

HIGH-SPEED RAIL – HIGHWAY 2.0?

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ABSTRACT. High-speed rail lines should make it possible to fully replace air transport over the medium distances of Europe (about 500 km). In the Czech Republic, they are beginning to design. Estimates suggest that in five years, the first sections could begin to physically originate and within ten years, they will begin to ride on them. Is it possible that the scenario and the continuous extension of deadlines accompanying the completion of the backbone network will be repeated? This article discusses the options from the project management perspective and the idea of construction 4.0 to prevent this.

KEYWORDS: High-speed rail, project management, predictive project life cycle, stakeholders, construction 4.0.

1. INTRODUCTION

The Supreme Audit Office made two basic conclusions after taking an inventory of the preparation and construction of motorways between 2013 and 2017. The better news is: motorway prices have fallen by 55 percent on average compared to the years 2008 to 2012. The bad one: the preparation of constructions is getting longer and the basic motorway network will not be completed even in 2050 [1].

In 2018, 833 kilometers of the planned 2,073 kilometers were to be built to complete the backbone network of motorways. To achieve this, the Road and Motorway Directorate would have to open approximately 25 kilometers of motorway annually. But the preparation is not accelerating, on the contrary. Compared to the previous inspection in 2012, the phase from obtaining a favorable opinion of the EIA to the issuance of a building permit extended by four years to an average of 13 years [1].

Is the state failing? Is it possible that the situation will repeat itself in the preparation and construction of high-speed lines? The initial situation is as follows.

Regulation (EU) No 1315/2013 of the European Parliament and of the Council identifies the main principles for the development of road, rail, inland waterway, maritime and multimodal infrastructure. Rail transport is further divided into two parts of TEN-T [2]:

- The comprehensive network aims to connect all European NUTS II regions to the TEN-T network, with an indicative completion date of 2050. Network continuity has become a basic requirement. Great emphasis has also been placed on cross-border sections. For the territory of the Czech Republic, the TEN-T Regulation identifies the main directions of high-speed rail development for further examination.
- The core network is a subset of the global net-

work and has been established by the European Commission on the basis of a uniform European methodology. According to this methodology, the main network includes all the links of the neighboring so-called primary nodes (simply the capitals of the states and agglomerations over 1 million inhabitants). The second condition is a guarantee for the completion of the project by the end of 2030, provided that its economic efficiency is demonstrated.

Ministry of Transport of the Czech Republic released Program for the Development of Fast Railway Connections in the Czech Republic, signed by Resolution of the Government of the Czech Republic No. 389 of 22 May 2017 [3, 4].

By 2030, three sections of high-speed lines are expected to be realized within the TEN-T main network, namely the new Prague – Lovosice / Litomerice construction including the exit from the Prague junction, the major reconstruction of the Brno - Prerov line and modernization and capacity increase of the Brno – Breclav line. The new construction of the Prague – Brno high-speed line in its entire length was not enforced into the TEN-T main network, as it is not feasible until the end of 2030, given the current process delays in the construction preparation period. The Ministry of Transport reached this conclusion on the basis of an assessment of experience from abroad, where implementation of similarly large projects from the beginning of preparation to completion usually takes 15 – 20 years. However, the potential of this connection within the Czech Republic is considerable and this section should be significantly preferred in the preparation, see below. However, the construction time limit is neither the design preparation, the actual construction work, nor the provision of financing, but the processes associated with building permits. The inclusion in the comprehensive network contrasts with the social need for this part of the network, according to which the new construction of the high-speed line

