

Strategic Environmental Assessment of the Railway Corridor Vienna – Bratislava

Felix Sternath, Lukas Lang, Ernst Mattanovich

Abstract

In 2010, the first-ever railway Strategic Environmental Assessment in Austria was carried out on several railway connections between Vienna and Bratislava. Also for the first time, the Strategic Environmental Assessment did not focus merely on a single project but on an entire corridor. The paper mainly shows the deduction of a target system from numerous official documents which was used as a basis to assess the sustainability of alternatives. Each secondary goal was assigned to at least one pillar of sustainability. It clearly was shown that many secondary goals correspond to more than just one the latter.

Introduction

Vienna and Bratislava are the two EU-capitals closest to each other. However, until the fall of the Iron Curtain there hardly was any interchange between the two cities just as between Austria and its neighbouring countries in the east. This situation clearly changed after 1989, Bratislava became the capital of the newly formed Slovak Republic in 1993. Over the last two decades, the two capitals started to grow together – both mentally and also partly physically. Today, the western suburbs of Bratislava cover parts of the adjacent Austrian municipalities. Many Slovaks work in and around Vienna and so do Austrians vice versa. Vienna and Bratislava together form the so-called Twin City Region which is the core of the larger Central European Region CENTROPE.

However, the infrastructural development has not kept pace with the growing interchange within this Twin City Region. This is especially true for the railway infrastructure which is not sufficient to cope with the demands in both passenger and freight traffic. This situation aggravated due to the process of European integration which lead to an increase of east-west traffic flows. At present there are two inter-state, single-track railway connections, running north and south of the Danube. Only one of them is electrified. Both railway connections were declared Priority Projects of the Trans-European Railway Network and are about to become elements of the Trans-European Railway Core Network.

The improvement of the railway infrastructure between Vienna and Bratislava (see figure 1) represents one of the main objectives of Austria's infrastructure policy. According to Austrian legislation¹, such improvements imply a change of the federal high-level traffic infrastructure network. Such changes have to be initiated by defined and so called initiators (for rail infrastructure: Austrian Federal Railways ÖBB) and require a Strategic Environmental Assessment as a basis for enacting ordinary railways as high-level railways. Initiators have to provide an Environmental Report (see Austrian Federal Railways ÖBB 2010) as a precondition for the Strategic Environmental Assessment.

¹ Concerning Austria's high-level railway infrastructure, the Federal Law on Strategic Environmental Assessments within the Transportation Sector (Bundesgesetz über die strategische Prüfung im Verkehrsbereich) implements the Directive 2001/42/EC of the European Parliament and of the Council on the Assessment of the Effects of Certain Plans and Programmes on the Environment into Austrian Legislation.

Subject to this Strategic Environmental Assessment and consequently to the Environmental Report was the entire railway corridor between Vienna and Bratislava. This represented a novelty in Austria's Strategic Environmental Assessment praxis in the light of two facts: First, it was the first-ever railway Strategic Environmental Assessment in Austria. Second, earlier Strategic Environmental Assessments always focused on one single project. Very fast, this examination of the whole corridor turned out to be necessary. There were a number of improvements planned and each of them was interlinked with the others and was meant to fulfil specific functions within a complex system. Doing several Strategic Environmental Assessments for each of them did not seem not make sense and would not have corresponded appropriately to the strategic level immanent to a Strategic Environmental Assessment.

