CORE OUTPUTS OF THE PROJECT FLAVIA - ACTION PLANS FOR LOGISTICS CHAINS TO REMOVE BOTTLENECKS

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Summary: This article belongs to publishing of the European project FLAVIA. This project is now in last, implementation phase where one of the core outputs are action plans for logistic chains. This article summarizes data and output for Czech Republic in the field of infrastructure, terminals and legislation.

Key words: logistic chain, FLAVIA, action plan.

INTRODUCTION

The project FLAVIA is coming to the last phase of solve. One of the core outputs of the project are Action plans for logistic chains which will support the decision makers to use railway of inland waterway transport. The solution has to be found along the corridor and suitable for most of FLAVIA countries. In this article are data and results for Czech Republic which were collected by University of Pardubice.

The main question for Action plan "Missing terminals" was: How can be the capacity and attractiveness of terminals as interfaces between intermodal transport modes increased? To achieve these goals it was necessary to follow the following steps. First an analysis of current terminals was carried out. The compilation of all countries will show the target for future effort to eliminate terminal capacity problems. Basic terminal data were described in FLAVIA report 3.5.4 (Missing terminals).

The Action plan „Legislation" has the first step in the transport and trade regulation needs on EU and national level which are identified and ranked. In the second step all regulatory need have to be specified, justified and commented. Involved partners should use the reports 3.2.4 "Trade barriers", 3.5.8 "Licenses and legislation" and partly 3.5.9 "Interoperability".

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1. EXECUTIVE SUMMARY

The main goal of Actions 4.2.1, 4.2.2 and 4.2.3 was to identify measures to remove infrastructure bottlenecks on FLAVIA corridor. In the first step the bottlenecks for railway, water and route transport in each country were identified and described. All bottlenecks were also marked in country charts. After this the proper measures to overcome the bottlenecks were compiled and evaluated. The partners from all FLAVIA countries also express in graphic form the expensiveness and time duration of measure implementation. From all measures per country the TOP 5 measures were chosen. For each from these TOP 5 measures the deeper details were specified. The TOP 5 measures from all countries were summarized in one table and evaluated and ranked.

Measures that are related to TEN-T network in railway transport were identified as the most important measures for bottlenecks removing. In Austria it is extension of track to two between Linz and Summerau with connection to Czech Republic. Both countries put this track to TOP 5 measures. In Czech Republic the parallel tracks has been evaluated as most important in railway transport. These tracks are parallel to railway connection from German border (Děčín) to Austria and Slovakia borders (Břeclav). For the FLAVIA corridor it is very important to remove bottlenecks along the IVth TEN-T corridor. Slovakia is due to its geographical location tangential to the main flows of the FLAVIA corridor. Nevertheless the bottlenecks in direction to Slovak – Ukraine border should be removed. Also the connection from west part of Slovakia (Zilina region) to Austria (via Bratislava) is very important for rail freight transport. For all countries the implementation of ETCS L2 in railway infrastructure remains very important despite it was not mentioned by partners.

In previous actions of the project FLAVIA some bottlenecks were discovered on infrastructure, in terminal development as well in legislation. The most important passage of each sub-action is an “Action Plan”, how to remove those bottlenecks along the corridor in cooperation of the FLAVIA countries. That will have a synergic and multiplier effect on transport market and logistics chains. The conclusions of all three sub-actions will be in accordance with the goals of the Central Europe Programme.

2. RESULTS FOR CZECH REPUBLIC

All countries were responsible for data and outputs from own countries. Here are presented just data about Czech Republic because each document has more than 80 pages. Each country identified weak points and measured them according to common rules. Those measures were than described and ranked.

2.1 Identification of measures

It is able to be mentioned that the bottlenecks in the Czech Republic are connected with high usage of capacity of railway lines, these bottlenecks are able to be seen as “linear” bottlenecks. In general point of view the solution is not able to be seen in reconstruction of the lines, because most of them was been reconstructed in last years (in the frame of creating of so called corridors). Some constructions are not able to be changed, because it has been financed by support of the European Union and there is a time period in what it is not possible

to change reconstructed constructions. The solution is seen in the application of modern train controlling systems (ETCS) and in fulfilling of technical specifications of interoperability (TSI).

Second possible group of bottlenecks is connected to different way and rules of railway operation in the Czech Republic and in neighboring states, especially in Austria and Germany. Some problems are also able to be occurred in the field of using of different electric power-supply systems.

Source: Authors

Fig. 1 - Map of the bottlenecks – Czech Republic

Mentioned bottlenecks are graphically represented by the map above with this explanation due to limited space by individual points.

BR1: capacity usage over 90 % (more concrete information was not available from the Railway Infrastructure Administration, state organization (see part 3 of the FLAVIA project). Mentioned railway line form Děčín to Břeclav is after reconstruction and it can be not presupposed that the capacity will be increased in the way of reconstructions or similar construction works in short time horizon (with exception of ETCS application).

