ensuring safe fuelling and waste storage in ports, support to installing public access functionalities in ports and docking locations (barrier-free access, access to vessels, etc);	I	VVD			
			23	Upgrading the vessels;	N	VVD			
			10	Completing the modernisation of transit corridors (III. and IV. corridor); upgrading the key railway junctions, including the interconnection of corridors in the Prague railway junction;	I	ŽD			
			24	Preparing conditions for connecting all regions to a quality railway network;	I	ŽD			
			12	Supporting the development of cross-border railway transport projects;	I	ŽD			
	Transporters of full loads	Providing optimum conditions for transport	25	Supporting the development of public logistics centres (PLC)	I / N	SD	ŽD	LD	VVD
			26	Supporting new concepts for supplying to cities based on citylogistics and relying on the connection to the PLC system;	I / N	SD	ŽD		
			6	Preparing conditions for increasing the capacity of Praha - Ruzyne airport;	I	LD			
			7	Creating conditions for upgrading technical airport infrastructure of public airports leading to an increase in capacity, quality and air traffic safety.	I / N	LD			
			21	Dealing with the issue of navigability on waterways used for transport and other waterways the development and upgrading of which is in the public interest;	I	VVD			
			22	Upgrading the waterways infrastructure - additional equipment of waterways and ports with anti-flood measures, ensuring safe fuelling and waste storage in ports, support to installing public access functionalities in ports and docking locations (barrier-free access, access to vessels, etc);	I	VVD			
			23	Upgrading the vessels;	N	VVD			
			8	Continue in building the sections of the trans-European TEN-T network in the Czech Republic;	I	SD	ŽD		
			9	Connecting all regions to a quality network of motorways and expressways; expressways on less heavily trafficked sections should be built only as half-profile in the first stage;	I	SD			
			10	Completing the modernisation of transit corridors (III. and IV. corridor); upgrading the key railway junctions, including the interconnection of corridors in the Prague railway junction;	I	ŽD			
			24	Preparing conditions for connecting all regions to a quality railway network;	I	ŽD			
			11	Implementing intelligent transport systems on the motorway network;	I / N	SD			

			12	Supporting the development of cross-border railway transport projects;	I	ŽD			
	Transporters of piece consignments	Providing optimum conditions for transport	25	Supporting the development of public logistics centres (PLC)	I / N	SD	ŽD	LD	VVD
			26	Supporting new concepts for supplying to cities based on citylogistics and relying on the connection to the PLC system;	I / N	SD	ŽD		
			8	Continue in building the sections of the trans-European TEN-T network in the Czech Republic;	I	SD	ŽD		
			9	Connecting all regions to a quality network of motorways and expressways; expressways on less heavily trafficked sections should be built only as half-profile in the first stage;	I	SD			
			11	Implementing intelligent transport systems on the motorway network;	I / N	SD			
			13	By developing railway transport services contribute to solving the issue of increased air transport on shorter distances;	N	ŽD			
Passenger and freight tr.	Regulation by the state with the objective of optimisation and providing for a sust.dev. of tran.	Providing for a competitive transport and competitiveness of individual sectors	19	Support to introducing the co-modality principle and benefiting from comparative advantages of individual transport modes;	I / N	TRANSPORT			
			27	Research and development of new energy sources for transport and development of more efficient drive units.	N	TRANSPORT			
			28	Removing old ecological burdens caused by the existing infrastructure;	I / N	SD	ŽD		
			29	Improving the capacity for wild fauna to pass through transport infrastructure;	I	SD	ŽD		
			30	Applying anti-noise measures (preferebly in areas with values exceeding the limits);	I / N	SD	ŽD	LD	
			31	Ensuring the upholding of limit values in force for transport emissions;	N	SD	ŽD	LD	
			32	Supporting projects leading to economical usage of energy sources in transport;	N	TRANSPORT			
			33	Supporting the electrification of railway lines;	I	ŽD			
			34	Better solutions for transit transport through municipalities (slowing the transport, building by-passes);	I	SD			
			35	Supporting the maximum possible usage of those transport sectors that are environmentally friendly.	N	ŽD	VVD		
			36	Supporting multimodal and combined transport;	I / N	TRANSPORT			
			37	Supporting the development and introduction of new multimodal technologies and intelligent transport systems for multimodal transport;	N	TRANSPORT			
			38	Connecting the Czech Republic to the pan-European multimodal information system that is currently being created;	N	TRANSPORT			
			39	Implementing measures for technical safety of roads (priority modifications at crossroads with high accident rates, removing level crossings on Class I roads and main railway lines, improving the safety parameters of railway crossings);	I	SD	ŽD		
			40	Introducing modern signalling systems for railway transport;	I / N	ŽD			
			41	Providing for interoperability and remote traffic management in railway transport, e.g. developing technologies for safe management of running of trains in line with European trends;	N	ŽD			
			42	Providing for sufficient capacity of road infrastructure in frontier and sensitive areas.	I	SD			

			43	Reconstructing other tracks included in international agreements (e.g. the TEN-T network, AGC, AGTC) and other important tracks with the objective of reaching the recommended parameters;	I	ŽD			
			44	Turning other national and important regional lines (in areas where railways play an important role) into optimum condition including rail systems of regional and urban transport in case of their combination.	I	ŽD			
			45	Introducing modern technologies in rail transport (e.g. combining light rail systems with classic rail);	I	ŽD			
			46	Ensuring the respect of business conditions on the railway network in a non-discriminatory manner for all operators by resolving the relations of involved entities;	N	ŽD			
			47	Implementing the EU programme “Revitalization of Railways and Gradual Implementation of Interoperability”	N	ŽD			
			48	Ensuring quality maintenance and renewal of transport infrastructure; giving it preference over building of new infrastructure in case of insufficient financial resources;	I	TRANSPORT			

Key:
I = infrastructure measure
N = non-infrastructure measure
SD = road transport
ŽD = rail transport
LD = air transport
VVD = inland waterway transport

Annex 3 Methodology of the Multi-Criteria Analysis (MCA)

A Motorway MCA

A. 1 Atractiveness

A. 1.1 Europe-wide relevance

The project relevance for Europe is an important factor with regard to the economic integration with the European Union and with regard to the considerable share of financing from the Cohesion Fund in the planning period.

The degree of European relevance is given by the priority, urgency and obligation of the project (or package) mainly in the context of the relevant regulation, agreement or financing programme priority (for example higher priority is given to European priority projects, which are followed by the TEN-T trans-European network etc.)

Index – Europe-wide relevance

Index 1.1.1: Europe-wide relevance	
European priority corridor pursuant to the Regulation 884/2004/EC Part of the TEN-T network Important connecting line with a neighbouring country or subject of an international agreement	+15 +15 +10
Definition of networks, project author assessment	

A. 1.2 Accessibility improvement, time saving and territorial relevance

The primary reason for construction of new motorway infrastructure is to improve accessibility of a particular territory. The main benefits of increased accessibility are as follows:

- Cost saving of infrastructure users
- Generation of new socio-economic activities by means of reduced travel costs to/from/via territory

The ideal approach to evaluation of the complex benefits of territorial accessibility is based on assessment of the following points:

- Project impact on time and operation costs of users via multimodal analysis of future transport relationships
- Economic impact of improved accessibility in the situation of increased mobility and the related increase of GDP, employment and other social activities

These analyses are not currently available in the Czech Republic and that is why within this MCA the following benchmark for accessibility benefit assessment was selected:

- The transport model was used for numerical expression of time saving of transport relationships (from the regional point of view) for transit, external and internal transport relationships

- The indicator of relevance of territorial interconnections in the sense of categorisation of urban areas connected by the project as designed in the Spatial Development Policy

Indices: Improvement of accessibility, time saving and territorial relevance

Indices for criterion 1.2	Basic score	Data source
Index 1.2.1 Benefit for transit across the region in which the project is located: decrease of pers. hrs./day/project length in km	The best score – 7	Transport model
Index 1.2.2 Over-regional benefit – source or destination of travel in the region in which the project is located: decrease of pers. hrs./day/project length in km	The best score – 7	
Index 1.2.3 Intra-regional benefit - source and destination of travel in the region in which the project is located: decrease of pers. hrs./day/project length in km	The best score – 6	
Index 1.2.4 Relavance of regional connection	**Max. = 20**	**Figs. 2, 3 author assessment**
1. Interconnection of neighbouring urban areas (UA) of international relevance	+2	
2. Interconnection as per point 1 above or interconnection of UA of national relevance with its internationally relevant trunk UA	+2	
3. Interconnection as per point 2 or connection of supra-regionally relevant UA	+2	
4. first connection of nationally or internationally relevant UA to high-standard and high-capacity network	+2	
5. Section for high-capacity urban transport for internationally relevant UA	+2	
6. Section of high-capacity urban transport for internationally and nationally relevant UA and supra-nationally relevant UA in the case of existence of large employer	+2	
7. Backbone interconnection of two cities with the population of above 40 thousand up to 50 km length	+2	
8. Section interconnecting a nationally relevant recreation area with internationally relevant UA within the Czech Republic or abroad	+1	
9. Section relevant for employer / source of basic transport of exceptional state importance	+5	

A. 1.3 Increased quality of traffic (capacity saturation level)

Investments into development of transport infrastructure should be considered according to the density and type of traffic (requirement for capacity increase, overtaking possibilities etc.). Those are mainly removal of bottlenecks, traffic instability and safety risks partly during standard traffic and partly in the case of planned and unplanned possessions.

Due to the need of model calculation of future traffic, or the ratio of traffic load to capacity, the existing transport model was used for analysis of traffic quality (level of capacity saturation, research project of the Ministry of Transport no 804/210/105 Development of Transport Networks in the Czech Republic before 2010 with Outlook to 2015, DÚ 16, 17).

Indices – Traffic quality improvement

Indices of criterion 1.3	Basic score
Index 1.3.1 traffic quality 2005 - need: capacity saturation level of current routes infrastructure in 2015	Quality level D (sufficient) = 4 Quality level E (instable) = 12 Quality level F (unacceptable) = 20
Index 1.3.2 traffic quality 2015 - need: capacity saturation level of current routes infrastructure in 2015	Quality level D (sufficient) = 4 Quality level E (instable) = 12 Quality level F (unacceptable) = 20
	Research project Development of Transport Networks in the Czech Republic before 2010 with Outlook to 2015

A. 1.4 Accident rate decrease

An important secondary reason for construction of motorway infrastructure is the favourable effect on accident rate decrease. The Transport Policy of the Czech Republic and the EU, the National Strategy of Road Traffic Safety, the priorities of the Cohesion Fund (elimination of impact on human health), the Sustainable Development Strategy and the National Reform Programme put great emphasis on decrease of road accident rates.

Motorways and speedways are up to 4times safer (measured in car-kilometres) than 1st class roads. The higher the traffic load of 1st class road is, the higher is the risk of traffic accident. Particular sections of 1st class roads show increased accident rates which cannot be substantially decreased by construction of motorways and speedways.

Following the objectives of the Transport Policy mortality as a consequence of traffic accidents should be reduced by 2013 by at least 50%, which is a very ambitious objective. Construction of new motorways and speedways will considerably contribute to the fulfilment of the objective. That is why decrease of accident rate is an important part of MCA.

Indices – Accident rate decrease

Indices of criterion 1.4	Basic score
Index of safety 1.4.1: Number of increased accident localities in the sections of the current roads* mean relative accident rate of increased	Max. score = 40 Min. score = 7

accident localities/length of section in km	
	Data analysis by Directorate of Roads and Motorways of the Czech Republic concerning increased accident localities for motorways and speedways on the existing routes of the designed transport relationships (in the rare cases where the data were not available mean score was applied), for 1st class roads the data were not available.

A. 1.5 Balanced regional development

The principle of social coherence and the related objective of reduction of economic differences between regions represent the main priorities of the national development plan of the FS, ERDF. In practice this means preferential help to regions with higher unemployment rates, structural impairment or lower economic performance.

The territorial impact of construction of transport infrastructure may greatly affect economic growth if the project increases accessibility of the region in a significant manner.

That is why the analysis includes prioritised projects for the areas with highly above-average unemployment and for economically weak regions.

Indices – Balanced regional development

Indices of criterion 1.5	Basic score	Data source
Balanced regional development index 1.5.1: Project located completely or partly (major part) in an economically weak region by GDP per capita	0 – 20	Statistics of the Czech Statistical Office for 2007
Balanced regional development index 1.5.2: Project situated in a region with above-average unemployment	From 0 (average unemployment) to 20 (highest unemployment)	Official statistics of the Ministry of Labour on unemployment 1 Jan 2007

A. 1.6 Decrease of impact on the environment and public health

The Transport Policy of the Czech Republic and the EU, the priorities of EU Funds, the Sustainable Development Strategy and the National Reform Programme place great emphasis on decrease of transport impact on the environment. Construction of motorways, speedways and railways represents an important element in the strategy of solution of environmental issues, especially those related to noise and emissions.

That is why the project impact on the environment in regard to noise and emissions has been included in the multi-criteria analysis. Unfortunately, the available and processed data on potential impact of the particular project are on a very low level and that is why the impact may only be assessed only on the general level.

Indoces – Decrease of impact on the environment and public health

Indices of criterion 1.6	Basic score
Index of environmental impact 1.6.1: Positive effect in regard to elimination of above-limit noise values (direct effect of the project)	0-20 depending on the relevance of the urban area in question crossed by the road section and further depending on the relevance of the main residential areas bypassed by the road section in question
Index of environmental impact 1.6.2: Positive effect with regard to elimination of above-limit emissions, pollution (direct effect of the project)	0-20 depending on the relevance of the urban area in question crossed by the road section and further depending on the relevance of the main residential areas bypassed by the road section in question

A. 1.7 Unit costs

In the case of road projects the lack of numerically expressed benefits it is sometimes impossible to directly compare benefits in relation to costs of the implemented measure. For that reason the criterion expressing the project costs per km of the route in question is added. Projects with lower unit costs are assessed more positively.

Indices – Unit costs of constructions

Index of criterion 1.7	Basic scores
Index of unit costs of construction 1.7.1: 1 km of construction / investment costs	0 - 40 (the cheapest)
Data source	Roads and Motorways Directorate of CR

A. 2 Feasibility

It is necessary to consider the project feasibility with regard to efforts and time needed for completion of the project preparation and the risk of eventual non-implementation after exercise of considerable time and effort. As the unrealised projects were not identified the feasibility criteria were not included in the final evaluation.

A. 2.1 Impact on the environment

This criterion considers the level of potential problems with regard to the progress of environmental analysis (EIA), or assessment of the project effects on the NATURA system and protest against project environmental impact.

Indices – Feasibility

Index of criterion 2.1	Identification /basic score
Index of environmental impact 2.1.1: Potentially non-resolvable problem : (PNP) / Potentially resolvable with difficulties problem (POPP) / Problem-free project (BP)	PNP = 0 POPP = 5 BP = 10
Data source	Expert assessment of project authors

A. 2.2 Other difficulties related to project

This criterion considers the level of potential problems for reasons other than the environment, such as spatial planning issues, land repurchase issues, municipal protests, technical feasibility etc.

Indices – Other difficulties related to project

Index of criterion 2.2	Identification /basic score
Index of environmental impact 2.2.1: Potentially non-resolvable problem / Potentially resolvable with difficulties problem / Problem-free project	PNP = 0 POPP = 5 BP = 10
Data source	Expert assessment of project authors based on data of the Roads and Motorways Directorate of the CR

B Road MCA

B. 1 Attractiveness

B. 1.1 Road subcategory

The project relevance within the Czech Republic is given by the relevance of the road in the road and motorway network of the Czech Republic. The measures applied on roads of different subcategories will vary significantly.

Index – Europe-wide relevance

Index 1.1.1: Europe-wide relevance	Basic score
Subcategory 1 – Central European relevance roads Subcategory 2 – Nationwide relevance roads Subcategory 3 – Regional relevance roads	+25 +15 0

	Structure of 1st class roads by project authors

The other criteria are identical with the motorway criteria.

C Railway MCA

C. 1 Attractiveness

C. 1.1 Europe-wide relevance

The same as in the case of motorway MCA.