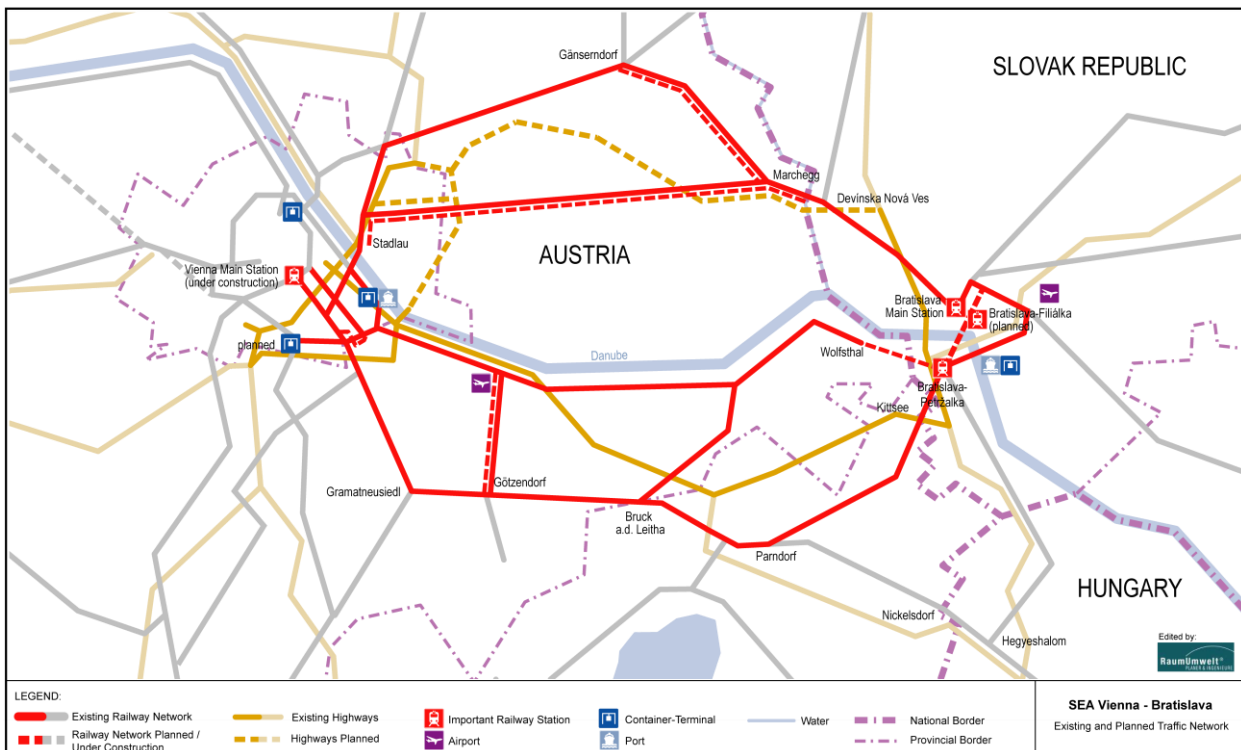


Figure 1: Existing and planned traffic network in the Twin City Region Vienna – Bratislava (source: Austrian Federal Railways ÖBB 2010: 133; 136; 140; modified)

Conception of the Target System

Article 1 of Directive 2001/42/EC names a sustainable development one of the main objectives and calls for an environmental assessment to ensure the observance of this objective. At the same time, within the Environmental Report reasonable alternatives shall be identified, described and evaluated, taking into account the objectives and the geographical scope of the plan or programme. Austrian legislation adds a further requirement, saying that the relatedness to other plans and programmes has to be displayed.

In order to comply with these two requirements, a target system was to be found that would cover goals for both a sustainable development and plans and programmes. What is to be defined as sustainable development, very often is included and defined in official documents which on their part are based on scientific foundations. Official documents – not necessarily the same ones – also contain objectives of plans and programmes. In both cases the documents usually cite a democratically expressed will that therefore can be regarded cross-social.

The authors chose the following stepwise approach to create a target system: First, official documents that cover questions of sustainability, environment, spatial development and traffic were to be found.

Second, all relevant objectives expressed in the selected documents were to be extracted and clustered according to their content. Third, out of these clusters main goals and secondary goals were to be formulated and brought into a hierarchic structure. Finally, each secondary goal was to be assigned to one or more pillars of sustainability, provided its matching the individual pillar's ideas.

Selection of Documents

The selection of documents was carried out by means of a few rules in order to ensure that the documents selected were those relevant for the question at hand. Documents should be rather current and could have different normative characters. They could cover any administrative unit concerned (EU, Austrian Federal State, Austrian Länder, regional level) with the area but the smallest one, the municipalities. There needed to be a clear focus on one of the topics mentioned above, i.e. sustainability, environment, spatial development and traffic.