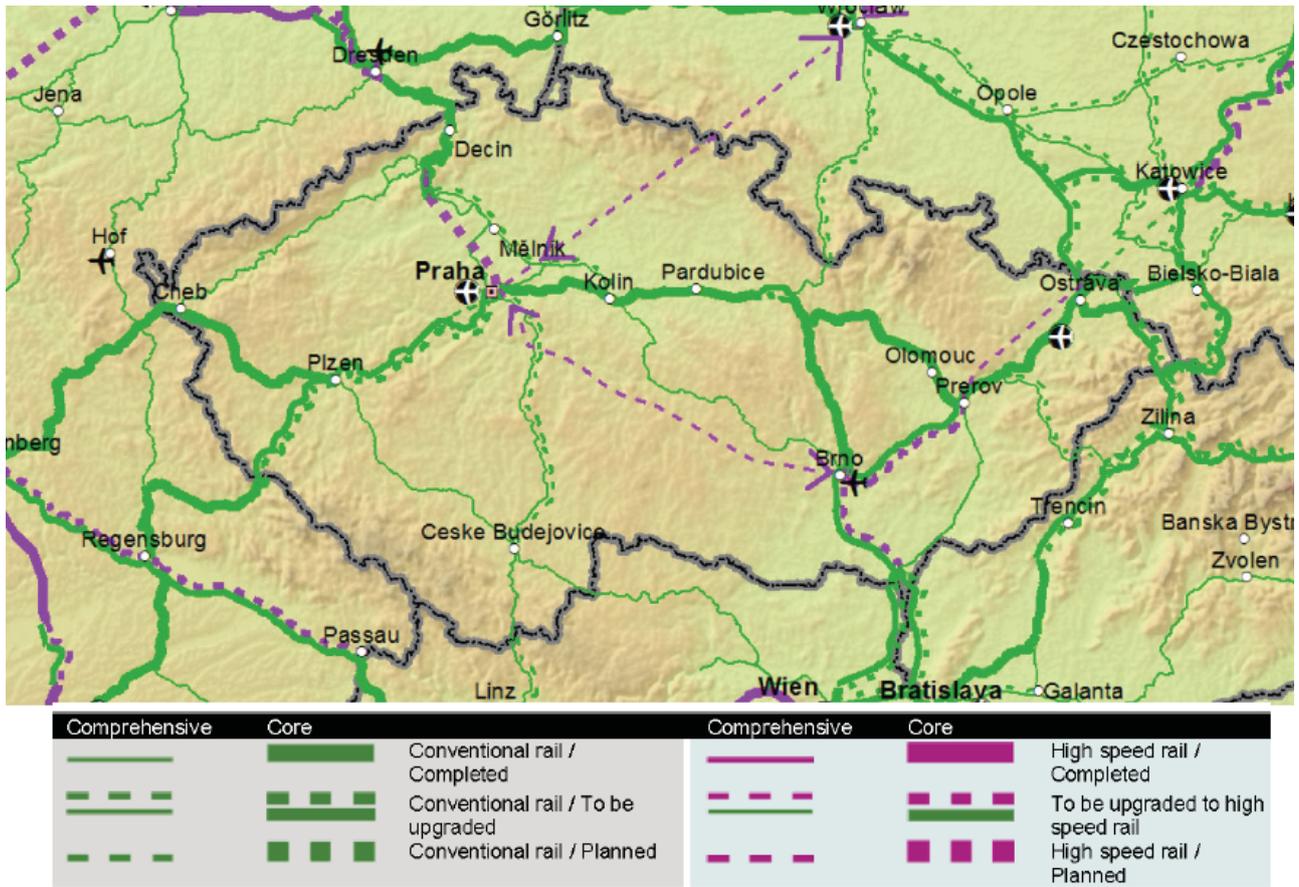


FIGURE 1. TEN-T map for rail transport [1].

Prague – Brno should clearly functionally belong to the core network for passenger transport [4].

High-speed rail lines are also included in the National Investment Plan, which presents the investment potential of the Czech Republic until 2050 and which was discussed on 16 December 2019 by the Government. It presents a total of seven new track constructions for speeds up to 320 km/h with the date of commencement of implementation from 2025 to 2040 [5].

2. AIMS

The aim of this article is to describe the possibilities from the perspective of advanced project management methods and the idea of construction 4.0 how not to repeat some significant historical errors in the planning and realization of motorways, which has delayed this process compared to the original plans.

3. METHODS

The article mentions the possible use of advanced project management methods, which the author considers to be one of the important components of construction 4.0. Among these advanced project management methods, they work with a predictive project life cycle and different approaches to project management depending on the life cycle. For selected approaches

will be discussed the suitability of use for planning and preparation of high-speed rails.