C. 1.2 Relevance for accessibility and change of transport labour division

The primary reason for construction of new railway infrastructure is to improve accessibility of a particular territory. The main benefits of increased accessibility include:

- Cost saving of infrastructure users
- Generation of new socio-economic activities by means of reduced travel costs to/from/via regions

In the case of railways the main priority of the Czech and the European Transport Policies and the Sustainable Development Strategy is transfer of traffic streams onto the railways for the reason of reduction of the negative impact of transport. The ideal approach to evaluation of the complex benefits of territorial accessibility is based on assessment of the following points:

- Project impact on time and operation costs of users and externalities of the transport system via multimodal analysis of future transport relationships
- Economic impact of improved accessibility in the situation of increased mobility and the related increase of GDP, employment and other social activities

These analyses are not currently available in the Czech Republic and that is why this MCA selected the following benchmark for accessibility benefit assessment:

- The indicator of relevance of territorial interconnections in the sense of categorisation of urban areas connected by the project as designed in the Regional Development Policy

C. 1.3 Relevance of territorial connections

Indices – Relevance of territorial connections

Index 1.2.1 relevance of territorial connection	Type 1-3 Modernisation TEN-T + , Main nodes Independent electrification	Type 4 Agglomeration/ urban projects

1. Interconnections of neighbouring urban areas (UA) of international relevance	+1-4	
2. Interconnection as per 1 or interconnection of nationally relevant UA and its trunk internationally relevant UA [25]	+1-4	
3. Interconnection as per 2 or connection of supra-regionally relevant UA	+1-4	
4. First connection of nationally or internationally relevant UA to high-standard and high-capacity network	+1-3	
5. Section for high-capacity urban transport for internationally relevant UA	+1-3	+1-8
6. Section of high-capacity urban transport for internationally and nationally relevant UA	+1-3	+1-7
7. Section of high-capacity urban transport for internationally and nationally relevant UA and supra-nationally relevant UA	+1-3	+1-7
8. Backbone interconnection of two cities with the population of above 40 thousand up to 50 km length	+1-3	+1-4
9. Section interconnecting a nationally relevant recreation area with internationally relevant UA within the Czech Republic or abroad	+1-3	+1-4
10. Section relevant for employer / source of basic transport of exceptional state importance	+1-10	+1-10
Data source: Figs. 1,2,3, authors´ assessment		

C. 1.4 Technical urgency

In the case of development of the Czech railway network most of the modernisation projects not only increase the line parameters but also solve the acute degraded status of the current infrastructure. That is why technical urgency of the projects (regarding its relevance) must be considered when specifying priorities for the reason of safety, reliability and operation costs.

Indices – Technical urgency – railways

Index 1.3.1: Technical urgency[26] (with regard to technical condition, outdated section etc.)	Type 1 Modernisation	Type 2 Main	Type 3 Main network	Type 4 Agglomeration/

[25] Trunk UA of international relevance for Bohemian UA is Prague UA, for Moravian UA except for Moravian Silesia Brno UA and for Moravian Silesia Ostrava UA

[26] The original proposals of SZDC were adapted in certain cases when the relevance of the line was considered not correctly estimated. In the case of safety the condition of the security elements, single-track structure and other safety measures are relevant. In the case of the reliability scale the effect on traffic reliability is important (single-track, differences in speed, transport mode mix – pursuant to Transport Policy requirements - ability to provide for regular traffic. The cost scale considers the costs of the infrastructure operation (such as employee costs), the costs of the traffic itself (for example frequent stops for traffic reasons), traction type etc.

	of TEN-T +	nodes	electrification	urban projects
Safety Reliability Operation costs	0-10 0-15 0-15	0-10 0-15 0-15	Just in the case of modernisation	0-10 0-15 0-15
Data source			Assessment of the Railway Infrastructure Administration of the Czech Republic, project authors	

C. 1.5 Urgency in the context of sustainable development of transport network

In the case of railways the main priority of Czech and European transport policy and strategy of sustainable development is transfer of traffic streams onto the railway transport for the reason of decrease of the negative effects of transport (externality). Quality railway connection is especially important where

- An existing or planned high-standard road alternative exists (especially high-speed)
- Railways can resolve urgent problems of road transport for example on the radial access roads to the city

That is why there factors are evaluated separately in the context of this criterion

Indices – Urgency in the context of sustainable development of transport network

Indices of criterion 1.4	Max. 40 score points
Index 1.4.1 Development of parallel road	Has the "parallel" road infrastructure outrun of the railway from the technical point of view (i.e. does a motorway or a similar road exist already), or will that happen in the course of the assessed period and to what extent this is a competitive threat for the existing railway transport? 0-20
Index 1.4.2 potential to resolve road transport issues	Is railway transport, especially passenger, able to help reduce road congestions, or is the problem hard to solve and is caused by the road network development (such as in the Zlínský region the section Otrokovice - Zlín or Liberec – Tanvald)? 0-20
Data source	Authors´ assessment

C. 1.6 Balanced regional development

The same as the road MCA.

C. 1.7 Decrease of impact on the environment and public health

The Transport Policy of the Czech Republic and the EU, the priorities of EU Funds, the Sustainable Development Strategy and the National Reform Programme put a great emphasis on the decrease of transport impact on the environment. Construction of motorways, speedways and railways represents an important element in the strategy of solution of environmental issues, especially those related to noise and emissions.

Unfortunately, the available and processed data on potential impact of the particular project are on a very low level and that is why the impact may only be assessed on the

general level. In the case of railways and their impact on the environment the most relevant fact is whether the project resolves electrification of the line or not, and that is why this aspect is distinguished in the indices.

Indices – Decrease of impact on the environment and public health – railways

Indices of criterion 1.6	Basic score
Index of environmental impact 1.6.1: Positive effect with regard to elimination of above-limit noise values (direct effect of the project)	0-10 depending on the relevance of the urban areas/main residential areas in question crossed by the section
Index of environmental impact 1.6.2: Positive effect with regard to elimination of above-limit emissions, pollution (direct effect of the project)	0-10 depending on the relevance of the urban areas/main residential areas in question crossed by the section With electrification: increase of the value three fold
	Authors ´ assessment

C. 1.8 Unit costs

In the case of railway projects due to the lack of numerically expressed benefits it is sometimes impossible to directly compare benefits in relation to costs of the implemented measure. For that reason the criterion expressing the project costs per km of the route in question is added. Projects with lower unit costs are assessed more positively.

Indices: Unit costs of constructions

Index of criterion 1.7	Basic scores
Index of unit costs of construction 1.7.1: 1 km of construction / investment costs	0 - 40 (the cheapest)
Data source	SŽDC (Railway Infrastructure Administration)

C. 2 Feasibility

The same as in the case of road MCA with use of materials and data of the Railway Infrastructure Administration.

D MCA weights of attractiveness and their justification

Weights of particular criteria in the context of two MCA were specified on the basis of analysis of relevance of these criteria in the context of the following factors:

- Status of the criterion as argument for development of transport infrastructure

The main reason for this factor is to assure the dominance of the active reasons for investment intention and the main purpose is to support mobility and accessibility of the particular region.

- Usual meaning of the factor in the context of CBA (cost and benefit analysis)

This factor is used for reinforcement of the meaning the criteria that usually play a dominant role in the analysis of costs and benefits of the projects (such as constructions of motorways where time saving is dominant)

- Particular priorities of the Cohesion Fund

As one of the main sources of funding of the projects in the context of MCA this factor considers priorities of the European Union in spending of the fund (for example European relevance is the main factor from the viewpoint of the Cohesion Fund, but other factors such as impact on the environment and safety are also significantly represented

- Priorities of transport policy, other sector policies and strategies (such as PÚR, SUR, NPR)

A quality plan of development of transport infrastructure must consider the main priorities of different policies and strategies. That is why this factor puts greatest emphasis on the criteria in maximum compliance with all policies and strategies.

- Complexity, quality and quantification of data for the given criteria

For the reason of a large span of the quality of the available materials for project evaluation the standard of the available data differ considerably. Ideal data are data available in their complexity for all projects, showing maximum reliability and accuracy and quantitatively expressed. If the data are insufficient the weight of the criterion is reduced.

In the analysis of the individual criteria weights the following weights have been assigned to the individual factors:

Factor weights

Factor		Weight
1	Primary reason for construction	20
2	Common purpose of factor in the context of CBA	10
3	Cohesion fund priority	5
4	Priorities of policies and strategies	5
5	Complexity, quality and data quantification level	10

D. 1 Weights of attractiveness criteria of MCA of motorways and roads

The following is the result of the analysis for motorways, expressways and 1st class roads (resulting from joint work of the authors).

Weights of attractiveness criteria of MCA of motorways and roads

Motorway projects	Factors of specification of MCA criteria weights						
Factor - Motorway	1	2	3	4	5		

	Primary/secondary reason for construction	Common purpose of factor in the context of CBA	Cohesion fund priority	Policy and strategy priorities	Complexity, quality and quantity of data	Total	Weight of 280
Max	20	10	5	5	10	50	
1.1 Europe-wide relevance (or road subcategory)	4	2	5	5	6	22	35
1.2 Improvement of accessibility, time saving and territorial relevance	20	10	3	3	9	45	72
1.3 Traffic quality improvement	6	6	3	3	9	27	43
1.4 Accident rate decrease	4	4	3	5	6	22	35
1.5 Balanced regional development	4	2	3	3	6	18	29
1.6 Decrease of environmental impact and public health impact	2	2	3	5	1	13	21
1.7 Unit costs	2	10	2	4	10	28	45
Total						175	280

D. 2 Weights of attractiveness criteria of MCA of railway transport

The result of the analysis for railway transport is the following.

Weights of attractiveness criteria of MCA of railway transport

Railway projects – alternative with unit costs	Factors of specification of MCA criteria weights						
Factor – Railway	1	2	3	4	5		
	Primary/secondary reason for construction	Common purpose of factor in the context	Cohesion fund priority	Policy and strategy priorities	Complexity, quality and quantity of data	Total	Weight of 281

		of CBA					
Max	20	10	5	5	10	50	
1.1 Europe-wide relevance	4	2	5	5	6	22	34
1.2 Relevance for accessibility and change of transport labour division	20	10	5	5	6	46	72
1.3 Technical urgency	6	6	3	3	6	24	38
1.4 Urgency in the context of sustainable development of transport network	15	6	3	3	6	33	52
1.5 Balanced regional development	4	2	3	2	6	17	27
1.6 Reduction of environmental impact and public health impact	2	2	3	1	1	9	14
1.7 Unit costs	2	10	2	4	10	28	44
Total						179	281

Annex 4 Prioritization of projects based on MCA

TEN-T Roads

Sequence :	Sequence according to time feasibility	Route	Project	Total points - attractiveness	Degree of project preparation[27]	Total costs in mil. CZK.	Costs remaining from 2010	Link to development areas[28]	Link to measures[29]
1	19	R48	MÚK Nošovice	178,98	4	377,5	366,0	2	42
2	5	D11	Sedlice – Hradec Králové	177,80	2	5 494,5	1 448,5	1,4	8,9
3	20	R48	Nový Jičín (křížení s I/57) – Rychaltice	174,62	4	4 502,2	4 437,3	8,2	8,9
4	21	R48	Frýdek-Místek obchvat	174,10	4	4 478,1	4 241,0	2	8,9,34
5	6	R1	D1 – Vestec	170,23	2	8 495,4	2 428,4	1	8,34
6	1	R6	Praha – Pavlov	169,52	1	3 885,4	0,0	1,12	8,9
7	7	R1	Vestec – Lahovice	168,64	2	9 968,5	1 898,1	1	8,34
8	22	R1	Běchovice – křiž. s D1	166,66	4	10 801,4	10 660,4	1	8,34
9	30	R1	Suchdol – Březiněves	165,59	5	10 714,9	10 528,1	1	8,34
10	8	R1	Lahovice – Slivenec	165,23	2	13 037,1	2 358,4	1	8,34
11	23	R48	Bělotín – Nový Jičín (křížení s I/57)	163,99	4	3 008,0	2 941,1	2,8	8,9
12	2	D3	Nová Hospoda – Chotoviny	161,11	1	1 135,6	163,8	1,10	8,9
13	24	D11	Smiřice – Jaroměř	157,78	4	2 717,8	2 658,8	4	8
14	31	D3	Praha – Nová Hospoda	156,48	5	27 355,0	27 303,6	1	8,9
15	32	R1	Ruzyně – Suchdol	155,06	5	17 862,9	17 686,5	1	8,34
16	46	R35	Opatovice Zámrsk	152,01	6	2 419,0	2 419,0	4,8	8,9
17	9	R35	Sedlice – Opatovice	151,43	2	3 610,5	1 788,1	4	8,9
18	18	R48	Rychaltice - Frýdek-Místek (zač. obchvatu)	150,16	3	3 706,1	2 858,6	8,2	8,9
19	47	R43	Kuřim – Sebranice	148,20	6	4 165,0	4 165,0	3,4	8
20	10	R49	Hulín – Fryšták	148,14	2	9 276,2	8 809,3	9,8,3	9

[27] 1 – completed in 2009, 2 – other under construction, 3 – prepared for commencement in 2009, 4 – prepared for commencement after 2009, 5 – being prepared, 6 – not prepared

[28] Link to development areas listed in chapter 3. 3.

[29] The link to measure defined to core services in Annex No. 2; Measure No. 30 concerns all road projects if by making operational applicable sections limits are exceeded; Measure No. 34 concerns all projects on Class I roads and all motorways and expressways, since their construction shall lead to alleviation of transport in municipalities along the original line.

21	11	D47	Bělotín – Ostrava, Rudná	143,18	2	25 354,3	1 061,0	8,2	8,9
22	33	R55	Napajedla – Uh. Hradiště (po křiž. s I/50)	141,52	5	5 661,5	5 585,1	9	8
23	25	R55	Otrokovice (obchvat jih – po Napajedla)	140,27	4	1 171,0	1 130,2	9	8
24	34	R35	Úlibice – křiž. s D11	139,39	5	1 362,2	1 352,0	4	8,9
25	12	D1	Hulín – Přerov	133,87	2	13 498,0	9 113,2	3, 8	8
26	48	R35	Zámrsk - křiž.s R43 – Mohelnice (J)	133,40	6	21 000,0	21 000,0	4,8	8,9
27	13	D8	Lovosice – Řehlovice	133,00	2	16 256,0	12 670,2	1,6	8,9
28	35	R1	Březiněves – Satalice	132,91	5	16 675,4	16 622,2	1	8,34
29	36	D3	Bošilec – Třeboníin	132,56	5	20 846,3	20 687,3	10	8,9
30	26	D1	Přerov – Lipník n. Bečvou	131,29	4	7 459,2	7 055,5	8,2	8,9
31	14	D3	Tábor – Bošilec	128,41	2	15 265,0	11 192,2	1,10	8,9
32	3	D1	Mořice – Hulín (křiž. S R49 a R55)	126,68	1	6 116,3	262,2	3,8	8,9
33	49	R43	Sebranice – Mor. Třebová (křiž. s R35)	124,97	6	6 690,0	6 690,0	3,4	8,9
34	37	R55	Vsisko – Přerov	124,60	5	2 618,0	2 601,7	8	8,9
35	15	R6	K. Vary západ – Kamenný dvůr	124,43	2	11 672,8	5 328,7	12	8,9
36	4	D47	Lipník n. B. – Bělotín	122,73	1	9 386,1	0,0	8,2	8,9
37	27	D11	Hradec Králové – Smiřice	120,82	4	8 064,0	7 735,9	4	8
38	50	R35	Turnov – Úlibice	114,56	6	5 680,0	5 680,0	4,7	8,9
39	38	D1	Kývalka – Černovická terasa (rozšíření)	110,04	5	9 640,3	9 448,2	3	8,34
40	39	R6	Bošov – Karlovy Vary východ	109,48	5	8 050,6	7 960,3	1,12	8,9
41	40	R43	křiž. S D1 – Kuřim	109,12	5	10 111,0	10 095,7	3	8,34
42	51	R35	Křelov – Slavonín	108,77	6	3 123,8	1 829,4	8	8,34
43	41	R49	Fryšták – Zádveřice	108,31	5	7 138,6	7 138,6	9	8
44	42	R52	Pohořelice – Mikulov, státní hranice	106,10	5	10 000,0	9 816,5	3	8,42
45	43	R55	Uh. Hradiště (od křiž. s I/50) – Hodonín jih (I/51)	104,03	5	4 310,3	4 204,4	9	8
46	52	R6	Cheb (obchvat konec) – Bříza – hranice	101,29	6	1 350,0	1 350,0	12	8,34,42
47	16	D47	Bohumín – státní hranice	100,96	2	3 946,7	1 824,3	2	8,42
48	17	R55	Hulín – Otrokovice (obchvat sever)	100,71	2	4 573,1	2 555,3	9,8,3	8,9
49	28	R6	Nové Strašecí – Bošov	97,44	4	20 797,8	20 618,0	1,12	8,9
50	53	R11	Jaroměř – Trutnov	96,90	6	11 255,0	11 228,5	4	8
51	44	R3	Třeboníin – státní hranice	94,59	5	11 988,0	11 924,6	10	8,42
52	54	R49	Zádveřice – státní hranice	94,57	6	13 116,4	13 116,4	9	42
53	55	R43	D1 – Modřice (R52) – Chrlice (D2)	92,89	6	12 500,0	12 500,0	3	8,34
54	45	R55	Hodonín jih – D2	91,41	5	3 559,7	3 556,5	9	8
55	29	R56	križ. s I/48 – křiž. s R48	88,22	4	1 274,1	1 214,2	2	39

56	56	R11	Trutnov – státní hranice	66,27	6	15 265,0	15 242,4	4	8,42

The order of projects as the result of the MCA assessment has been modified by taking into account the index of the possibility to implement the project with regard to time, because the 1st phase of Transport Sector Strategies covers the short-term time horizon till 2013 while the timetable for the period after 2013 should only forecast till when will certain important projects have to be postponed due to the lack of financial resources. In the short-term horizon, it is not possible to start the implementation of certain important projects as they are not ready because the preparation itself is very time-demanding and for some projects also very complicated. On the top of this, it is necessary to decrease the level of works underway by completing in the first place the projects that are already started, due to economic reasons.