Regarding these selection criteria, a total number of 48 documents were finally analysed. Twelve of them are from a supranational level, i.e. covering the global or European scale. Most of the documents on the European level were passed by the European Commission and have very different normative characters. Eleven documents originated from the Austrian federal level. Most of them have a rather weak normative character due to the allocation of competences between the Austrian Federal State and the Austrian Länder. Thirteen documents were issued by the Länder concerned with the area, i.e. Vienna, Lower Austria, Burgenland and the Bratislava Self-Governing Region. Some of them are laws, others have only recommendatory character. Twelve documents originate from a regional level. Cooperation on this level is based on voluntarism and so is the compliance of these documents.

Extraction and clustering of objectives

Every single selected document was analysed in three steps: First, short information was given on the date and institution that issued the document, general objectives and the normative character of the document. Second, all goals and statements regarding a sustainable development and / or the concerned area were named and described. Third, relevant plans and programmes were identified. Of course, not all documents delivered information regarding both aspects. However, surprisingly many documents did. Very often, a certain plan or programme was reasoned by the objective of a sustainable development. This was not necessarily expressed in a direct way, but the objectives given coincided very clearly with those commonly accepted in the sustainability discourse.

When clustering the objectives, five focal points were distinguished by the authors.

One focal point follows the idea of strengthening agglomerations as economic centres. This idea corresponds to the objective of the Lisbon Strategy to make *“the EU the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion”*. Especially EU documents refer to this strategy and argue for – amongst others – the development of a very high-level transport infrastructure across the EU Member States. Infrastructure is therefore seen as a key factor for making economies competitive due to better accessibility of markets and the integration into international goods transport flows.

A second focal point, in some parts contradictory to the first one mentioned above, is the reduction of regional disparities and the strengthening of economic and social cohesion. This idea is very strongly anchored in most European governments' policy making and a crucial policy of the European Commission. One way to achieve this goal is – in parts – similar to the strategies applied for strengthening agglomerations as economic centres: (Transport) Infrastructure is provided for peripheral

regions to make them more attractive as business locations, to improve the access to educational and research institutions as well as to services in general. By doing that, the opportunities for the population concerned increase and so do – after a while – their incomes.

Efficiency of public investments forms the third focal point. This idea originates predominantly from neoclassic economics. At the same time scarcity of public funding and the constraints due to the crisis force public administrations more and more to make sure funds are used in the best possible way. This regards both short- and long-term employment effects on the one hand as well as macro-economic benefits on the other hand. In general, public investments should perform a good cost-benefit-relationship, i.e. money spent should cause positive effects superior to itself.

The fourth focal point advocates an economical use and the protection of natural resources. This idea is very often considered the most self-evident aspect of a sustainable development. It covers climate protection on a large scale as well as local barrier effects on a very small scale. The latter are usually very well covered by examinations in the course of Environmental Impact Assessments and very difficult to catch in the framework of the Strategic Environmental Assessment. Therefore, the authors had to re-think their ideas of how to assess a plan or a programme considering classic environmental aspects.

A liveable living environment is the fifth focal point that turned out to be of high importance in most of the analysed documents. Policies on all administrative levels pursue goals to enhance health and safety. Besides these very intuitional ideas, it is also about the cultural heritage, lifestyles and an anticipatory design of the built environment. Away from all the considerations to cover these aspects in Environmental Impact Assessments, they are very applicative for discussing the effects of plans or programmes.

Formulation of goals and building of a hierarchic structure

Corresponding to the five focal points mentioned above, five main goals were identified and formulated (see first column of table 1, main goals M1 – M5). Within these very vast thematic groups, specifications were necessary in order to gather a set of concrete assertions that can be used for examining the subject to the Strategic Environmental Assessment. In doing so, objectives that had been identified in the previous step were assigned to single main goals. According to the hierarchy that is developed by this assignment these objectives are called secondary goals (see second column of table 1, secondary goals S1.1 – S5.4). Each main goal is connected to at least two secondary goals, in most cases four to six secondary goals.