BR2: capacity usage over 90 % (more concrete information was not available from the Railway Infrastructure Administration, state organization (see part 3 of the FLAVIA project). Mentioned railway line form Bohumín (PL border) to Břeclav is after reconstruction and it can be not presupposed that the capacity will be increased in the way of reconstructions or similar construction works in short time horizon (with exception of ETCS and remote control application – in progress).

BR3: capacity usage over 90 % (more concrete information was not available from the Railway Infrastructure Administration, state organization (see part 3 of the FLAVIA project at flavia-online.de). Mentioned railway line is located in complicated terrain it is not possible to presuppose that a serious modernization can be realized there. For that reason, utilizing of substituting line Praha – Veselí nad Lužnicí is proposed next to application of the ETCS L2 safety system.

BR4: different transport rules on both sides of border especially with Austria and Germany. Solution is seen in following TSI (technical specifications of interoperability) as well as in application of ETCS system.

BR5: There are occurred changings of electric power supply system on Czech and Austrian borders (BR5a) to AC 15 kV 16.7 Hz system as well as between AC 25 kV 50 Hz and DC 3 kV in the frame of the Czech railway network (BR5b). Most of these changes are realized between stations in line segments (with exception of stations Kutná Hora hl.n. and Nedakonice) and multi-way powered vehicles must be used due to this reason. In operation it is not a problem, but using of multi-powered vehicles will be essential.

BW1: problematic state of water levels causing limitation of cruises on the river Elbe in the area between cities of Děčín and Ústí nad Labem near German border.

BW2: Location of the Czech Republic on the watershed between Elbe, Oder and Danube is causing not so suitable natural conditions for inland waterway transport. These rivers are not connected together in spite of the fact, that an artificial waterway is planned there for a long time.

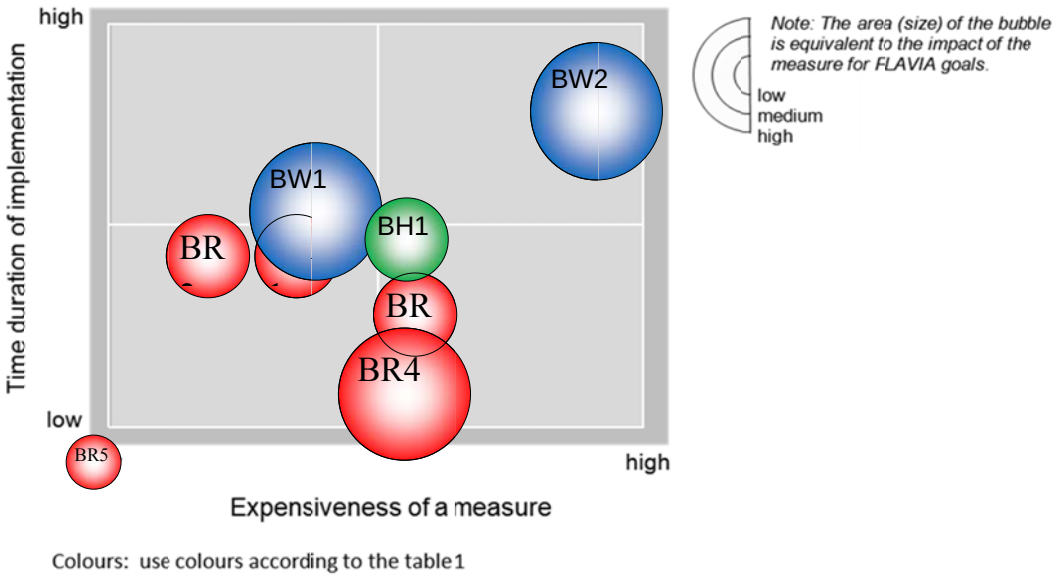
BH1: The main Czech highway D1 from Prague to Brno is highly utilized from the capacity point of view. The traffic intensity is about 35,000 vehicles/24 hours in the middle part of highway (near city of Jihlava).

Second parallel motorway connection between Prague and northern Moravia by highway No. D11 and motorway No. R35 is still not completed. These connections are important for possible interconnection of Danube, Oder and Elbe by road transport.

2.2 Ranking of proposed measures

Relations between there features by each individual measures are represented by following figure. Impact of the most of measures for FLAVIA project is considered as medium, because it is usually not about allowing some new possibilities, but about ensuring of some things in easier way. High impact is seen by application of unified system of train controlling.

In the case of waterway transport removing of both measures will importantly increase utilitability of inland waterway transport in the Czech Republic.



Source: Authors

Fig. 2 - Visualization of the measure main dimensions – Czech Republic

2.3 Terminal capacity

On the territory of the Czech Republic are located 10 terminals. Question is: How the capacity and attractiveness of terminals as interfaces between intermodal transport modes can be increased? In the figure 3 are capacity problems in Czech terminals.

