Work paper

Version
2.0
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1.1. FORM FOR DETAILED BOTTLENECK INVESTIGATION

BOTTLENECK NO. 1

Rolling stock of the national rail carrier in Slovenia

BOTTLENECK ALLOCATION

(Select the type of bottleneck with X)

transport infrastructure	
rolling stock / machinery	X
services / operations	
legislation / administration	

PROBLEM DESCRIPTION

Over half of the rolling stock (electric locomotives) of the national rail carrier in Slovenia is over 40 years old and it is not interoperable. Because of that, the locomotives must be changed at border handover stations. The problem is also spare parts and often defects of the locomotives.

Electric locomotive SŽ 363 have been produced in the mid 70's. It is 6-axle electric locomotive with two electric motors on the bogies. It have two pantographs, but only for voltage of 3 kV DC. The output power is 2,7 MW and maximal speed in freight transport 75 km/h. The national rail carrier in Slovenia possess 38 locomotives SŽ 363

Electric locomotive SŽ 363

Vir: https://jw218344testblog.files.wordpress.com/2018/09/imgp7225.jpg

BOTTLENECK CONSEQUENCES

(Select the level of consequences with X)

low	
medium	X
high	

PROBLEM-SOLVING APPROACH

Solution is to change old locomotives with the new one interoperable, with the better technical performances. New electric locomotives have pantographs with standart voltages 3, 15 and 25 kV. Maximal speed of the locomotive could be at least 120 km/h, starting tractive effort (6-axle loco) between 400 do 500 kN and with engine power 5-6 MW.

Stadler 6-axle electric loco EURO 6000

Source: http://ferrmed.eu/sites/default/files/2019-03/12_00_7_MAR%20RIVAS_2.pdf

With the strongest locomotives – such as 6 axle Stadler EURO 6000 it could be eliminated some double traction (two hauling locomotives at one train).

RESPONSIBILITY

Slovenian national rail carrier SŽ-Tovorni promet.

TIME FRAME

(Select the time, needed to eliminate bottleneck with X)

Immediately	
Short-term	
Mid-term	X
Long-term	

EXPECTED BENEFIT

(Select the benefit with X)

Low	
Medium	
High	X
Vast	

AN EXAMPLE OF BEST PRACTICE

Many of the national railway carriers in Europe already modernized its locomotive fleet with new interoperable locomotives.

Just for example, investment costs for one interoperable electric locomotive are estimated between 4 to 5 mill. EUR. Costs depend to the equipment of the loco, number of axles (4 or 6 driving axles) and maintenance agreement.

BOTTLENECK NO. 2

Railway hub Ljubljana

BOTTLENECK ALLOCATION

(Select the type of bottleneck with X)

transport infrastructure	X
rolling stock / machinery	
services / operations	
legislation / administration	

PROBLEM DESCRIPTION

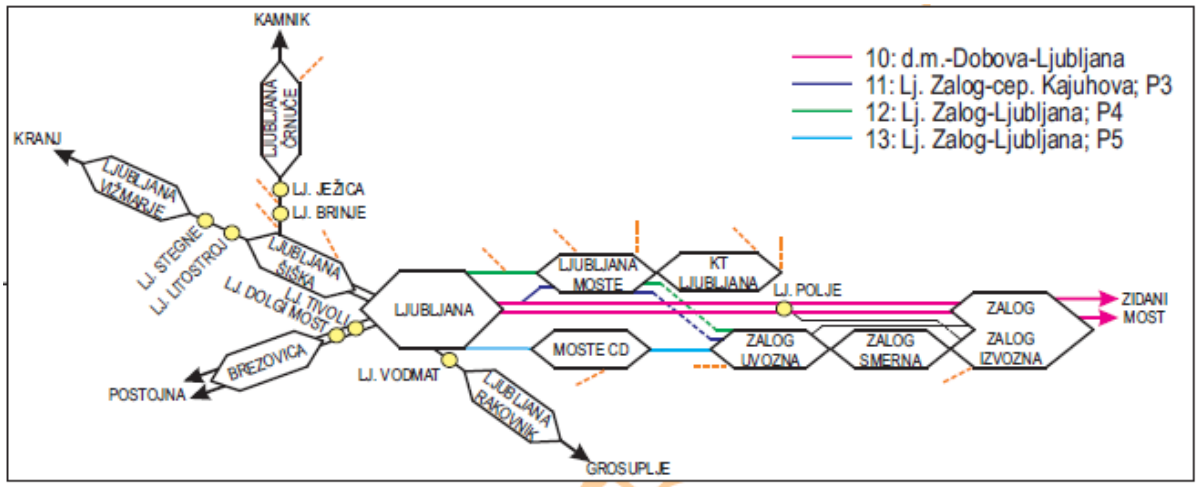
Railway hub Ljubljana is the most important and the biggest railway hub in Slovenia. All freight trains in directions North-South and East-West transit the Ljubljana main passenger station.

At Ljubljana hub is located main passenger station Ljubljana, container terminal Moste, marshalling yard Zalog and repair station for rolling stock.

Ljubljana railway hub is without bypasses for freight trains, so all freight trains operates through main passenger station. The stations tracks in the hub are short; none of them is available for 740 m freight trains.

Ljubljana has no railway connection to the national airport at Brnik.

Railway hub Ljubljana



BOTTLENECK CONSEQUENCES

(Select the level of consequences with X)

low	
medium	X
high	

PROBLEM-SOLVING APPROACH

The elimination of the bottleneck in Ljubljana could be solved through different phases:

- Construction of two bypasses for freight trains,
- Extension of station tracks for 740 m trains,
- Additional platform capacities at the main passenger station,
- New lines for passenger transport (Vrhnika, airport).

RESPONSIBILITY

The responsibility institution is Ministry for Infrastructure of Slovenia.