4. RESULTS AND DISCUSSION

The PMBOK guide [6] states that there is a so-called predictive life cycle, or plan-driven. In this cycle, the scope, time and cost of the project are defined as soon as possible, possible. It is advisable to use it in areas where the final product is known in advance, which is undoubtedly high-speed rails. It also emphasizes the influence and relationship between the project, the project team, and various stakeholders.

Predictive live cycle of high-speed rail projects in The Czech Republic shows Figure 2.

The importance of stakeholders is also indicated by different project management approaches such as ISO 21500 Standard Guidance on Project Management and Project Management Systems and Lean Construction philosophy [7]. The situation with the construction of highways only confirms their importance. And it is possible that this will be the case for high-speed rail projects too.

The relation between stakeholders and the project in case high-speed rail projects in The Czech Republic shows Figure 3.

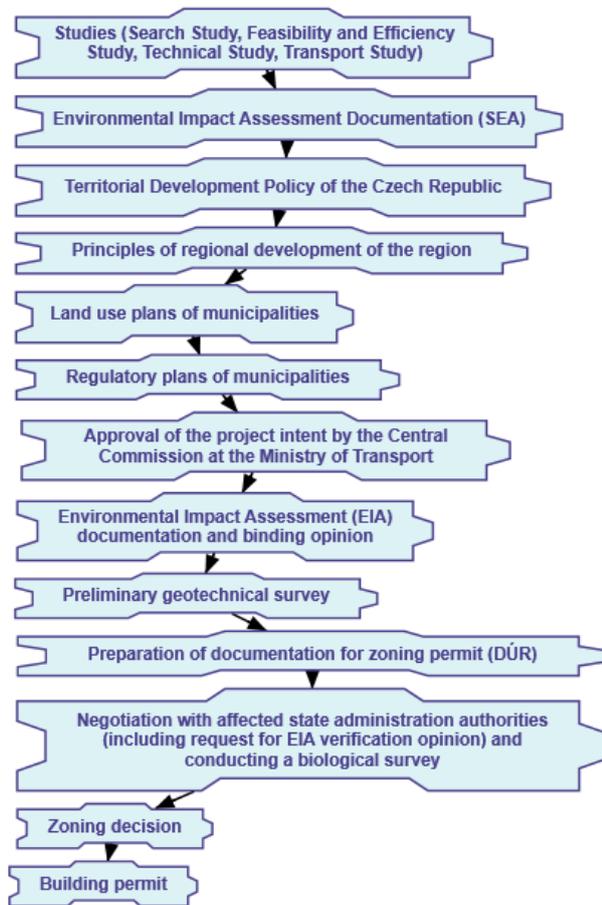


FIGURE 2. Predictive live cycle, source: custom.

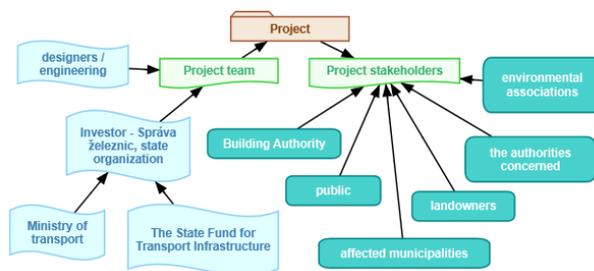


FIGURE 3. The relation between stakeholders and the project, source: custom.

5. CONCLUSION

Usually it is not possible to name the causes of delays in the construction of motorways constructions. One of culprits is the former Minister of Transport, who allegedly stopped the preparatory work on dozens of projects in 2010 on the pretext that they are at risk of corruption and because unlimited amounts of money were not available in crisis years. Another popular culprit is environmental associations, which continuously delay construction by appealing during any administrative procedure that the construction has to go through before it can even begin. Culprit may be also the state bureaucracy as such. For the preparation of buildings it creates such complex regulations that it

is beyond its own power to meet their requirements. At the same time, it is unable to reach a civilized agreement with those affected by the construction, from landowners, villages and nature conservation to construction companies.

Whoever is to blame, the repetition of the highway situation in the case of high-speed rail must be prevented. One of the keys is the consistent identification of the whole predictive life cycle and their stakeholders (including roles).

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