It is necessary to postpone mainly the following projects due to their stage of preparation:

- Expressway R48 - Grade-separated junction Nošovice; the section Nový Jičín - Rychaltice; Frýdek-Místek bypass, the postponement will not be too important.
- The section Bělotín - Nový Jičín has a sufficient capacity (4 lanes without a separating strip). Modifications are necessary because of traffic safety and this will be addressed by provisional measures in the meantime.
- The section Smiřice - Jaroměř must connect to a short missing motorway section near Hradec Králové that has been put on hold due to issues with purchase of land.
- The section of D3 Prague - Nová Hospoda – the environmental impact assessment currently underway.
- The section of the Prague Ring Road between Ruzyně and Suchdol – the appellate procedure for planning permission has not been concluded yet
- The section of R35 Opatovice - Zámrsk - Mohelnice is on hold due to the assessment of the construction impact on the environment and the Natura 2000 system.
- For the section of R43 Kuřim - Sebranice, the final routing has not been decided yet.

On the contrary, certain constructions underway have been moved forward: Mořice – Hulín – Přerov, Tábor – Bošilec, Karlovy Vary West – Kamenný Dvůr, Lipník nad Bečvou – Bělotín, Hulín – Otrokovice and Bohumín – state border (in this case, the main reason is to satisfy the international agreements with Poland and to complete a full stretch of the road).

Roads except TEN-T

Sequence [30]	Sequence according to time feasibility	Route	Project	Total points - attractiveness	Degree of project preparation [31]	Total costs in mil. CZK.	Costs remaining from 2010	Link to development areas [32]	Link to measures [33]
1	1	I/11	Jablunkov obchvat	179,03	1	935,6	0,0	2	34
2	35	I/49	Malenovice – Otrokovice okres Zlín	169,63	4	936,2	892,8	9	34
3	36	I/11	Oldřichovice – Bystřice	162,14	4	2 952,7	2 922,8	2	34
4	37	I/11	Třanovice – Nebory	161,41	4	2 922,9	2 892,8	2	34
5	38	I/11	Nebory – Oldřichovice	160,12	4	2 367,1	2 341,2	2	34
6	74	I/10	Praha Vysočanská radiála	158,72	2	2 441,8	659,7	1	31,34
7	4	I/11	Hrádek – průtah (SŽDC)	155,89	2	1 054,6	845,0	2	34
8	24	I/11	Ostrava Prodloužená Rudná	152,15	3	3 676,5	3 348,1	2	31,34
9	39	I/42	Brno VMO Tomkovo náměstí	150,98	4	1 336,1	1 313,5	3	31,34
10	5	I/42	Brno VMO MÚK Dobrovského Svitavská radiála	150,14	2	1 527,0	1 176,9	3	30
11	6	I/38	Kolín obchvat	149,38	2	2 695,2	1 255,1	1	34
12	52	I/36	Pardubice Trnová – Fáblovka – Dubina	149,11	5	823,0	814,7	4	31,34
13	7	I/56	Ostrava - Prodloužená Místecká II.stavba	149,04	2	940,4	510,5	2	31
14	8	I/56	Ostrava - Prodloužená Místecká I.stavba	147,22	2	2 382,0	1 787,3	2	31
15	25	I/58	Příbor obchvat	146,70	3	1 530,3	1 010,3	2	34
16	9	I/11	I/11 a I/56 propojení spojka S1 v Opavě	146,29	2	896,9	93,8	2	34
17	10	I/42	Brno VMO Dobrovského B	146,23	2	9 060,1	4 258,1	3	34
18	71	I/33	Jaroměř – obchvat	145,73	6	1 087,7	1 087,7	4	34
19	40	I/11	Opava severní obchvat východní část	145,38	4	996,8	941,2	2	34
20	41	I/57	Semetín – Bystřička 2.stavba	142,25	4	909,7	889,5	2	34

[30] Projects in the sequence of 74th to 77th place may not be co-financed from the OPT because funds from ERDF cannot be used for NUTS II cohesion region Prague.

[31] 1 – completed in 2009, 2 – other under construction, 3 – prepared for commencement in 2009, 4 – prepared for commencement after 2009, 5 – being prepared, 6 – not prepared

[32] Link to development areas listed in chapter 3. 3.

[33] The link to measure defined to core services in Annex No. 2; Measure No. 30 concerns all road projects if by making operational applicable sections limits are exceeded; Measure No. 34 concerns all projects on Class I roads and all motorways and expressways, since their construction shall lead to alleviation of transport in municipalities along the original line.

21	77	I/6	Břevnovská radiála	141,58	5	11 924,2	11 924,2	1	31,34
22	53	I/13	Kladrubská spojka	141,38	5	2 683,0	2 664,1	6	34
23	11	I/38	Nymburk přeložka II. a III. stavba	139,97	2	1 368,4	702,4	1	34
24	54	I/50	Bučovice přeložka	133,25	5	1 195,3	1 185,3	9	34
25	42	R7	Louny (zač. obchvatu) – MÚK Bitozeves	131,99	4	3 645,9	3 595,0	1,6	34
26	55	I/27	Most – Litvínov	131,37	5	1 758,9	1 751,0	6	34
27	56	I/9	I/9, I/16 Mělník obchvat 2. stavba	130,16	5	227,6	224,7	1	34
28	57	I/38	Luštěnice – Újezd	129,26	5	1 303,2	1 302,1	1	34
29	58	I/9	I/9, I/16 Mělník obchvat 3. stavba	128,84	5	309,1	306,7	1	34
30	75	I/12	Štěrboholská radiála	124,18	2	1 150,0	654,1	1	31,34
31	59	I/43	Letovice – Rozhraní	123,77	5	613,2	589,9	3	34
32	26	I/11	Mokré Lazce – hranice okresů Opava Ostrava	123,67	3	5 151,6	4 058,1	2	34
33	60	I/36	Sezemice obchvat	122,61	5	673,6	668,8	4	34
34	12	I/38	Moravské Budějovice obchvat	122,19	2	1 354,2	508,8	11	34
35	61	I/27	Žiželice obchvat a přemostění	120,50	5	766,5	751,5	6	34
36	62	I/12	R1 – Úvaly	120,47	5	5 588,1	5 570,4	1	34
37	43	I/20	I/20 a II/231 Plzeň Plaská – Na Roudné – Chrástecká	119,83	4	964,5	943,0	5	31,34
38	13	I/13	Děčín most ev.č. 13-085 Pravobřežní estakáda	117,98	2	596,2	16,4	6	31
39	14	I/9	Líbeznice obchvat	117,42	2	732,1	366,0	1	34
40	15	I/21	Nová Hospoda – Kočov přeložka	116,59	2	893,2	453,0	5,12	34
41	27	I/37	Hrobice – Ohrazenice	116,51	3	898,8	827,1	4	34
42	28	I/35	Valašské Meziříčí – Lešná 2.etapa	115,70	3	816,3	657,4	8	34
43	63	I/38	Církvice obchvat	115,23	5	674,9	669,3	1	34
44	44	I/37	Chrudim obchvat úsek křiž. I/17 – Slatiňany	114,16	4	439,6	423,5	5	34
45	2	I/57	Semetín – Bystřička I. stavba	112,54	1	1 530,1	83,3	2	34
46	29	I/35	Valašské Meziříčí – Lešná 3.etapa	112,13	3	974,4	816,0	8	34
47	64	I/35	Lešná – Palačov	111,75	5	4 239,0	4 221,3	8	34
48	16	I/57	Hladké Životice – obchvat	108,45	2	992,5	106,0	2	34
49	65	I/33	Náchod – obchvat	103,97	5	1 666,7	1 641,2	4	34
50	76	I/4	MÚK a připojení V. a M. Chuchle soubor staveb	102,26	2	969,7	71,5	1	39, 31,34
51	66	I/21	Trstěnice – Drmoul	101,78	5	1 043,2	1 029,3	5,12	34
52	45	I/37	Chrudim obchvat úsek Medlešice – I/17	100,46	4	1 782,5	1 677,2	4	34
53	46	I/16	Slaný – Velvary	99,54	4	2 833,9	2 773,4	1	34
54	17	I/13	Stráž n.N. - Krásná Studánka	97,58	2	980,0	388,0	7	34
55	47	I/38	Havlíčkův Brod JV obchvat	97,02	4	2 240,0	2 215,9	11	34

56	30	I/37	Březhrad – Opatovice	96,53	3	1 798,0	1 728,3	4	34
57	18	R7	MÚK Bitozeves – Chomutov	94,52	2	8 311,5	6 957,0	6	34
58	31	R4	Příbram (Skalka) – Milín	93,97	3	1 875,1	1 816,9	1,10	34
59	32	I/34	propojení DO České Budějovice	93,67	3	895,8	559,7	10	34
60	48	I/57	Krnov SV obchvat	93,49	4	1 980,1	1 937,7	2	34
61	49	I/16	Nová Paka – obchvat	92,00	4	1 484,6	1 470,3	4	34
62	67	I/27	Šlovice – Přeštice přeložka	91,79	5	1 488,1	1 476,0	5	34
63	50	I/37	Pardubice – Trojice	90,69	4	789,4	777,0	4	31,34
64	33	I/44	Vlachov – Rájec	89,88	3	1 273,4	1 140,1	8	34
65	19	R7	Slaný – Louny (začátek obchvatu)	87,94	2	9 346,1	8 616,5	1,6	34
66	20	I/34	Česká Bělá obchvat	85,85	2	553,0	167,7	11	34
67	21	I/27	Třemošná – přeložka	85,03	2	1 094,8	424,1	5	34
68	68	I/18	Příbram – Jihovýchodní obchvat	84,92	5	1 021,8	1 010,2	1	34
69	69	I/4	Vimperk – Solná Lhota	82,09	5	713,8	708,6	10	34
70	70	I/26	obchvat Babylon	81,25	5	707,6	701,0	5	34
71	72	I/34	Lišov	80,41	6	772,2	769,9	10	34
72	51	R4	Milín - křiž. s I/19	78,00	4	3 721,5	3 671,8	1,10	34
73	22	I/27	Plzeň Tyršův Sad – Sukova 2. stavba	76,23	2	988,0	205,0	5	34
74	34	I/51	Hodonín obchvat	74,59	3	1 488,0	1 411,1	9	34
75	23	R4	křiž. s I/19 – Nová Hospoda	66,13	2	6 908,9	4 702,2	1,10	34
76	3	I/47	Severní spoj I. stavba	63,68	1	1 093,5	2,0	2	34
77	73	I/21	MÚK Střížov – Horní Ves	55,60	6	720,9	720,9	12	34

Also in the category of roads outside the TEN-T network, it was necessary to modify the order of constructions for the short-term horizon for the same reasons as in roads and motorway on the TEN-T network, i.e. to decrease the number of constructions underway and to address the problems in preparation of constructions.

TEN-T railway network

Sequence :	Sequence according to time feasibility	Type of project	Name of associated project	Total points - attractiveness	Degree of project preparation[34]	Total costs in mil. CZK.	Costs remaining from 2010	Link to development areas[35]	Link to measures[36]
1	1	IV. corridor	Horní Dvořiště – České Budějovice (mimo) úpravy cca 29km úseku	216	1	1 299,2	0,0	10	8,10,12
2	5	IV. corridor	Benešov u Prahy – Praha Hostivař (mimo)	195	2	8 162,4	1 156,7	1	5,8,10,24
3	21	III. corridor	traťový úsek Beroun – Praha Smíchov (tunelová varianta)	194	5	20 512,8	20 512,8	1	8,10,24
4	34	non-corridor railways	trať Blažovice – Přerov zdvoukolejnění, elektrizace Hulín – Kojetín	194	6	21 500,0	21 500,0	8	43,33,24
5	22	III. corridor	Český Těšín (mimo) – Dětmarovice u Karviné (včetně)	193	5	3 168,0	3 167,5	2	5,8,10,12
6	6	nodes	Praha Nové spojení	190	2	9 287,6	428,8	1	5,10
7	23	nodes	Brno	190	5	20 410,5	19 817,7	3	5,10
8	24	nodes	Praha – směr I. koridor	190	5	2 198,2	1 215,5	1	5,10
9	25	nodes	Praha – směr IV. koridor	190	5	5 351,0	5 351,0	1	5,10
10	26	nodes	Praha – směr III. koridor	190	5	4 700,0	4 700,0	1	5,10
11	7	III. corridor	St. hranice Slovensko – Český Těšín (včetně)	188	2	9 281,0	5 707,9	2	10,12
12	35	nodes	Ostrava hlavní nádraží průjezd uzlem	188	6	800,0	25,0	2	5,10
13	8	nodes	Úvaly (včetně) – Praha Libeň (včetně)	186	2	7 160,4	4 941,5	1	8,10
14	19	interoperability	ETCS st.hr. – Dolní Žleb – Praha Libeň – Kolín	185	4	1 045,0	1 045,0	1,6	41
15	9	nodes	Kolín průjezd uzlem	180	2	1 748,2	100,0	1	5,10
16	27	IV. corridor	České Budějovice severní zhlaví (včetně) – Veselí nad Lužnicí (včetně)	180	5	16 572,7	16 403,2	10	5,8,10,24
17	2	interoperability	ETCS Kolín – Břeclav – st.hr. Rakousko	179	1	1 187,0	1 079,6	1,4,3	41
18	28	III. corridor	Rokycany (mimo) – Plzeň (mimo)	179	5	9 970,3	9 789,2	5	5,8,10,24
19	17	nodes	Přerov průjezd uzlem (i žst. Dluhonice a Dluhonická spojka II. etapa)	178	3	4 108,1	4 108,1	8	5,10

[34] 1 – completed in 2009, 2 – other under construction, 3 – prepared for commencement in 2009, 4 – prepared for commencement after 2009, 5 – being prepared, 6 – not prepared

[35] Link to development areas listed in chapter 3. 3.

[36] The link to measure defined to core services in Annex No. 2

20	29	nodes	Plzeň průjezd uzlem	174	5	3 276,8	3 133,1	5	5,10	
21	36	IV. corridor	Horní Dvořiště – České Budějovice (mimo) – rychlostní trať	173	6	17 000,0	17 000,0	10	8,10	
22	10	IV. corridor	Veselí nad Lužnicí (mimo) – Benešov u Prahy (mimo)	172	2	28 445,4	23 793,8	1,10	5,8,10,24	
23	37	nodes	České Budějovice jižní zhlaví + staniční koleje	169	6	500,0	500,0	10	10	
24	11	non-corridor railways	Plzeň (mimo) – Domažlice – st. hranice Německo	167	2	12 475,1	12 262,6	5	43,8	
25	12	III. corridor	Plzeň (mimo) – Cheb (mimo)	167	2	13 554,4	4 043,8	5,12	5,8,10	
26	38	nodes	Kralupy nad Vltavou průjezd uzlem	164	6	740,0	740,0	1	5,10	
27	13	III. corridor	Beroun (mimo) – Rokycany (včetně)	163	2	9 641,2	7 295,4	1,5	5,8,10,24	
28	30	nodes	Olomouc průjezd uzlem	159	5	2 999,0	2 999,0	8	5,10	
29	39	III. corridor	Cheb (mimo) – Pomezí nad Ohří, státní hranice Německo	159	6	1 212,8	1 212,8	12	8,10,12, 33	
30	31	nodes	Pardubice průjezd uzlem	156	5	500,0	498,0	4	5,10	
31	40	I. corridor	Ústí nad Orlicí (mimo) – Brandýs nad Orlicí (včetně)	156	6	1 446,6	1 446,6	4	5,8,10	
32	14	nodes	Břeclav průjezd uzlem	149	2	4 036,3	1 835,5	3	5,10	
33	41	I. corridor	Děčínské tunely	149	6	1 100,0	1 100,0	6	8,10,36	
34	20	nodes	uzel Praha nekoridorové	146	4	2 316,6	2 316,6	1	43	
35	42	nodes	Praha Malešice, modernizace	146	6	1 500,0	1 500,0	1	10	
36	43	I. corridor	Nelahozeveské tunely	144	6	1 212,8	960,0	1	8,10,36	
37	32	nodes	Česká Třebová	142	5	1 620,0	1 620,0	4,	5,10	
38	3	nodes	Sokolov – modernizace	140	1	536,0	0,0	12	5	
39	44	IV. corridor	odbočka Rožnov – odbočka na nákladové nádraží České Budějovice 2. kolej	139	6	200,0	200,0	10	10	
40	18	nodes	Ústí nad Orlicí průjezd uzlem	136	3	2 041,7	1 967,4	4	5,10	
41	15	non-corridor railways	Č.Velenice - Veselí n/L. – optimalizace 1. stavba	95	2	851,3	455,5	10	8,12,33	
42	16	non-corridor railways	České Velenice – České Budějovice + elektrizace	92	2	1 913,3	853,9	10	8,33,12	
43	33	nodes	Strakonice	90	5	450,0	443,0	10	5,8	
44	4	electrification	Letohrad – Lichkov státní hranice Polsko	53	1	1 607,3	0,0	4	8,12,33	

It was necessary to postpone the following TEN-T railway projects:

- The section Beroun - Praha Smíchov (the tunnel option) is very costly and due to financial problems it will be necessary to continue in the optimisation of preparatory works.
- The line Blažovice - Přerov is a complex demanding project where some design and technical issues still need to be resolved.
- The preparation of the section Český Těšín - Dětmarovice has not been completed.
- Upgrading the Brno junction transit capacity is a very demanding project; its preparation has not been completed yet; certain partial phases of the project are already under implementation.
- Selected parts of upgrading the Prague junction must be technologically interlinked in such a way so that the construction works have the minimum possible impact on everyday operation of the station.
- Ostrava main station is the last phase of the junction upgrading that has not been prepared yet.
- On the section České Budějovice - Veselí nad Lužnicí, the issues related to the routing of the line in the suburbs of České Budějovice have not been concluded yet.
- The section Rokycany - Pilsen contain a complex new tunnel, project preparation has not been completed.