It is very obvious that many of the secondary goals thematically match the information required for the Environmental Report by Annex I of Directive 2001/42/EC, especially on the subjects of protection enumerated in lit. f. Those subjects of protection are verbally adopted in the Austrian Federal Law on Strategic Environmental Assessments within the Transportation Sector in § 6. Therefore, particularly the secondary goals appendant to the main goals M4 “Economical use and protection of natural resources” and M5 “Creation of a liveable living environment” correspond very strongly to these subjects of protection. Beyond that the Austrian Federal Law on Strategic Environmental Assessments within the Transportation Sector in § 5 names objectives for the country’s high-level traffic infrastructure. These objectives are covered mainly by the secondary goals appendant to the main goals M1 “Strengthening of agglomerations as economic centres”, M2 “Reduction of regional disparities and strengthening of economic and social cohesion” and M3 “Efficiency of investments”.

To this point, the target system was composed of the main goals and the assigned secondary goals. Since this target system was to be used for examining a number of alternatives that were sketched as possible developments for the corridor, the secondary goals had to be made useable. Therefore, indicators had to be found in order to be able to identify the developments’ effects regarding every single

secondary goal. By doing so, the target system was enlarged with these indicators. The paper at hand is not supposed to go further into depth with this argument.

Assignment of secondary goals to pillars of sustainability

In order to demonstrate that the target system is capable to examine whether or not the alternatives contribute to a sustainable development, each secondary goal was assigned to one or more pillars of sustainability. Therefore, every single secondary goal was discussed regarding its eligibility in the sustainability discourse. Each single goal fitted perfectly to at least one of the pillars of sustainability. However, most of them fitted to two pillars, a few even to all three pillars of sustainability (see third column of table 1). In fact, this was a very positive experience for the authors. It was clearly shown that all objectives contained in and extracted from the official documents that had been analysed corresponded – in a way or another – to the overall objective of a sustainable development. So, finally the target system was completed and ready to use.

Main Goals	Secondary Goals	Dimension of Sustainability			Target Achievement			
		social	economic	environmental	Alternative 0	Alternative 1	Alternative 2	Alternative 3
M1 Strengthening of agglomerations as economic centres	S1.1 Provision of a high-level railway infrastructure, esp. improvement of the integration into supra-regional traffic systems				+	++	+	+
	S1.2 Improvement in cross-national accessibility in passenger traffic, above all regarding important nodes				+	++	+	+
	S1.3 Provision of high-level connections to important existing traffic infrastructures, e.g. airports or freight terminals				+	++	+	+
	S1.4 Removal of bottlenecks in cross-national freight traffic				+	++	+	+
M2 Reduction of regional disparities and strengthening of economic and social cohesion	S2.1 Improvement in accessibility of passenger traffic on a regional and local scale				+	++	+	+
	S2.2 Shift of commuter flows from private transport to public transport				-	++	-	-
	S2.3 Improvement in accessibility of existing businesses resp. coverage of possible new, attractive business locations				+	++	+	+
	S2.4 Improvement in accessibility of educational and research institutions				+	++	+	+
	S2.5 Securing of mobility of all parts of society				0	+	0	0
M3 Efficiency of investments	S3.1 Indirect and direct employment effects				+	++	+	+
	S3.2 Macro-economic benefits				+	++	+	+
M4 Economical use and protection of natural resources	S4.1 Climate protection and energy efficiency				-	+	-	-
	S4.2 Protection or least possible damaging of protected areas				-	-	-	-
	S4.3 Avoidance or abatement of direct land consumption				-	-	-	-
	S4.4 Avoidance or abatement of barrier effects and fragmentation				-	-	-	-
	S4.5 Protection of scenic beauty, character and recreational functions				-	-	-	-
	S4.6 Protection of both surface and ground water				0	0	0	-
M5 Creation of a liveable living environment	S5.1 Enhancement of traffic safety				+	++	+	+
	S5.2 Minimisation of impairments of people's health through immissions				+	+	+	+
	S5.3 Protection of cultural heritage, archaeological treasures and architecturally precious buildings				0	0	0	0
	S5.4 Favouritism of a compact, soil saving and traffic reducing settlement structure				-	+	-	-