TIME FRAME

(Select the time, needed to eliminate bottleneck with X)

Immediately	
Short-term	
Mid-term	X
Long-term	

EXPECTED BENEFIT

(Select the benefit with X)

Low	
Medium	
High	X
Vast	

AN EXAMPLE OF BEST PRACTICE

Many of the neighbour capital cities already possess bypasses for freight transport and capacities for passenger transport.

BOTTLENECK NO. 3

Stopping (dwell) times at border crossings

BOTTLENECK ALLOCATION

(Select the type of bottleneck with X)

transport infrastructure	
rolling stock / machinery	
services / operations	X
legislation / administration	

PROBLEM DESCRIPTION

Physical and non-physical barriers at rail border crossings cause excessive and often inordinate delays, high costs and uncertainties in the entire transport process. Border crossings are major bottlenecks for seamless international railway transport. Inefficient border crossing processes and procedures are one of the main causes for significant delays and increased transport costs, and they diminish the comparative advantages of the railway transport.

At border crossing points several critical processes and procedures take place such as transfer of wagons and goods between neighbouring railways, change of locomotive and crews, technical inspections and control of compliance with railway transport standards. Neighbouring railways often operate under different legal regimes and different standards.

Lack of railway interoperability, deficits in the operational coordination of border crossings and priority rules to the detriment of rail freight on a multi-purpose rail network are among the main reasons for non-competitive timetables and unreliable rail freight services.

A freight train normally goes through five processes after arriving at a railway border crossing:

- commercial handover from one railway to another,
- technical handover,
- customs formalities,
- border guard and immigration formalities and
- other government agencies formalities.

The reasons for long stops and delays (over planned stops) at the border stations are similar to all cross border sections:

Reasons for long stops and delays at the border stations

Reason	Responsibility	Comments	
Migrants	External	Detailed police inspections.	
Customs inspection	Authority	Duplicate procedure at both border states.	
Veterinarian and Phytopathological inspection	Authority	Not located at rail border stations.	
Lack of information systems	State, Authority, Infrastructure managers	A lot of paper hand work for all participants at rail border crossing.	
Maintenance works, closures	Infrastructure managers, State	Maintenance and line upgrading with delays.	
Lack of mutual trust agreements	Rail carrier	Agreements between different rail carriers along transport route.	
Lack of locomotives	Rail carrier	While change the loco at handover station.	
Lack of engine drivers	Rail carrier	Engine drivers are not always available.	
Broken wagon and load refused	Rail carrier	At handover station, the following carrier refused inadequate wagons.	
Lack of capacities at lines and railway stations	Infrastructure managers, State	Bottlenecks on the railway infrastructure.	

BOTTLENECK CONSEQUENCES

(Select the level of consequences with X)

low	
medium	
high	X

PROBLEM-SOLVING APPROACH

Simplification, standardization and harmonization of the legal, technical and operational requirements relevant for processes and procedures at railway border crossings is very demanding and challenging endeavour that requires mandate given by the governments for actions and cooperation at both national and cross-border level.

The relevant standards and recommendations address wide range of issues, including:

- formalities at common border crossings, such as: correlation of business hours/competence; joint customs controls and customs office;
- coordinated and simultaneous controls of customs and other competent authorities;
- lodging of the goods declaration / supporting documents by electronic means using recommended international standards;
- limited requirements (only to those deemed necessary) for data of the goods declaration / supporting documents;
- restrained requirements for translation of particulars in supporting

documents;
- pre-arrival lodgement/checking of goods declaration;
- use of commercial/transport documents as descriptive part of customs declaration or as customs declaration for transit;
- providing simplified procedures for authorized operators;
- simplified temporary admission formalities for means of transport.

Proposals for improvement of border crossing practices in international railway transport:
- electronic information systems for sharing information,
- railways to railways electronic data interchange (EDI),
- information exchange between railways and control authorities,
- reduced data and document requirements,
- standardization and harmonization of data requirements,
- Rail Transport Single Window Facility/System,
- Government-to-Government electronic information exchange,
- pre-arrival information, risk assessment and selective controls,
- use of new technologies and non-intrusive inspections,
- simplification for customs transit procedures at railway border crossings,
- joint controls by border agencies at the railway border crossings.

RESPONSIBILITY

State Authorities (ministries, police, customs…), Railway infrastructure managers, Rail carriers

TIME FRAME

(Select the time, needed to eliminate bottleneck with X)

Immediately	
Short-term	
Mid-term	X
Long-term	

EXPECTED BENEFIT

(Select the benefit with X)

Low	
Medium	
High	X
Vast	

AN EXAMPLE OF BEST PRACTICE

First example of highly efficiency cross border operations is the border section between Germany and Austria, detail between stations Freilassing and Salzburg (connection to the west branch of the Alpine-Western Balkan RFC in Austria). At this section the trains have no stops at the border because the train control system, line electrification and the most important language of communication are equal at both states. This example between Germany and Austria works for many decades, without changing the locomotives.

Other best practice on the Alpine-Western Balkan RFC route was a container train "Bosphorus Europe Express" from Slovenia to Turkey in 2009 with very short procedures on the cross border sections. The travel time between Ljubljana and Halkali was only 38 hours. It should be mentioned that today the freight trains stops at the borders for over 52 hours. That example shows that almost everything could be possible, even 11 years ago.

The third good practice on the Alpine-Western Balkan RFC regarding the cross border sections is the border section between Austria and Slovenia, Spielfeld-Strass and Šentilj (Maribor) with the shortest stopping times at the handover station of the Alpine-Western Balkan RFC. Since Slovenia upgrade the line to Austria (Zidani Most-Šentilj) with the 22,5 t/axle the stopping times will be even shorter, without change the locomotives, only staff.