Another task is to decrease the number of constructions in progress by completing the projects:

- Junction Břeclav (intersection of European Priority Projects No 22 and 23)
- Upgrading the Sokolov junction
- Transit capacity of the Ústí nad Orlicí junction
- České Velenice – České Budějovice and České Velenice – Veselí nad Lužnicí

Electrification of the section Letohrad - Lichkov (providing for the connection of the Czech and Polish railway network in the middle part of the common border.

Other rail projects

Sequence :	Sequence according to time feasibility	Type of project	Name of associated project	Total points - attractiveness	Degree of project preparation[37]	Total costs in mil. CZK.	Costs remaining from 2010	Link to development areas[38]	Link to measures[39]
1	1	regional projects	Zdice – Protivín, racionalizace	247	1	450,8	0,0	1,10	40,44
2	8	agglomeration projects	Praha – Kladno – Ostrovec včetně letiště	206	4	22 700,0	22 439,2	1	6,44,33
3	11	non-corridor railways	Praha Vysočany – Lysá n/L optimalizace	172	5	4 599,0	4 479,8	1	41,44
4	23	non-corridor railways	Mladá Boleslav – Liberec	171	6	19 300,0	19 300,0	7,1	44,43,33,24
5	24	non-corridor railways	Lysá n/L – Mladá Boleslav	167	6	8 750,0	8 750,0	1	44,43,33,24
6	9	regional projects	Studénka – Sedlnice – letiště Mošnov	162	4	698,7	686,0	2	44
7	25	non-corridor railways	Praha – Všetaty (s odbočkou k metru Letňany)	158	6	450,0	450,0	1	44,43,33
8	12	nodes	Mladá Boleslav	147	5	498,0	498,0	1,7	5,44
9	13	agglomeration projects	Otrokovice – Zlín zdvoukolejnění + Vizovice – elektrizace	146	5	3 270,0	3 216,8	9	44,33,36
10	14	agglomeration projects	Liberec – Tanvald	145	5	750,0	750,0	7	5,44
11	15	agglomeration projects	Hradec Králové – Pardubice – Chrudim – Slatiňany	140	5	5 241,0	5 203,2	4	43,44,24
12	16	non-corridor railways	Velký Osek – Hradec Králové vč. Kanínské spojky	130	5	400,0	400,0	4	43,44
13	2	nodes	Kroměříž – modernizace žst.	128	2	444,2	33,5	8	5,44
14	17	electrification	Ostrava Kunčice – Frýdek Místek – Český Těšín	126	5	8 959,1	8 779,0	2	44,33
15	26	non-corridor railways	zkapacitnění Bludov – Hanušovice – Jeseník	110	6	2 900,0	2 900,0	8	44

[37] 1 – completed in 2009, 2 – other under construction, 3 – prepared for commencement in 2009, 4 – prepared for commencement after 2009, 5 – being prepared, 6 – not prepared

[38] Link to development areas listed in chapter 3. 3.

[39] The link to measure defined to core services in Annex No. 2; Measures No. 30 and 32 concern all rail projects.

16	27	non-corridor railways	Všetaty – Mladá Boleslav	100	6	450,0	450,0	1	43,44	
17	18	agglomeration projects	Kutná Hora – Kutná Hora město	98	5	712,6	712,6	1	44	
18	28	regional projects	Tanvald – Harrachov město / st.hr.	96	6	2 500,0	2 500,0	7	12	
19	29	non-corridor railways	traťový úsek Praha Smíchov – Hostivice + elektrizace	94	6	230,0	230,0	1	44,33	
20	19	electrification	Brno Horní Heršpice – Okříšky – Jihlava	92	5	5 117,0	5 066,1	3,11	44,33	
21	30	electrification	Liberec – Frýdlant v Č. – Černousy	92	6	1 000,0	1 000,0	7	44,43,33,12	
22	31	agglomeration projects	Most – Hrob	92	6	300,0	300,0	6	44	
23	32	agglomeration projects	Opava – Hlučín	89	6	600,0	600,0	2	44	
24	3	electrification	úsek Zábřeh na Moravě – Šumperk	83	2	1 635,1	321,5	8	44,33	
25	20	regional projects	České Budějovice – Volary, racionalizace	82	5	1 545,0	1 527,2	10	44	
26	33	electrification	Frýdlant n. Ostravicí – Frenštát pod Radhoštěm	81	6	1 000,0	1 000,0	2	44,33	
27	34	regional projects	Šumavské elektrické dráhy (Lipno – Černá v Pošumaví a další)	81	6	8 000,0	8 000,0	10	44,33	
28	35	agglomeration projects	Zbýšovská (Křenovická) spojka	79	6	1 000,0	1 000,0	3	44	
29	36	regional projects	Hustopeče u Brna – Rakvice	73	6	350,0	350,0	3	44	
30	21	regional projects	Boskovická spojka	72	5	160,0	160,0	3	44	
31	37	regional projects	Hrušovany u Brna – Židlochovice	72	6	500,0	500,0	3	44	
32	22	electrification	Klatovy – Železná Ruda	71	5	945,0	943,1	5	44,33	
33	38	regional projects	Náchod – Česká Skalice (nová spojovací trať)	71	6	1 000,0	1 000,0	4	44	
34	10	regional projects	Kostelec u Jihlavy – Slavonice	70	4	401,5	397,6	11	44,12	
35	39	regional projects	Bělská spojka (trať Turnov – Trutnov)	69	6	600,0	600,0	7	44	
36	7	electrification	Lysá n/L – Milovice	66	3	300,0	146,3	1	44,33	
37	4	cross-border projects	Dolní Pustevna – Sebnitz	62	2	38,7	0,0	6	12	
38	40	electrification	Jaroměř – Trutnov hlavní nádraží	61	6	2 200,0	2 200,0	4,7	44,33	

39	41	cross-border projects	Aš – Selb	57	6	60,0	60,0	12	12	
40	42	electrification	Znojmo – Okříšky	57	6	2 700,0	2 700,0	11	44,33	
41	43	regional projects	Hrob – Moldava	56	6	500,0	500,0	6	44,12	
42	44	cross-border projects	Moldava – Holzhau	55	6	20,0	20,0	6	12	
43	5	cross-border projects	Slavonice – Fratres	53	2	144,1	0,0	11	12	
44	6	electrification	státní hranice Rakousko (Retz) – Znojmo	49	2	1 230,9	199,2	3	12,3	
45	45	cross-border projects	Hevlín – Laa a.d. Thaya	40	6	350,2	0,1	3	12	

- It was necessary to postpone the important project connecting the Prague - Ruzyně airport and continuing to Kladno, as the costs of the project increased significantly in comparison to initial estimates due to environmental protection aspects.
- The connection Prague - Mladá Boleslav - Liberec continuing further to Poland is only in the concept solution phase and it must therefore be postponed.
- The projects of Upgrading the Kroměříž railway junction and Electification of sections Lysá n.L. – Milovice and Zábřeh – Šumperk (both electrifications are related to optimising of operating condition for electrified lines in suburban transport) are before completion.
- Priority has been given to the section Retz - Znojmo because of an international agreement with Austria (it is not efficient to have the electrified line from Vienna terminating in the small municipalities on the Austrian side, but rather in Znojmo).
- Other projects that were given priority are of small scale and are based on cross-border cooperation with Germany and Austria.

Annex 5 Overview of Inland Waterway Transport Projects

Sequence :	Name of project	Degree of project preparation [40]	Total costs in mil. CZK.	Costs as of 2010	Link to development areas [41]	specific measures [42]
1	Kilometráž a značení labské vodní cesty	1	49	17	1,6,4	21, 35
2	Úprava plavební úžiny Chvatěruby	1	352	98	1	21, 35
3	Železniční most Kolín	1	1229	754	1	21, 35
4	Dokončení vltavské vodní cesty v úseku České Budějovice Hluboká n.Vlt.	1	880	440	10	21, 35
5	Ústí n.L. – Vaňov, přístavní zeď	1	136	114	6	22, 35
6	Rozšíření systému RIS v rámci projektu IRIS II	1	46	30	-	35
7	Dokončení vltavské vodní cesty v úseku VD Hněvkovice - Týn nad Vltavou	1	734	700	10	21, 35
8	Dokončení vltavské vodní cesty v úseku Hl.n.Vlt. – VD Hněvkovice	3	550	535	10	21
9	Lodní zdvihadlo Orlík	3	630	620	1,10	18
10	Příst. rekr.plavby na LVVC (6 úvazišť osobní vodní dopravy na dolním Labi)	2	98	98	6	18, 35
11	Přístaviště Spytihněv (Baťův kanál)	3	12	12	9	35
12	Přístaviště Sudoměřice – výklopník (Baťův kanál)	3	11	11	9	35
13	Stupeň Přelouč II	4	2928	2928	4	21, 35
14	Lodní zdvihadlo Slapy	4	2159	2132	1	18, 35
15	Prodloužení splavnosti Otrokovice – Rohatec	4	125	117	9	35
16	Stání plavidel Strážnice (Baťův kanál)	4	12	12	9	35
17	Ochranná stání na LVVC	4	190	190	1,6,4	22, 35
18	Plavební stupeň Děčín	5	4189	3849	6	21, 35
19	Přístav Děčín, překladiště Staré Loubí	3	88	88	6	35

[40] 1 – under construction, 2 – prepared, 3 – in building permit phase, 4 – in land-use planning proceedings, 5 – elaborated investment aim, 6 – defined conception of solution

[41] Link to development areas listed in chapter 3. 3.

[42] The link to measure defined to core services in Annex No. 2

20	Plavební komora Bělov	4	182	173	9	35
21	Splavnění Berounky v Radotíně	5	1245	1237	1	21
22	Zabezpečení podj.výšek na Vltavě	5	1003	400	1	21, 35
23	Překladiště 7 ks na Vltavě pro nadměrnou přepravu	6	1050	1050	-	35
24	2. plavební komora Brandýs n/L.	5	1036	1028	1	35
25	Přístav Hluboká n/Vl.	5	230	230	10	35
26	Mosty Týn n/Vl.	6	270	270	10	35

Annex 6 Revenue Groups for Individual Scenarios of Financing in the Years 2013/16 – 30

Revenue category	A – RESTRICTIVE VARIANT	B – MINIMALIST VARIANT	C – PROGRESSIVE VARIANT
Benefits of using infrastructure			
Road transport: time-based fees	Shall copy level of inflation	Shall copy GDP growth	Shall copy growth of GDP + increase by 2.5%
Road transport: performance-based fees	Vehicles over 3.5 t assessed with fees – shall copy level of inflation	Vehicles over 3.5 t assessed with fees – shall copy GDP growth	Vehicles over 3.5 t assessed with fees – shall copy GDP growth + increase by 2.5%
Waterway transport: use of line	No revenues from using waterways	No revenues from using waterways	No revenues from using waterways
Budget / (tax) resources			
Road tax	Shall copy level of inflation	Shall copy GDP growth	Shall copy growth of GDP + increase by 2.5%
Consumer tax (VAT)	Revenue shall grow in accordance with GDP development, approved portion in transport shall be 9.1%	Revenue shall grow in accordance with GDP development, approved portion in transport shall be 20%	Revenue shall grow in accordance with GDP development, approved portion in transport shall be 30%
Contribution from state budget for covering deficit	Shall copy level of inflation	Shall copy GDP growth	Shall copy growth of GDP + increase by 2.5%
EU Subsidies			
Programs aimed at transport, community programmes	European resources for 25% of volume of European resources drawn in the years 2007 – 2013; after 2021 these resources are not used whatsoever	European resources for 30% of volume of European resources drawn in the years 2007 – 2013; after 2021 these resources are not used whatsoever	European resources for 40% of volume of European resources drawn in the years 2007 – 2013; after 2021 these resources are not used whatsoever
Private Sources			
Private financing, e.g. PPP projects	Private engagement of private resources is not being considered	Gradual start from 2016 with the stipulation that private resources form since that year 15% of all resources; instalments are established at 4% annually	Gradual start from 2016 with the stipulation that private resources form since that year 30% of all resources; instalments are established at 4% annually
Loans and other financial resources			
Loans from EIB	No additional loans from EIB	Loans from EIB for 50% of the volume from years 2010 - 2015	Loans from EIB for 70% of the volume from years 2010 - 2015

Overview of resources for restrictive variant

Billion CZK	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Benefits of using infrastructure																					
- road transport: time-based fees	2,29	2,28	2,48	2,44	2,54	2,64	2,75	2,86	2,97	3,09	3,21	3,34	3,48	3,62	3,76	3,91	4,07	4,23	4,40	4,58	4,76
- road transport: performance-based fees	7,75	7,76	5,47	7,27	7,56	7,86	8,18	8,50	8,84	9,20	9,57	9,95	10,35	10,76	11,19	11,64	12,10	12,59	13,09	13,62	14,16
- waterways	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
sum	**10,03**	**10,04**	**7,94**	**9,71**	**10,10**	**10,51**	**10,93**	**11,36**	**11,82**	**12,29**	**12,78**	**13,29**	**13,82**	**14,38**	**14,95**	**15,55**	**16,17**	**16,82**	**17,49**	**18,19**	**18,92**
Budget / (tax) resources																					
- road tax	5,50	5,80	6,20	6,07	6,31	6,56	6,82	7,10	7,38	7,68	7,98	8,30	8,63	8,98	9,34	9,71	10,10	10,51	10,93	11,36	11,82
- consumer tax (VAT)	8,10	8,20	8,40	8,97	9,78	10,62	11,49	12,39	13,30	14,26	15,28	16,32	17,43	18,61	19,88	21,25	22,72	24,29	25,97	27,73	29,57
- contribution from SB	12,6[43]	12,2	13,7	13,35	13,88	14,44	15,01	15,61	16,24	16,89	17,56	18,27	19,00	19,76	20,55	21,37	22,22	23,11	24,04	25,00	26,00
- subsidy from state budget from emissions of state bonds pursuant to Act no. 220/2003 Coll.	11,65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
sum	**37,85**	**26,20**	**28,30**	**28,39**	**29,97**	**31,62**	**33,33**	**35,10**	**36,92**	**38,83**	**40,82**	**42,89**	**45,06**	**47,35**	**49,76**	**52,33**	**55,05**	**57,91**	**60,93**	**64,09**	**67,39**
EU Subsidies																					
Programs aimed at transport, community programmes, period 2007-2013	35,91	28,80	15,94	13,60	10,80	3,80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Programmes aimed at transportation, period of 2014 and on	NA	NA	NA	NA	1,61	2,68	5,36	5,90	6,43	6,43	6,97	1,34	0,80	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
sum	**35,91**	**28,80**	**15,94**	**13,60**	**12,41**	**6,48**	**5,36**	**5,90**	**6,43**	**6,43**	**6,97**	**1,34**	**0,80**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Loans																					
EIB	12,21	10,80	6,90	5,10	4,00	2,80	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
sum	**12,21**	**10,80**	**6,90**	**5,10**	**4,00**	**2,80**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Private Sources																					
PPP resources	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
sum	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
total (in regular prices)	**96,00**	**75,84**	**59,09**	**56,80**	**56,48**	**51,40**	**49,62**	**52,36**	**55,17**	**57,55**	**60,57**	**57,52**	**59,69**	**61,72**	**64,71**	**67,88**	**71,22**	**74,73**	**78,42**	**82,29**	**86,31**
Payments																					

[43] According to the new proposed budget for 2010 that was presented only during the final phase of document drafting, the amount provided from the state budget should be CZK 7.5 bn and the remaining part of CZK 5.1 bn should be covered by transferring revenues from the privatisation of assets and dividends from companies with state participation.