Table 1: Target system composed of main goals, secondary goals, dimension of sustainability and degree of target achievement (source: Austrian Federal Railways ÖBB 2010: 128; 188; modified)

Conception of alternatives

Both the Directive 2001/42/EC (Article 5) and the Austrian Federal Law on Strategic Environmental Assessments within the Transportation Sector (§ 6) require the identification, description and evaluation of *“the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme”*. The target system described before was the basis for the evaluation. Before examination, the alternatives were identified and described.

In total, four alternatives were found that coincided regarding the area and the condition that alternatives should vary mainly in respect of different developments of the traffic infrastructure. The time horizon was fixed for the year 2025, until when all developments realistically could be completed. One very easy way to define alternatives would have been the free combination of all improvements respectively the single measures and projects necessary to achieve these improvements. Still, this would clearly contradict the initial idea of considering the entire railway corridor as one unit. Therefore, the distinctive feature between the alternatives must regard the mode of transport.

Alternative 0 was the easiest to define. It was an extrapolation of the current situation (zero alternative) which is always necessary as the only neutral point of reference. However, it was not easy to define it clearly, since, in a very dynamic environment like the actual one, different infrastructural projects are currently under construction, being planned or taken as granted by authorities and / or the public. Such projects have to be considered when formulating the zero alternative.

Alternative 1 was similarly easy to define, since it covered all the improvements foreseen by the Austrian Federal Railways. Accordingly, it was composed of Alternative 0 and the mentioned improvement measures. All of them are improvements of the railway system, so the alternative was labelled “Strengthening of the railway as mode of transport for the year 2025”.

Alternative 2 and Alternative 3 were designed following different modes of transport. Although there are two international airports in the area examined, air transport obviously is completely unimportant for the transport between Vienna and Bratislava. Therefore, Alternative 2 focused on an even stronger development of highway infrastructure than already foreseen in Alternative 0. It was labelled “Strengthening of the motorway as mode of transport for the year 2025”. Alternative 3 concentrated on inland navigation on the Danube which currently is underdeveloped and possesses a very high and internationally recognised development potential (see EU Strategy for the Danube Region), especially for freight traffic. It was labelled “Strengthening of the inland navigation as mode of transport for the year 2025”.

Assessment of the alternatives

The target system introduced before consists of main goals, secondary goals, indicators and the assignment of pillars of sustainability. It provides the basis for the assessments of the four alternatives. The paper at hand is not supposed to discuss this argument very deeply, but one detail of the assessment procedure is worth mentioning: The assessment focussed mainly on qualitative judgements rather than quantitative measurement. There are two reasons why the authors consciously decided for this approach.

The first reason was a rather technical one. The area subject to the assessment was simply too vast to process every indicator as accurately as technically possible. It covered an area of approximately 80 km x 40 km with a very dense structure of settlements, natural landscapes and transport infrastructure. Doing a

full investigation of everything would have meant an unimaginably long-lasting and expensive piece of work.

The second and systematically more important reason was a matter of principle. The use of qualitative methods corresponds in a high degree to the strategic approach which does not foresee an examination that is going too much into depth. Therefore, a Strategic Environmental Assessment compared to an Environmental Impact Assessment is even more suitable to qualitative judgements rather than quantitative measurement. After all, plans and programmes examined in a Strategic Environmental Assessment often are not available in the detailed elaboration concrete projects usually (have to) do before undergoing an Environmental Impact Assessment.

Selection and recommendation of alternatives

The predominantly qualitative approach to examination called for a way of making the results comparable in order to finally be able to select and rank alternatives. Since each indicator was connected to a secondary goal, a fairly easy way to standardise the results was the conversion of the singular results into a so called degree of target achievement. In total, five such degrees of target achievement were defined and described. Simple symbols were found for each degree of target achievement: predominantly matching the objective (++); partly matching the objective (+); neutral (0); partly contrary to objectives (-); predominantly contrary to objectives (--).