PPP payments	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
total (in regular prices)	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Total resources for transport infrastructure	**96,00**	**75,84**	**59,09**	**56,80**	**56,48**	**51,40**	**49,62**	**52,36**	**55,17**	**57,55**	**60,57**	**57,52**	**59,69**	**61,72**	**64,71**	**67,88**	**71,22**	**74,73**	**78,42**	**82,29**	**86,31**
Expenditures for non-infrastructure projects																					
Operational expenditures of SFTI	17,60	18,50	19,40	20,40	21,40	22,50	23,40	24,34	25,31	26,32	27,37	28,47	29,61	30,79	32,02	33,31	34,64	36,02	37,46	38,96	40,52
expenditures for small projects outside of MCA	1,70	1,72	1,79	1,86	1,94	2,02	2,10	2,18	2,27	2,36	2,45	2,55	2,65	2,76	2,87	2,98	3,10	3,23	3,36	3,49	3,63
total (in regular prices)	**19,30**	**20,22**	**21,19**	**22,26**	**23,34**	**24,52**	**25,50**	**26,52**	**27,58**	**28,68**	**29,83**	**31,02**	**32,26**	**33,55**	**34,89**	**36,29**	**37,74**	**39,25**	**40,82**	**42,45**	**44,15**
Total resources for analyzed projects (in regular prices)	**76,70**	**55,61**	**37,89**	**34,54**	**33,14**	**26,89**	**24,12**	**25,85**	**27,60**	**28,87**	**30,75**	**26,50**	**27,43**	**28,17**	**29,82**	**31,59**	**33,48**	**35,48**	**37,60**	**39,83**	**42,15**
Total resources for analyzed projects (in 2009 prices)	**74,11**	**52,94**	**34,68**	**30,39**	**28,05**	**21,88**	**18,87**	**19,44**	**19,96**	**20,08**	**20,56**	**17,04**	**16,96**	**16,75**	**17,05**	**17,36**	**17,70**	**18,03**	**18,37**	**18,72**	**19,05**

Overview of resources for minimalist variant

Billion CZK	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Benefits of using infrastructure																					
- road transport: time-based fees	2,29	2,28	2,48	2,56	2,79	3,03	3,28	3,54	3,80	4,07	4,36	4,66	4,97	5,31	5,67	6,06	6,48	6,93	7,41	7,91	8,44
- road transport: performance-based fees	7,75	7,76	5,47	7,62	8,30	9,02	9,76	10,52	11,29	12,11	12,97	13,86	14,80	15,80	16,87	18,04	19,29	20,62	22,05	23,55	25,11
- waterways	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
sum	**10,03**	**10,04**	**7,94**	**10,18**	**11,09**	**12,05**	**13,03**	**14,06**	**15,09**	**16,18**	**17,33**	**18,52**	**19,77**	**21,11**	**22,55**	**24,10**	**25,77**	**27,56**	**29,45**	**31,46**	**33,54**
Budget / (tax) resources																					
- road tax	5,50	5,80	6,20	6,36	6,93	7,52	8,14	8,78	9,42	10,10	10,82	11,57	12,35	13,19	14,08	15,05	16,10	17,21	18,40	19,65	20,95
- consumer tax (VAT)	8,10	8,20	8,40	19,72	21,49	23,34	25,25	27,23	29,23	31,35	33,57	35,88	38,31	40,90	43,68	46,70	49,94	53,39	57,07	60,95	64,99
- contribution from SB	12,6[44]	12,2	13,7	13,35	13,88	14,44	15,01	15,61	16,24	16,89	17,56	18,27	19,00	19,76	20,55	21,37	22,22	23,11	24,04	25,00	26,00
- subsidy from state budget from emissions of state bonds pursuant to Act no. 220/2003 Coll.	11,65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
sum	**37,85**	**26,20**	**28,30**	**39,43**	**42,30**	**45,30**	**48,41**	**51,63**	**54,90**	**58,34**	**61,96**	**65,71**	**69,66**	**73,85**	**78,31**	**83,12**	**88,26**	**93,72**	**99,50**	**105,60**	**111,94**
EU Subsidies																					
Programs aimed at transport, community programmes, period 2007-2013	35,91	28,80	15,94	13,60	10,80	3,80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Programmes aimed at transportation, period of 2014 and on	NA	NA	NA	NA	1,93	3,22	6,43	7,08	7,72	7,72	8,36	1,61	0,97	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
sum	**35,91**	**28,80**	**15,94**	**13,60**	**12,73**	**7,02**	**6,43**	**7,08**	**7,72**	**7,72**	**8,36**	**1,61**	**0,97**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Loans																					
EIB	12,21	10,80	6,90	5,10	4,00	2,80	3,48	3,48	3,48	3,48	3,48	3,48	3,48	3,48	3,48	3,48	3,48	3,48	3,48	3,48	3,48
sum	**12,21**	**10,80**	**6,90**	**5,10**	**4,00**	**2,80**	**3,48**	**3,48**	**3,48**	**3,48**	**3,48**	**3,48**	**3,48**	**3,48**	**3,48**	**3,48**	**3,48**	**3,48**	**3,48**	**3,48**	**3,48**
Private Sources																					
PPP resources	0,00	0,02	0,08	0,27	0,56	0,89	1,89	2,02	2,15	2,27	2,41	2,36	2,49	2,61	2,76	2,93	3,11	3,30	3,51	3,72	3,94
sum	**0,00**	**0,02**	**0,08**	**0,27**	**0,56**	**0,89**	**1,89**	**2,02**	**2,15**	**2,27**	**2,41**	**2,36**	**2,49**	**2,61**	**2,76**	**2,93**	**3,11**	**3,30**	**3,51**	**3,72**	**3,94**
total (in regular prices)	**96,00**	**75,86**	**59,16**	**68,58**	**70,68**	**68,05**	**73,25**	**78,26**	**83,34**	**87,99**	**93,55**	**91,68**	**96,37**	**101,05**	**107,10**	**113,63**	**120,63**	**128,06**	**135,95**	**144,26**	**152,91**
Payments																					

[44] According to the new proposed budget for 2010 that was presented only during the final phase of document drafting, the amount provided from the state budget should be CZK 7.5 bn and the remaining part of CZK 5.1 bn should be covered by transferring revenues from the privatisation of assets and dividends from companies with state participation.

PPP payments	0,00	0,00	0,00	0,00	0,01	0,04	0,07	0,15	0,23	0,31	0,41	0,50	0,60	0,70	0,80	0,91	1,03	1,15	1,28	1,42	1,57
total (in regular prices)	**0,00**	**0,00**	**0,00**	**0,00**	**0,01**	**0,04**	**0,07**	**0,15**	**0,23**	**0,31**	**0,41**	**0,50**	**0,60**	**0,70**	**0,80**	**0,91**	**1,03**	**1,15**	**1,28**	**1,42**	**1,57**
Total resources for transport infrastructure	**96,00**	**75,86**	**59,16**	**68,57**	**70,67**	**68,02**	**73,18**	**78,12**	**83,11**	**87,68**	**93,14**	**91,18**	**95,77**	**100,35**	**106,30**	**112,72**	**119,61**	**126,90**	**134,66**	**142,84**	**151,34**
Expenditures for non-infrastructure projects																					
Operational expenditures of SFTI	17,60	18,50	19,40	20,40	21,40	22,50	23,40	24,34	25,31	26,32	27,37	28,47	29,61	30,79	32,02	33,31	34,64	36,02	37,46	38,96	40,52
expenditures for small projects outside of MCA	1,70	1,72	1,79	1,86	1,94	2,02	2,10	2,18	2,27	2,36	2,45	2,55	2,65	2,76	2,87	2,98	3,10	3,23	3,36	3,49	3,63
total (in regular prices)	**19,30**	**20,22**	**21,19**	**22,26**	**23,34**	**24,52**	**25,50**	**26,52**	**27,58**	**28,68**	**29,83**	**31,02**	**32,26**	**33,55**	**34,89**	**36,29**	**37,74**	**39,25**	**40,82**	**42,45**	**44,15**
Total resources for analyzed projects (in regular prices)	**76,70**	**55,63**	**37,97**	**46,31**	**47,33**	**43,50**	**47,68**	**51,60**	**55,53**	**59,00**	**63,31**	**60,16**	**63,51**	**66,80**	**71,41**	**76,43**	**81,87**	**87,65**	**93,84**	**100,39**	**107,19**
Total resources for analyzed projects (in 2009 prices)	**74,11**	**52,96**	**34,75**	**40,76**	**40,05**	**35,40**	**37,31**	**38,82**	**40,17**	**41,03**	**42,34**	**38,69**	**39,27**	**39,72**	**40,82**	**42,02**	**43,27**	**44,55**	**45,86**	**47,17**	**48,43**

Overview of resources for progressive variant

Billion CZK	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Benefits of using infrastructure																					
- road transport: time-based fees	2,29	2,28	2,48	2,62	2,93	3,26	3,62	4,00	4,40	4,84	5,31	5,82	6,37	6,97	7,63	8,36	9,16	10,04	11,00	12,04	13,16
- road transport: performance-based fees	7,75	7,76	5,47	7,81	8,72	9,71	10,77	11,90	13,10	14,39	15,80	17,31	18,94	20,73	22,69	24,87	27,26	29,87	32,73	35,83	39,16
- waterways	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
sum	**10,03**	**10,04**	**7,94**	**10,43**	**11,65**	**12,97**	**14,39**	**15,90**	**17,50**	**19,23**	**21,11**	**23,12**	**25,31**	**27,70**	**30,32**	**33,22**	**36,42**	**39,91**	**43,72**	**47,87**	**52,32**
Budget / (tax) resources																					
- road tax	5,50	5,80	6,20	6,52	7,28	8,10	8,99	9,93	10,93	12,01	13,19	14,44	15,81	17,30	18,94	20,75	22,75	24,93	27,31	29,90	32,68
- consumer tax (VAT)	8,10	8,20	8,40	29,58	32,24	35,01	37,88	40,85	43,85	47,02	50,36	53,81	57,47	61,35	65,53	70,05	74,91	80,09	85,61	91,43	97,49
- contribution from SB	12,6[45]	12,2	13,7	13,99	15,24	16,55	17,91	19,32	20,73	22,23	23,81	25,44	27,17	29,01	30,98	33,12	35,42	37,87	40,47	43,23	46,09
- subsidy from state budget from emissions of state bonds pursuant to Act no. 220/2003 Coll.	11,65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
sum	**37,85**	**26,20**	**28,30**	**50,09**	**54,77**	**59,67**	**64,78**	**70,10**	**75,52**	**81,26**	**87,36**	**93,70**	**100,45**	**107,66**	**115,45**	**123,92**	**133,08**	**142,88**	**153,39**	**164,56**	**176,26**
EU Subsidies																					
Programs aimed at transport, community programmes, period 2007-2013	35,91	28,80	15,94	13,60	10,80	3,80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Programmes aimed at transportation, period of 2014 and on	NA	NA	NA	NA	2,57	4,29	8,58	9,44	10,29	10,29	11,15	2,14	1,29	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
sum	**35,91**	**28,80**	**15,94**	**13,60**	**13,37**	**8,09**	**8,58**	**9,44**	**10,29**	**10,29**	**11,15**	**2,14**	**1,29**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**	**0,00**
Loans																					
EIB	12,21	10,80	6,90	5,10	4,00	2,80	4,88	4,88	4,88	4,88	4,88	4,88	4,88	4,88	4,88	4,88	4,88	4,88	4,88	4,88	4,88
sum	**12,21**	**10,80**	**6,90**	**5,10**	**4,00**	**2,80**	**4,88**	**4,88**	**4,88**	**4,88**	**4,88**	**4,88**	**4,88**	**4,88**	**4,88**	**4,88**	**4,88**	**4,88**	**4,88**	**4,88**	**4,88**
Private Sources																					
PPP resources	0,00	0,04	0,16	0,63	1,33	2,21	4,90	5,31	5,73	6,12	6,59	6,56	6,98	7,42	7,98	8,58	9,23	9,94	10,69	11,50	12,36
sum	**0,00**	**0,04**	**0,16**	**0,63**	**1,33**	**2,21**	**4,90**	**5,31**	**5,73**	**6,12**	**6,59**	**6,56**	**6,98**	**7,42**	**7,98**	**8,58**	**9,23**	**9,94**	**10,69**	**11,50**	**12,36**
total (in regular prices)	**96,00**	**75,88**	**59,24**	**79,85**	**85,12**	**85,74**	**97,53**	**105,63**	**113,91**	**121,79**	**131,09**	**130,40**	**138,91**	**147,67**	**158,62**	**170,59**	**183,61**	**197,60**	**212,69**	**228,81**	**245,81**
Payments																					

[45] According to the new proposed budget for 2010 that was presented only during the final phase of document drafting, the amount provided from the state budget should be CZK 7.5 bn and the remaining part of CZK 5.1 bn should be covered by transferring revenues from the privatisation of assets and dividends from companies with state participation.

PPP payments	0,00	0,00	0,00	0,01	0,03	0,09	0,17	0,37	0,58	0,81	1,06	1,32	1,58	1,86	2,16	2,48	2,82	3,19	3,59	4,02	4,48
total (in regular prices)	**0,00**	**0,00**	**0,00**	**0,01**	**0,03**	**0,09**	**0,17**	**0,37**	**0,58**	**0,81**	**1,06**	**1,32**	**1,58**	**1,86**	**2,16**	**2,48**	**2,82**	**3,19**	**3,59**	**4,02**	**4,48**

Total resources for transport infrastructure	**96,00**	**75,88**	**59,24**	**79,84**	**85,09**	**85,65**	**97,35**	**105,26**	**113,33**	**120,97**	**130,03**	**129,08**	**137,33**	**145,80**	**156,46**	**168,12**	**180,79**	**194,41**	**209,10**	**224,79**	**241,34**

Expenditures for non-infrastructure projects																					
Operational expenditures of SFTI	17,60	18,50	19,40	20,40	21,40	22,50	23,40	24,34	25,31	26,32	27,37	28,47	29,61	30,79	32,02	33,31	34,64	36,02	37,46	38,96	40,52
expenditures for small projects outside of MCA	1,70	1,72	1,79	1,86	1,94	2,02	2,10	2,18	2,27	2,36	2,45	2,55	2,65	2,76	2,87	2,98	3,10	3,23	3,36	3,49	3,63
total (in regular prices)	**19,30**	**20,22**	**21,19**	**22,26**	**23,34**	**24,52**	**25,50**	**26,52**	**27,58**	**28,68**	**29,83**	**31,02**	**32,26**	**33,55**	**34,89**	**36,29**	**37,74**	**39,25**	**40,82**	**42,45**	**44,15**

Total resources for analyzed projects (in regular prices)	**76,70**	**55,65**	**38,05**	**57,58**	**61,75**	**61,14**	**71,85**	**78,74**	**85,75**	**92,29**	**100,21**	**98,06**	**105,06**	**112,25**	**121,57**	**131,83**	**143,05**	**155,16**	**168,28**	**182,34**	**197,19**
Total resources for analyzed projects (in 2009 prices)	**74,11**	**52,98**	**34,83**	**50,67**	**52,26**	**49,75**	**56,22**	**59,24**	**62,03**	**64,20**	**67,02**	**63,06**	**64,97**	**66,74**	**69,50**	**72,47**	**75,61**	**78,86**	**82,24**	**85,68**	**89,09**

Annex 7 Investment plan – restrictive variation

Note: Time schedule for Waterways has to be viewed in accordance with the chapter 7.4 – Development Scenarios

Financial forecast for transport infrastructure projects in the period of 2010 – 2030

restrictive variation

Inputs (2016 – 2030):

Annual change of time fee revenues	inflation
Annual change of perfomance fee revenues	inflation
Road tax	inflation
Consumer tax – SFDI share	9,1 %
State budget subsidies	inflation
Share of the EU subsidies on the average of drawing 2010 – 13	25,0%
Private financing, e.g. PPP projects	0,0%
Share of the loans from EIB on the average of drawing 2010 – 15	0,0%

Methodology of financial forecast and its purpose

Distribution of financial resources among projects is based on the following premises:

- The order of allocating resources to projects. Financial resources were allocated to projects according to the results of MC analysis reflecting the stage of accomplishment of the projects at the same time;
- Mutual relations between projects. To ensure the simplicity of the methodology the projects were considered (similar to the MC analysis) as separate stages/sections and the mutual relations (e.g. time dependency) were reflected only in very specific cases;
- Time projection of the projects' costs. The projection is based on data from the MC analysis. If data for a project was not available project's total costs were divided linearly into all years of its duration;
- Financing without interruptions. The resources are allocated to a project only if financing of the whole project is continuous and without any interruptions.

The methodology includes some **simplifying assumptions** and cannot reflect all the circumstances that affect the order of realization of the transport infrastructure projects. For example:

- Obligations from international treaties and agreements.
- Differences in current status of projects' accomplishment within pre-defined categories in MC analysis.
- Circumstances that may occur in the future and affect the initiation of particular projects, e.g. complications during the planning inquiry, land redemption etc.

Financial forecast is therefore a tool that provides (more than a detailed plan for building transport infrastructure projects):

- High-level overview of coverage of financial needs in medium to long run.

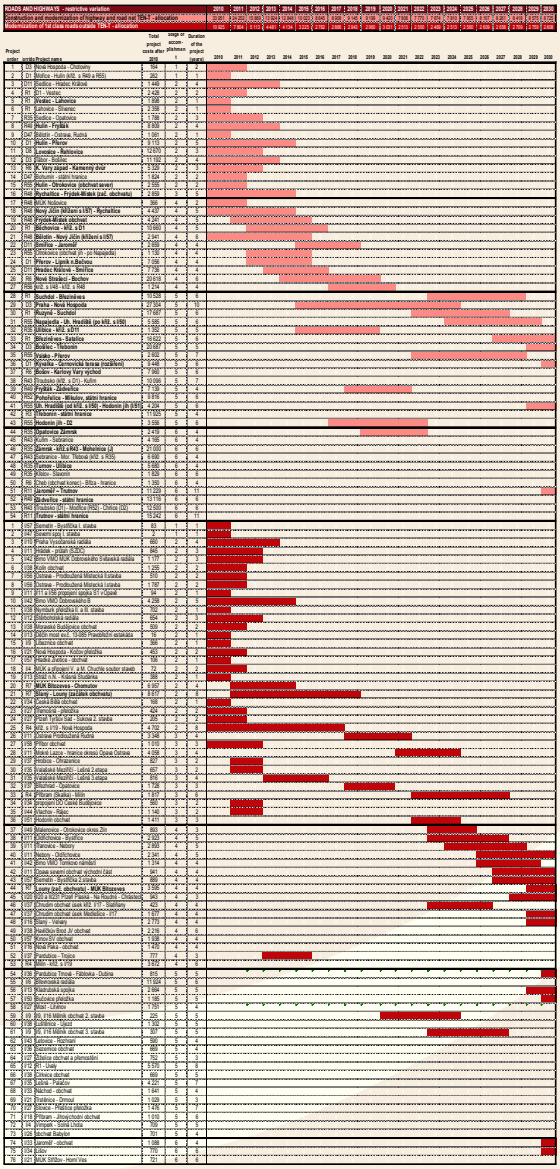
Information about the effect of the change in total resources on current needs (by comparing three different variations).

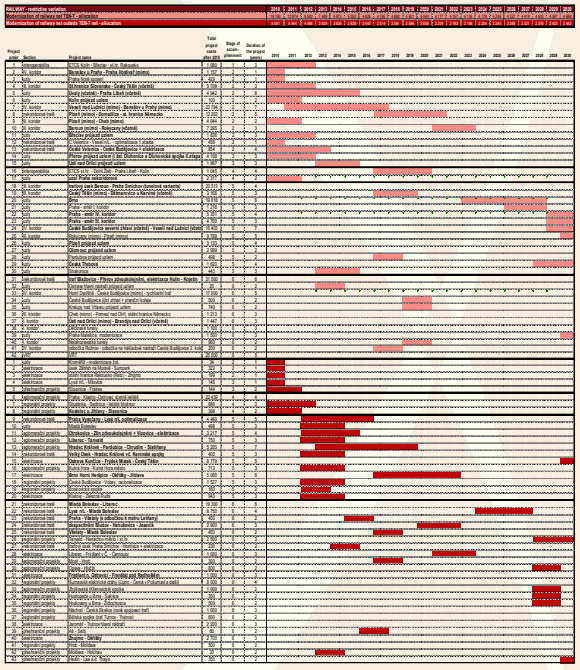
mil. CZK

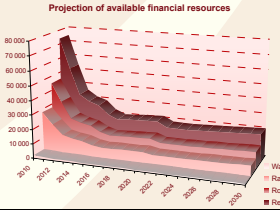
Financial needs in transport sectors	853 712	%
Road transport including:	**516 952**	**61%**
Construction and modernization of the highw ay and roa	391 101	46%
Modernization of the first class roads outside TEN-T	125 851	15%
Railway transport including:	**319 595**	**37%**
Modernization of railw ay net TEN-T	209 226	25%
Modernization of railw ay net outside TEN-T	110 369	13%
Water transport	**17 165**	**2%**

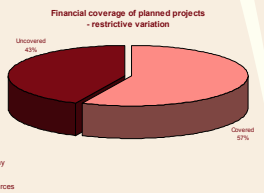
mil. CZK

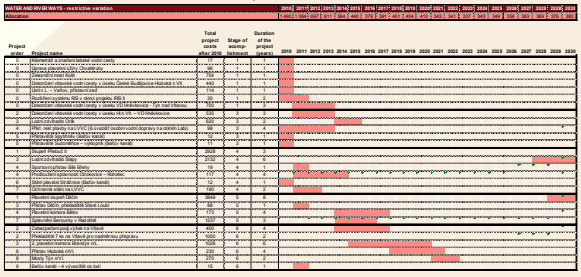
Transport sector \ Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Sum of Available Resources	**74 110**	**52 938**	**34 683**	**30 395**	**28 046**	**21 878**	**18 871**	**19 445**	**19 962**	**20 081**	**20 563**	**17 045**	**16 961**	**16 751**	**17 048**	**17 365**	**17 696**	**18 032**	**18 375**	**18 717**	**19 046**
Road transport including:	**44 876**	**32 056**	**21 002**	**18 405**	**16 983**	**13 248**	**11 427**	**11 774**	**12 087**	**12 159**	**12 452**	**10 321**	**10 271**	**10 143**	**10 323**	**10 515**	**10 716**	**10 919**	**11 127**	**11 334**	**11 533**
Construction and modernization of the highw ay and road	33 951	24 252	15 889	13 924	12 848	10 023	8 645	8 908	9 145	9 199	9 420	7 808	7 770	7 674	7 810	7 955	8 107	8 261	8 418	8 575	8 725
Modernization of the first class roads outside TEN-T	10 925	7 804	5 113	4 481	4 134	3 225	2 782	2 866	2 943	2 960	3 031	2 513	2 500	2 469	2 513	2 560	2 609	2 658	2 709	2 759	2 808
Railway transport including:	**27 744**	**19 818**	**12 984**	**11 378**	**10 499**	**8 190**	**7 064**	**7 279**	**7 473**	**7 517**	**7 698**	**6 381**	**6 350**	**6 271**	**6 382**	**6 501**	**6 625**	**6 750**	**6 879**	**7 007**	**7 130**
Modernization of railw ay net TEN-T	18 163	12 974	8 500	7 449	6 873	5 362	4 625	4 765	4 892	4 921	5 040	4 177	4 157	4 105	4 178	4 256	4 337	4 419	4 503	4 587	4 668
Modernization of railw ay net outside TEN-T	9 581	6 844	4 484	3 929	3 626	2 828	2 440	2 514	2 581	2 596	2 658	2 204	2 193	2 166	2 204	2 245	2 288	2 331	2 376	2 420	2 462
Water transport	**1 490**	**1 064**	**697**	**611**	**564**	**440**	**379**	**391**	**401**	**404**	**413**	**343**	**341**	**337**	**343**	**349**	**356**	**363**	**369**	**376**	**383**











Annex 8 Investment plan – minimalist variation

Note: Time schedule for Waterways has to be viewed in accordance with the chapter 7.4 – Development Scenarios

Financial forecast for transport infrastructure projects in the period of 2010 – 2030

minimalist scenario

Inputs (2016 – 2030):

Annual change of time fee revenues	HDP
Annual change of perfomance fee revenues	HDP
Road tax – annual change of revenues	HDP
Consumer tax – SFDI share	20,0%
State budget subsidies	HDP
Share of the EU subsidies on the average of drawing 2010 – 13	30,0%
Private financing, e.g. PPP projects	15,0%
Share of the loans from EIB on the average of drawing 2010 – 15	50,0%

mil. CZK

Financial needs in transport sectors	853 712	%
Road transport including:	**516 952**	**61%**
Construction and modernization of the highway and road	391 101	46%
Modernization of the first class roads outside TEN-T	125 851	15%
Railway transport including:	**319 595**	**37%**
Modernization of railway net TEN-T	209 226	25%
Modernization of railway net outside TEN-T	110 369	13%
Water transport	**17 165**	**2%**

Methodology of financial forecast and its purpose

Distribution of financial resources among projects is based on the following premises:

- The order of allocating resources to projects. Financial resources were allocated to projects according to the results of MC analysis reflecting the stage of accomplishment of the projects at the same time;
- Mutual relations between projects. To ensure the simplicity of the methodology the projects were considered (similar to the MC analysis) as separate stages/sections and the mutual relations (e.g. time dependency) were reflected only in very specific cases;
- Time projection of the projects' costs. The projection is based on data from the MC analysis. If data for a project was not available project's total costs were divided linearly into all years of its duration;
- Financing without interruptions. The resources are allocated to a project only if financing of the whole project is continuous and without any interruptions.

The methodology includes some **simplifying assumptions** and cannot reflect all the circumstances that affect the order of realization of the transport infrastructure projects. For example:

- Obligations from international treaties and agreements.
- Differences in current status of projects' accomplishment within pre-defined categories in MC analysis.
- Circumstances that may occur in the future and affect the initiation of particular projects, e.g. complications during the planning inquiry, land redemption etc.

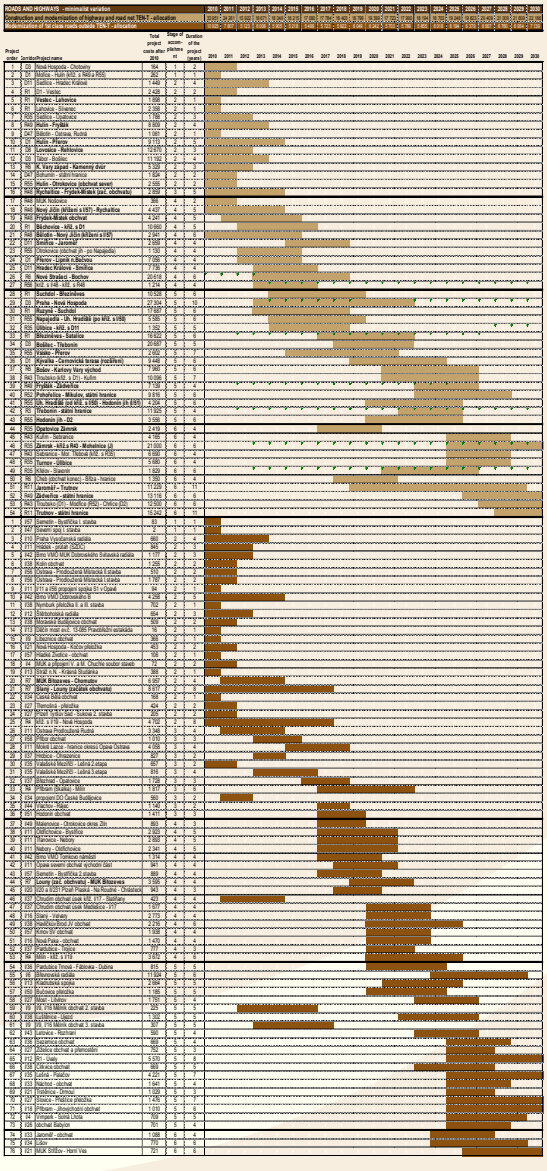
Financial forecast is therefore a tool that provides (more than a detailed plan for building transport infrastructure projects):

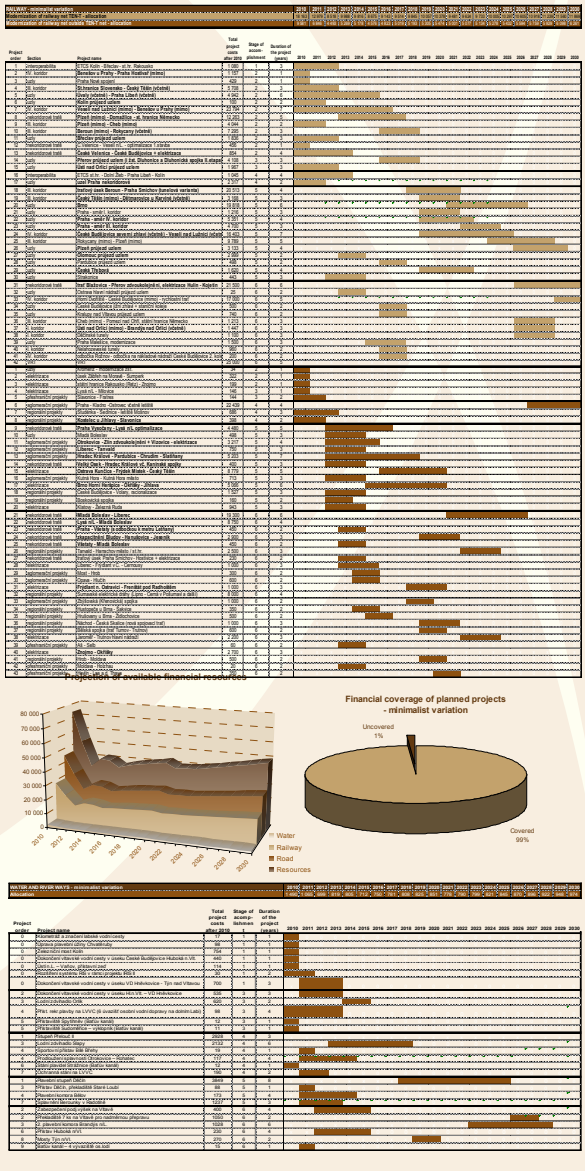
- High-level overview of coverage of financial needs in medium to long run.

Information about the effect of the change in total resources on current needs (by comparing three different variations).

mil. CZK

Transport sector \ Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Sum of Available Resources	**74 110**	**52 958**	**34 754**	**40 755**	**40 054**	**35 395**	**37 305**	**38 819**	**40 172**	**41 034**	**42 345**	**38 686**	**39 270**	**39 715**	**40 825**	**42 016**	**43 271**	**44 549**	**45 860**	**47 170**	**48 429**
Road transport including:	**44 876**	**32 068**	**21 045**	**24 679**	**24 254**	**21 433**	**22 590**	**23 506**	**24 325**	**24 848**	**25 641**	**23 426**	**23 778**	**24 049**	**24 721**	**25 442**	**26 202**	**26 976**	**27 779**	**28 563**	**29 325**
Construction and modernization of the highway and road	33 951	24 261	15 922	18 671	18 349	16 215	17 090	17 784	18 403	18 799	19 399	17 723	17 990	18 194	18 703	19 248	19 823	20 409	21 009	21 609	22 186
Modernization of the first class roads outside TEN-T	10 925	7 807	5 123	6 008	5 905	5 218	5 499	5 723	5 922	6 049	6 242	5 703	5 789	5 855	6 018	6 194	6 379	6 567	6 760	6 954	7 139
Railway transport including:	**27 744**	**19 825**	**13 011**	**15 257**	**14 994**	**13 251**	**13 966**	**14 532**	**15 039**	**15 362**	**15 852**	**14 482**	**14 701**	**14 868**	**15 283**	**15 729**	**16 199**	**16 677**	**17 168**	**17 658**	**18 130**
Modernization of railway net TEN-T	18 163	12 979	8 518	9 988	9 816	8 675	9 143	9 514	9 845	10 057	10 378	9 481	9 624	9 733	10 005	10 297	10 605	10 918	11 239	11 560	11 869
Modernization of railway net outside TEN-T	9 581	6 846	4 493	5 269	5 178	4 576	4 823	5 019	5 193	5 305	5 474	5 001	5 077	5 134	5 276	5 432	5 594	5 759	5 929	6 098	6 261
Water transport	**1 490**	**1 065**	**699**	**819**	**805**	**712**	**750**	**781**	**808**	**825**	**851**	**778**	**790**	**799**	**821**	**845**	**870**	**896**	**922**	**948**	**974**





Projection of available financial resources

Financial coverage of planned projects - minimalist variation

Annex 9 Investment plan – progressive variation

Note: Time schedule for Waterways has to be viewed in accordance with the chapter 7.4 – Development Scenarios

Financial forecast for transport infrastructure projects in the period of 2010 – 2030

progressive variation

Inputs (2016 – 2030):

Annual change of time fee revenues	HDP + 2,5%
Annual change of perfomance fee revenues	HDP + 2,5%
Road tax	HDP + 2,5%
Consumer tax – SFDI share	30,0%
State budget subsidies	HDP + 2,5%
Share of the EU subsidies on the average of drawing 2010 – 13	40,0%
Private financing, e.g. PPP projects	30,0%
Share of the loans from EIB on the average of drawing 2010 – 15	70,0%

mil. CZK

Financial needs in transport sectors	853 712	%
Road transport including:	**516 952**	**61%**
Construction and modernization of the highw ay and roa	391 101	46%
Modernization of the first class roads outside TEN-T	125 851	15%
Railway transport including:	**319 595**	**37%**
Modernization of railw ay net TEN-T	209 226	25%
Modernization of railw ay net outside TEN-T	110 369	13%
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- Differences in current status of projects' accomplishment within pre-defined categories in MC analysis.
- Circumstances that may occur in the future and affect the initiation of particular projects, e.g. complications during the planning inquiry, land redemption etc.