The translation of the single result into a degree of target achievement was carried out as an integral part of the examination. As soon as the effects of an alternative according to a secondary goal had been identified, they were translated into the degree of target achievement. The selection of the degree of target achievement was traded off and argued and therefore as possible transparent.

The results of the examination and standardisation were compiled as an extension to the target system developed previously. Therefore, a comparison of the effects of the four alternatives according to each of the secondary goals was facilitated. Table 1 shows this final extended target system. Already at the first glance, one can see the tendency to one of the examined alternatives.

The paper at hand is not supposed to review the rationale and process of the selection of Alternative 1 as the alternative that most of all four alternatives that were examined matches the whole of the secondary goals of the target system. However, one can imagine that it was not very surprising for the authors that the “winning” alternative was the one that represented a development that most scholars and professionals would agree on to be desirable in the field of transport. Furthermore, with this result it was possible to show that Alternative 1 would contribute to a sustainable development and would do so more than any other alternative in question.

Change of the federal high-level traffic infrastructure network

With this first and most important result of the Environmental Report it was possible to prove that the improvement of the railway infrastructure between Vienna and Bratislava was the development with the highest contribution to a sustainable development of the area. However, it then was also to be shown whether the railway network between Vienna and Bratislava after the planned improvements would have the characteristics of high-level-level railways according to Austrian legislation². Upon this description of characteristics, the single railway axes between Vienna and Bratislava were examined.

² The Federal Law on High-level Railways (Bundesgesetz über Eisenbahn-Hochleistungsstrecken) names a series of characteristics of railways that have to be found in order to enact a railway as high-level railway.

As a result, without going any further into detail, the authors proposed the enacting as high-level railways of three railway tracks that currently do not have the status of high-level railways according to the Austrian Federal Law on High-level Railways. The main argument for this recommendation was the fact that all of the three railway tracks after the implementation of the improvements would be of significance for a high-level traffic with cross-border railway connections both for passenger and freight traffic. This would lead to a change of the federal high-level traffic infrastructure network. Therefore, the enacting of railway tracks as high-level railways marks the final result of the Strategic Environmental Assessment. However, this act has not been passed yet by the Austrian Council of Federal Ministers as foreseen by the Austrian Federal Law on Strategic Environmental Assessments within the Transportation Sector.

Short Notes on the Strategic Environmental Assessment as a process

Although the major part of the area between Vienna and Bratislava is Austrian territory, it was obvious right from the beginning that the improvements of the railway infrastructure respectively the change of the federal high-level infrastructure network are “*likely to have significant effects on the environment in another Member State*”, as defined in Article 7 of Directive 2001/42/EC. That called for transboundary consultations as foreseen both by the Directive 2001/42/EC (Article 7) and the Austrian Federal Law on Strategic Environmental Assessments within the Transportation Sector (§ 7).

Before sending the draft of the Environmental Report to the Slovak Republic, the Austrian Federal Railways ÖBB and the Railways of the Slovak Republic ŽSR had preliminary meetings in order to discuss the issue. The Railways of the Slovak Republic ŽSR appreciated the planned improvements and emphasised that they corresponded to the Slovak development plans. Owing to this ex ante coordination which was reported by the Railways of the Slovak Republic ŽSR to the Slovak Government, the latter was well-informed in advance. Therefore, the official transboundary consultations were carried out very rapidly and with a very good way of cooperation.

The domestic consultations occurred in a similar, mainly consensual way. The planned improvements respectively the change of the federal high-level infrastructure network were favoured without exception. In the Summarising Statement (see Federal Ministry for Transport, Innovation and Technology 2011) both the Environmental Report and the results of the consultations were considered, just as requested by Article 9 of the Directive 2001/42/EC respectively § 9 of the Austrian Federal Law on Strategic Environmental Assessments within the Transportation Sector. A proposal for enacting the change of the federal high-level infrastructure network was finally forwarded by the Austrian Federal Minister for Transport, Innovation and Technology to the Austrian Council of Federal Ministers. The correspondent act is to be expected shortly.

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