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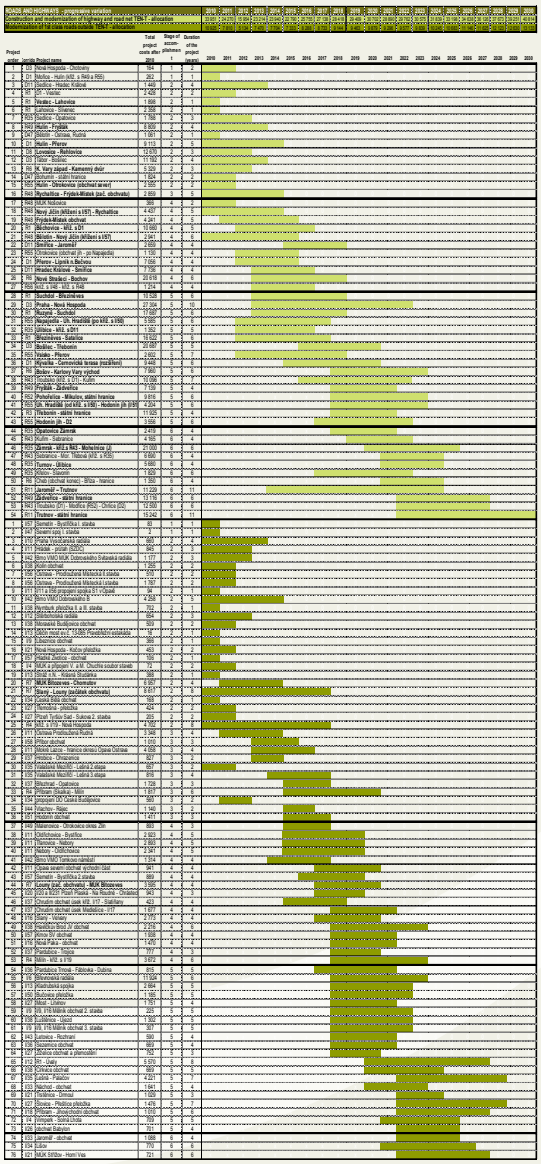
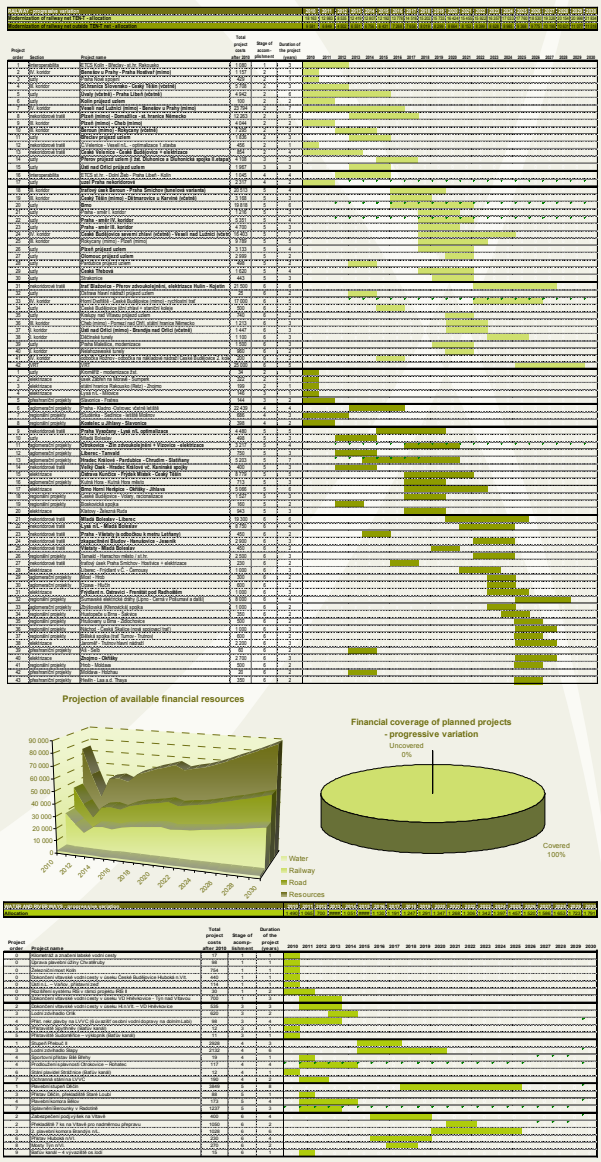
Information about the effect of the change in total resources on current needs (by comparing three different variations).

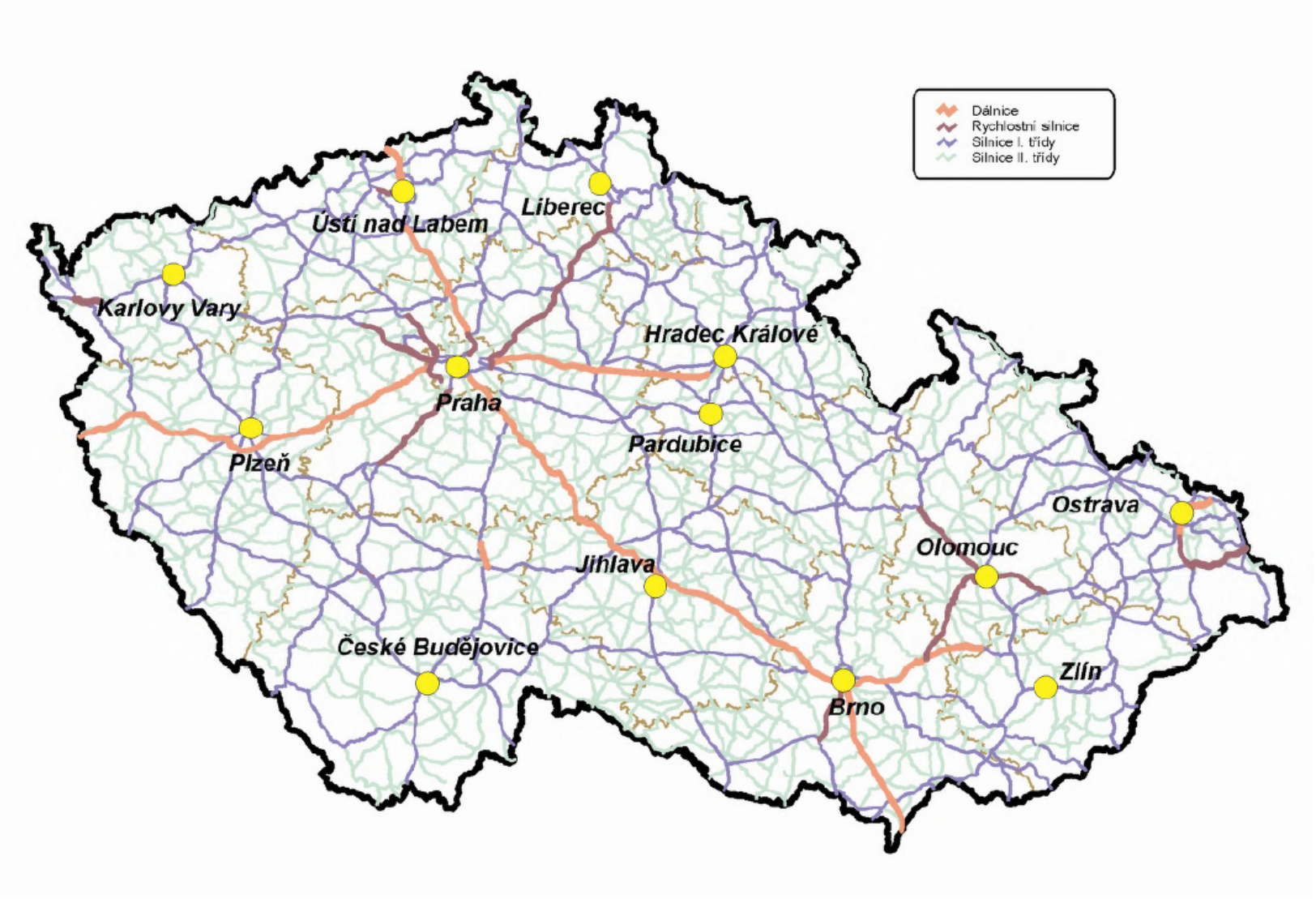
mil. CZK

Transport sector \ Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Sum of Available Resources	**74 110**	**52 977**	**34 825**	**50 672**	**52 259**	**49 747**	**56 219**	**59 238**	**62 031**	**64 196**	**67 017**	**63 061**	**64 966**	**66 740**	**69 499**	**72 465**	**75 608**	**78 857**	**82 235**	**85 678**	**89 091**
Road transport including:	**44 876**	**32 079**	**21 088**	**30 684**	**31 644**	**30 123**	**34 043**	**35 871**	**37 562**	**38 873**	**40 581**	**38 186**	**39 339**	**40 413**	**42 084**	**43 880**	**45 783**	**47 751**	**49 796**	**51 881**	**53 948**
Construction and modernization of the highw ay and roa	33 951	24 270	15 954	23 214	23 940	22 790	25 755	27 138	28 418	29 409	30 702	28 890	29 762	30 575	31 838	33 198	34 638	36 126	37 673	39 251	40 814
Modernization of the first class roads outside TEN-T	10 925	7 810	5 134	7 470	7 704	7 333	8 288	8 733	9 144	9 463	9 879	9 296	9 577	9 839	10 245	10 683	11 146	11 625	12 123	12 630	13 133
Railway transport including:	**27 744**	**19 832**	**13 037**	**18 970**	**19 563**	**18 623**	**21 046**	**22 176**	**23 222**	**24 032**	**25 088**	**23 608**	**24 321**	**24 985**	**26 018**	**27 128**	**28 305**	**29 521**	**30 785**	**32 074**	**33 352**
Modernization of railw ay net TEN-T	18 163	12 983	8 535	12 419	12 807	12 192	13 778	14 518	15 202	15 733	16 424	15 455	15 922	16 357	17 033	17 760	18 530	19 326	20 154	20 998	21 834
Modernization of railw ay net outside TEN-T	9 581	6 849	4 502	6 551	6 756	6 431	7 268	7 658	8 019	8 299	8 664	8 153	8 399	8 628	8 985	9 368	9 775	10 195	10 631	11 077	11 518
Water transport	**1 490**	**1 065**	**700**	**1 019**	**1 051**	**1 000**	**1 130**	**1 191**	**1 247**	**1 291**	**1 347**	**1 268**	**1 306**	**1 342**	**1 397**	**1 457**	**1 520**	**1 586**	**1 653**	**1 723**	**1 791**



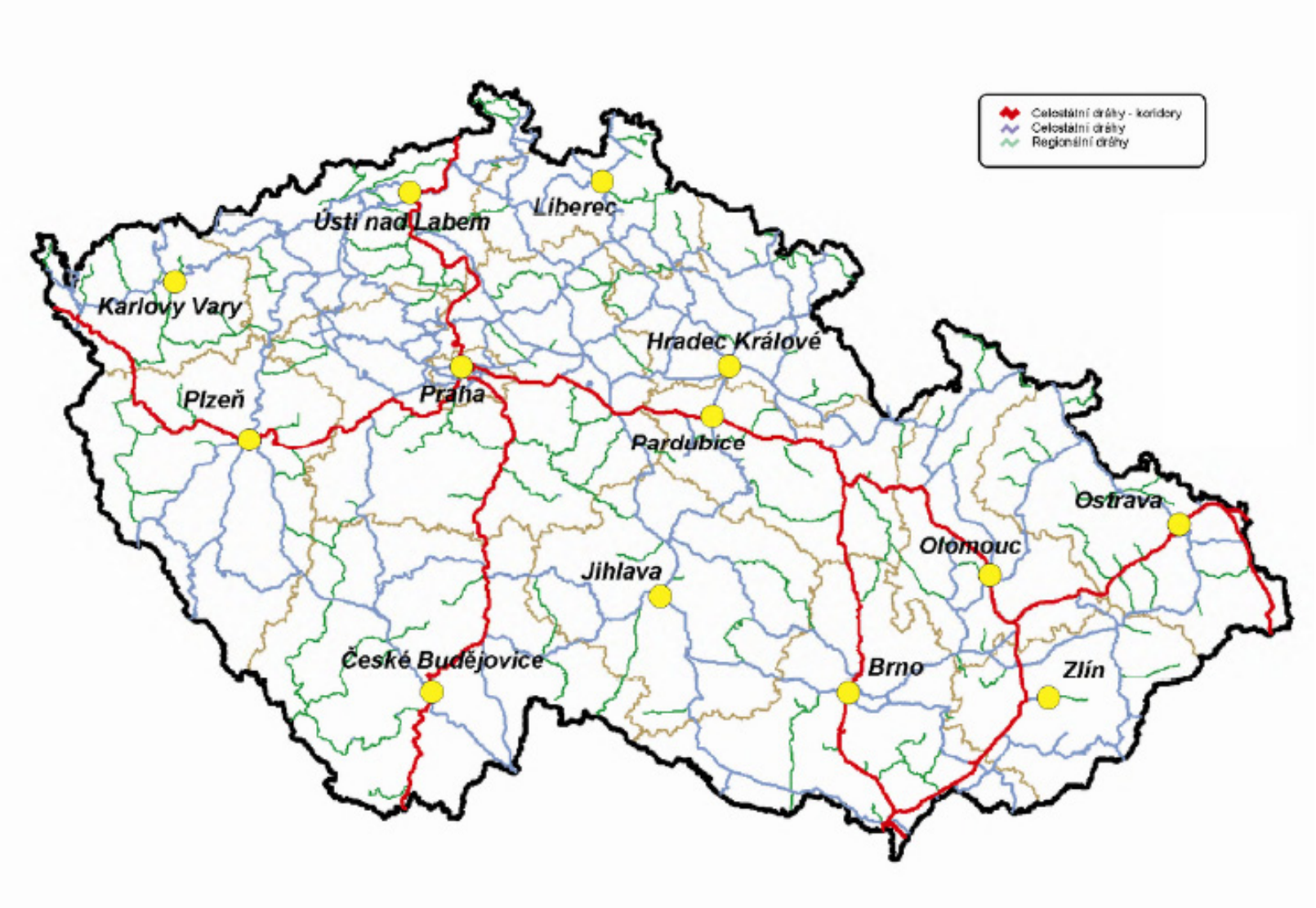


Annex 10 Road network of the Czech Republic



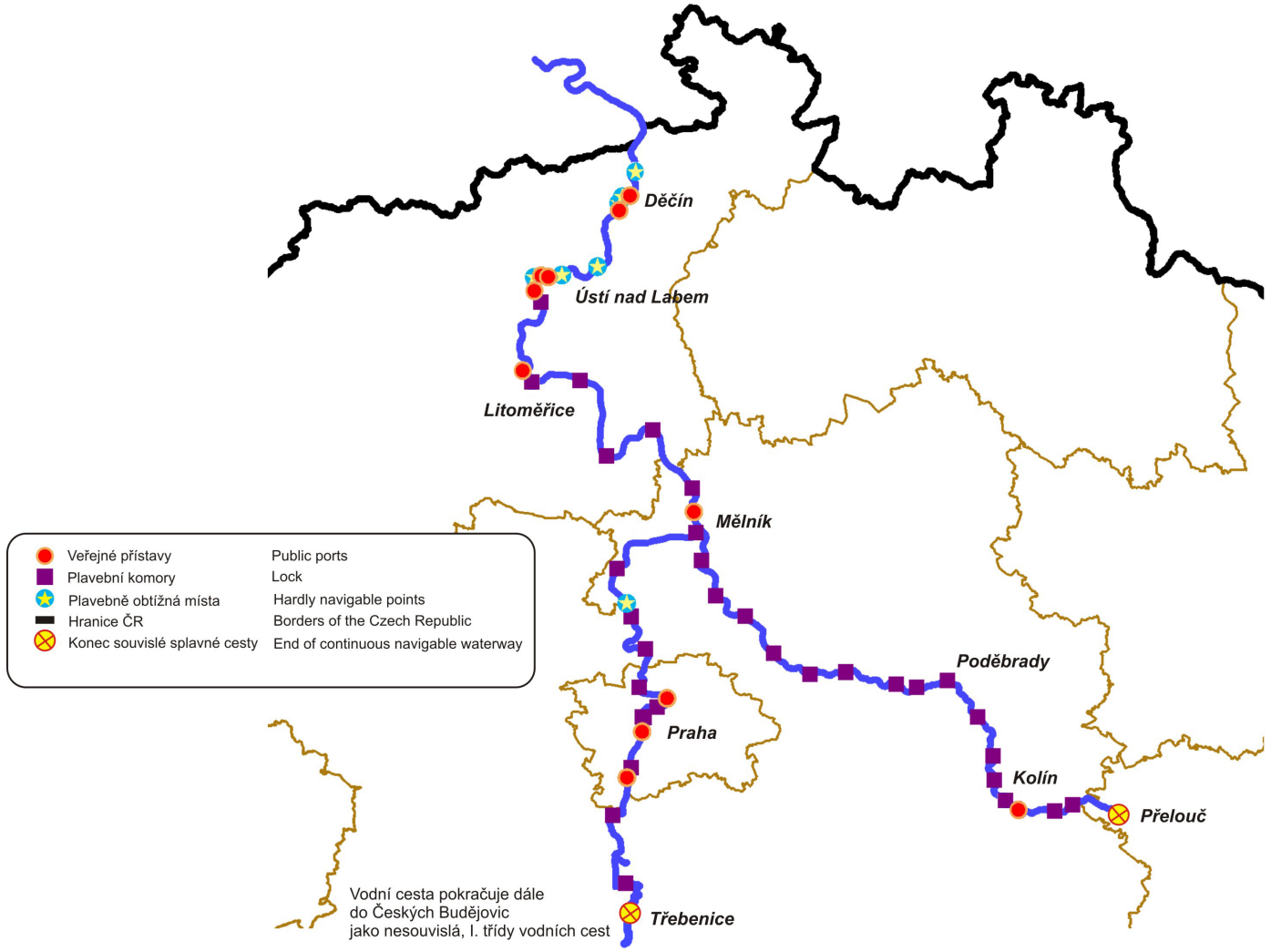
Key: Dálnice = Motorways; Rychlostní silnice = Speedways; Silnice I. třídy = 1st class roads; Silnice II. třídy = 2nd class roads

Annex 11 Railway network of the Czech Republic



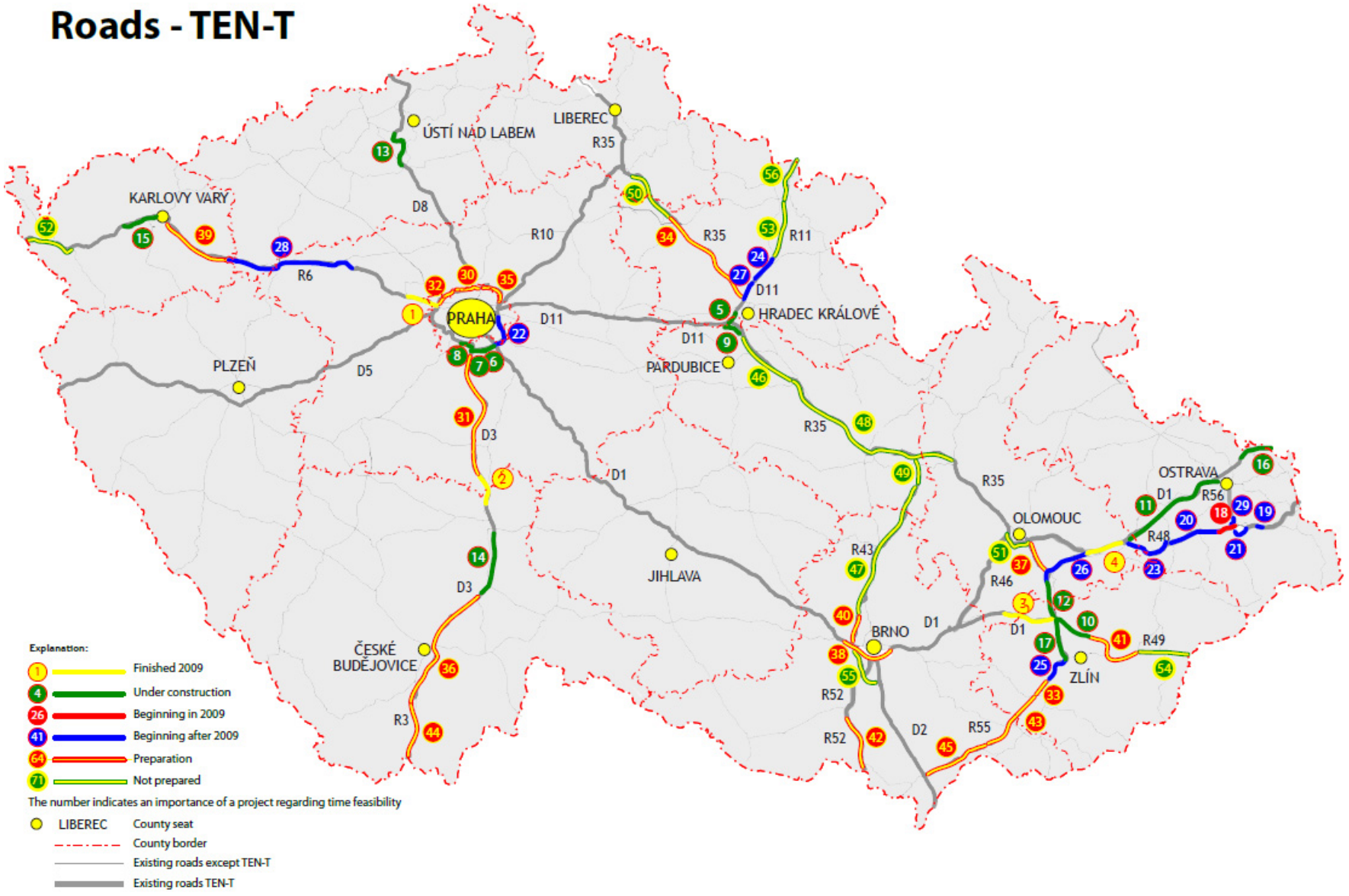
Key: Celostátní dráhy – koridory = Nationwide railways – corridors; Celostátní dráhy = Nationwide railways; Regionální dráhy = Regional railways

Annex 12 Waterways network in the Czech Republic

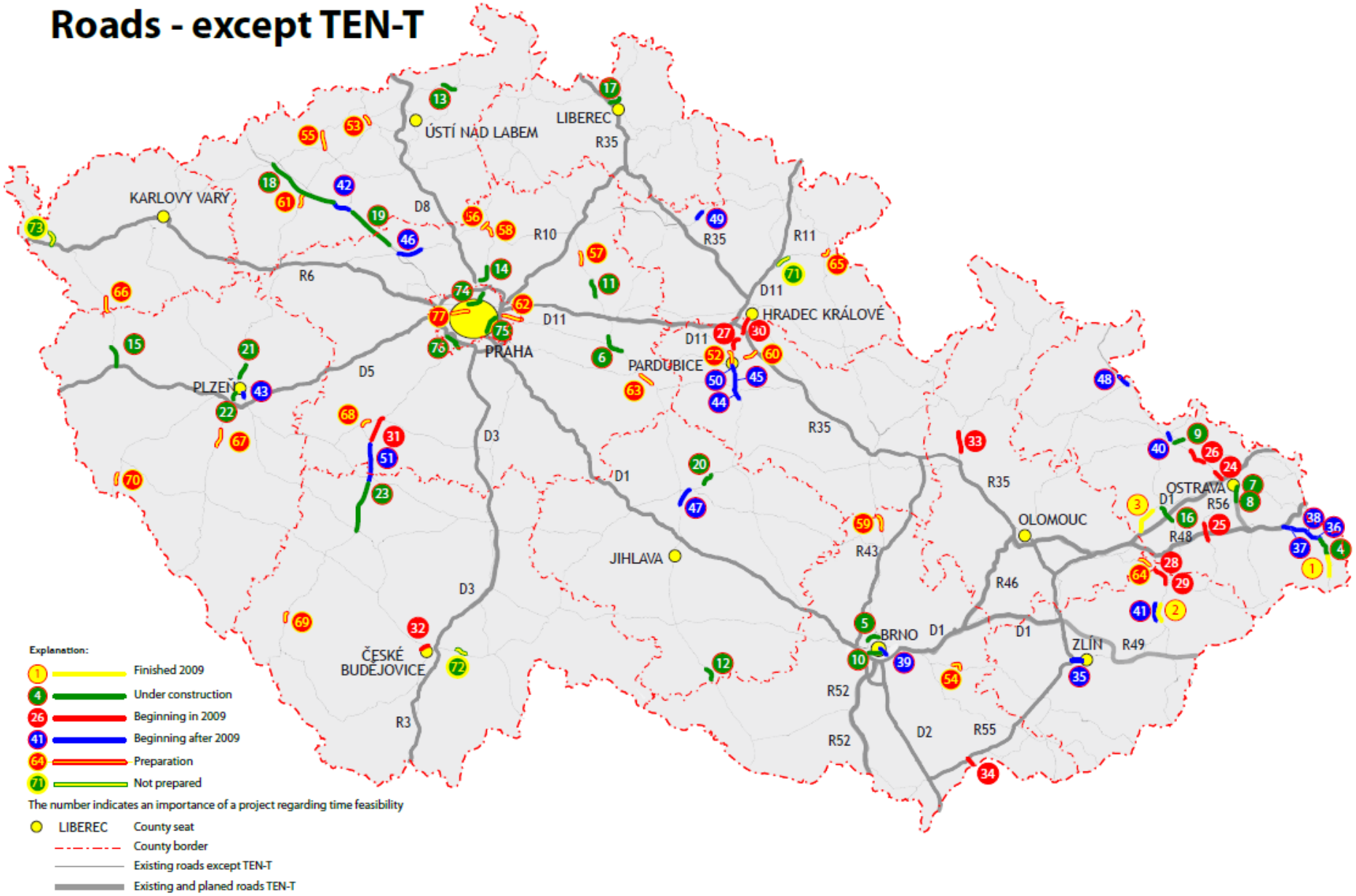


Key: Vodní cesta pokračuje dále do Českých Budějovic jako nesouvislá, I. třídy vodní cest = Waterway continues to České Budějovice as a discontinuous 1st class waterway

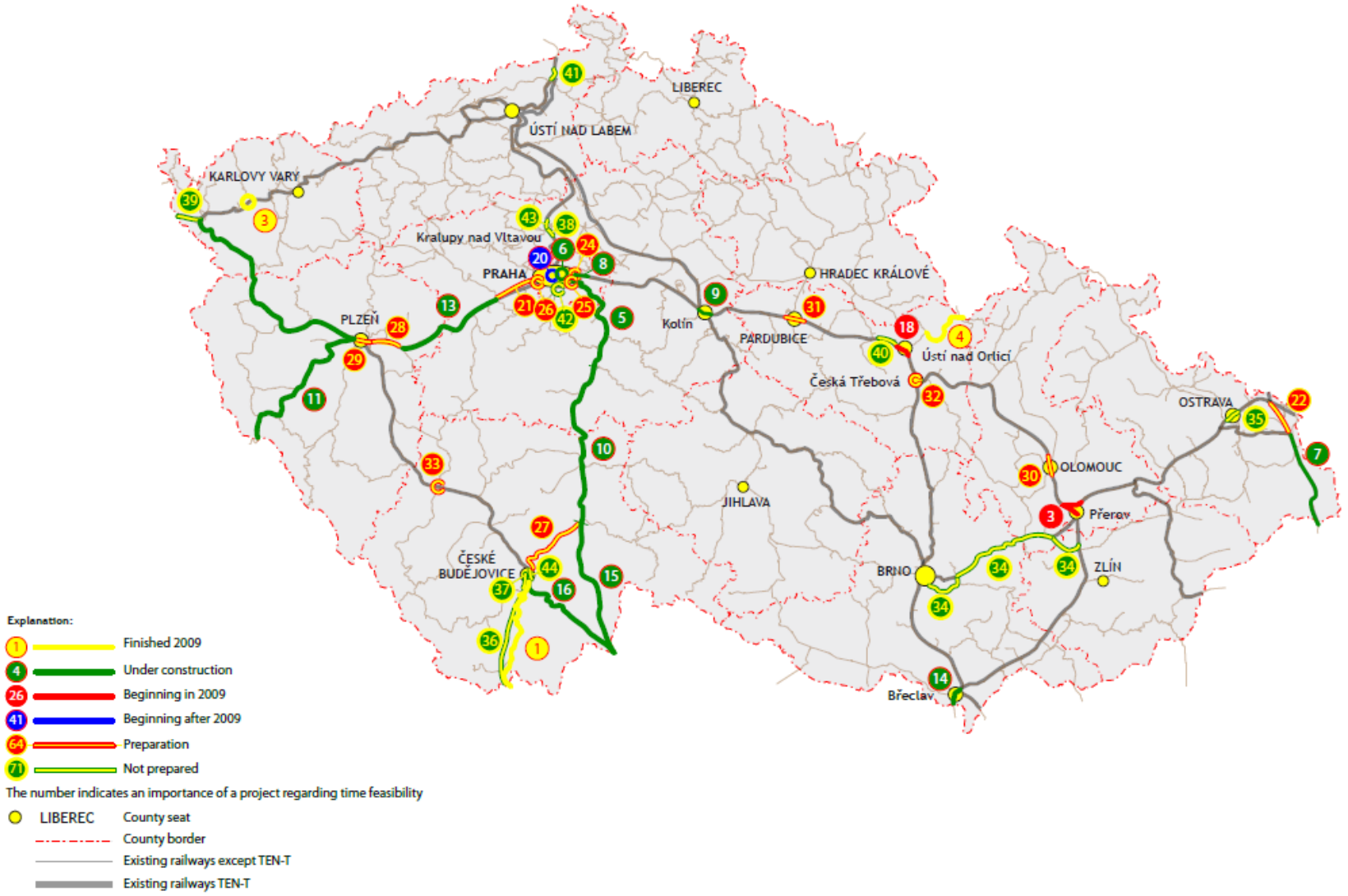
Annex 13 Roads – TEN-T



Annex 14 Roads – except TEN-T

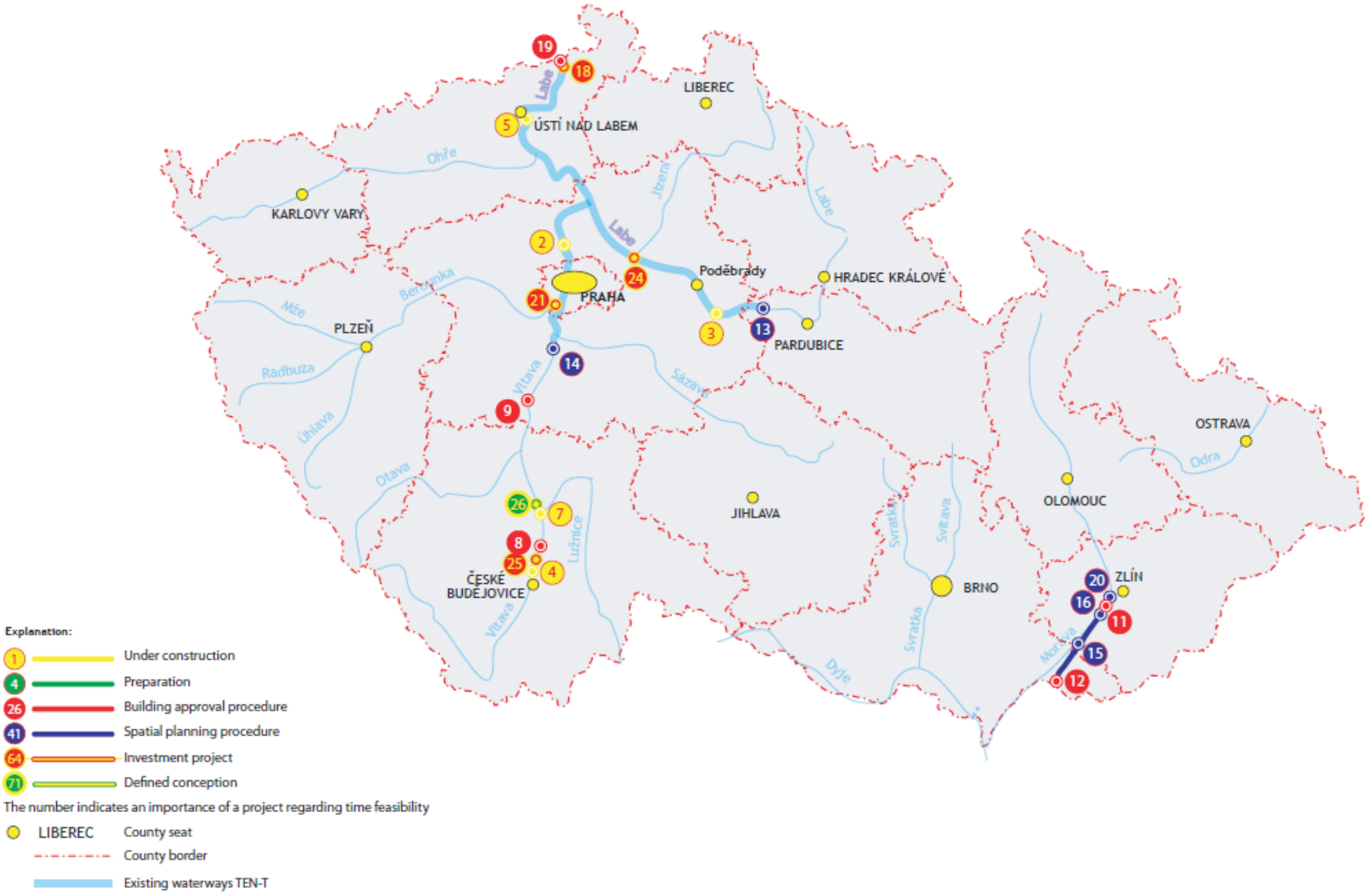


Annex 15 Railways TEN-T



Annex 16 Inland waterways

Inland waterways



Annex 17 Air transport