Type of problem	TP no.	Number of terminals concerned (in %)	Importance regarding capacity (5 very high to 1 = very low)	Relative ranking (multiplication of column [2] with [3] divided by 500 (maximum))
[1]		[2]	[3]	[4]
Lack of handling equipment	1	50	4	0,40
Too small area for storage	2	20	4	0,16
Insufficient ultimate load of the foundation	3	20	3	0,12
Too small area for transshipment	4	30	3	0,18
No free space for future terminal expansion	5	50	2	0,20
Insufficient capacity of road connection	6	10	3	0,06
Insufficient capacity of railway connection	7	10	4	0,08
Too short rail tracks	8	60	4	0,48
Insufficient capacity of inland waterway connection (if any)	9	60	3	0,36
Opening hours too short	10	40	3	0,24
Legal restrictions of local authorities (working times, noise, pollutions, etc.)	11	25	5	0,25

Source: Authors

Fig. 3 – Terminal capacity problems – Czech Republic

In the table 3 is presented the analysis of current terminals in the Czech Republic. It's clear that the most important capacity problems are lack of handling equipment and too short rail tracks.

Intermodal terminals have to be also attractive. In the figure 4are presented services which are missing in Czech terminals.

Category	Missing service	% of terminal with missing service	cost for implementing / offering of service	Added value of service	Expected interest of customers
Warehousing and completion of shipment	short-time storage of loaded ITU (up to 5 days), long-time storage of loaded ITU (over 5 days), empty ITU storage	10	small	saving storage cost	high
Maintenance and repair	Cleaning, inspection of ITU	30	medium	outsourcing	high
Open & non-discriminatory access	open non-stop	40	medium	greater flexibility	medium
Customer comfort	rent of trucks, rent of containers (swap bodies), accommodation of transport squads, banking services	50	medium	outsourcing	medium
Administration	declaration service, forwarding services	30	medium	simplify the process	medium

Source: Authors

Fig. 4 – Missing services in terminals – Czech Republic

2.4 Legislation

The missing legislation was divided for the missing rules on *EU level* and on *National level*. All regulations were put into figure 5 and figure 6.

Field of regulation	Type of transport	Regulatory needs	Ranking
Technical regulation	Rail	TR1: Application ETCS and TSI	2
		TR2: TSI standards for vehicles	2
	Inland waterway	TW1: Unification of records of vessels in the world	1
		TW2: Loading and unloading of ships controlled by the computer	2
	Road transport	TH1: Technical eligibility of trucks	3
		TH2: Pass ability of vehicles in limited areas (bridges, tunnels), etc.	4
		TH3: Marking of vehicles	2
Licenses	Rail	LR1: License to operate rail transport	2
		LR2: Connection to public logistics centers (PLC)	4
	Inland waterway	LW1: High competitiveness	2
	Road transport	LH1: Professional eligibility - demonstrating	4
		LH2: Driving licenses	2
Condition for access to market	Rail	AR1: Completion of the railway market liberalization	2
	Road transport	AH1: Concessions and unification	3
Environment and sustainable development	Rail	ER1: Investments in the modernization of technical equipment (locomotives)	1
		ER2: Certification of locomotives from safety	2
		ER3: Consolidation of emergency procedures	2
	Inland waterway	EW1: Externalities in transport	2
	Road transport	EH1: Dealing with traffic accidents, spills of dangerous goods	2
		EH2: Driving along the paid sections (eg non-use fees for highways)	4
Other	Rail	OR1: Consolidation of medical	2
		OR2: Lack of communication between of operators - duties of transmitting information	2
	Road transport	OH1: Cargo insurance on / in vehicles	2
		OH2: Health eligibility	2

Source: Authors

Fig. 5 – List of missing or unsuitable transport regulation in the EU – Czech Republic point of view

Field of regulation	Type of transport	Regulatory needs	Ranking
Technical regulation	Rail	TR1: Inserting rules into ETCS RIA	2
		TR2: Consistent transposition of European rules	3
	Road transport	TH1: Vehicle access restrictions in terms of transport and technical	2
Licenses	Rail	LR1: The issue of proof of professional competence	2
	Road transport	LH1: Terms of licensing group C	4
Condition for access to market	Rail	AR1: High competitiveness	2
Environment and sustainable development	Rail	ER1: Greater control for the transport of dangerous goods (RID)	3
	Road transport	EH1: Current traffic information	3
		EH2: Driving along the paid sections (eg non-use fees for roads)	4
		EH3: Lack of parking and parking areas	4
		EH4: Fixation of the load	2
		EH5: Tracking vehicles designed to transport ADR	2
Other	Rail	OR1: Unification of the conditions of insurance cargo insurance	2
	Inland waterway	OW1: Unification of the conditions of insurance cargo insurance	2
	Road transport	OH1: Higher penalties for gross violation of the Law on road traffic	1

Source: Authors

Fig. 6 – List of missing or unsuitable transport regulation in Czech Republic

CONCLUSION

The development of transport in the world is characterized by a maximum effort to increase the speed, reliability and accuracy of delivery of freight, with the help of modern technical equipment. Less transportation work remains on other mode of transport (air, water, and pipeline). In Europe is the combined transport inseparable element of transport policy mainly due to the reduction of negative impacts of road transport on the environment, energy and fuel consumption, maintenance costs of highways and roads on land use and increase road safety.

The development of rail infrastructure must be focused primarily on the modernization of corridors increasing line speed, adjustment stops and stations and upgrading of the track, traction lines and safety equipment.

The investments to modernization and innovation of fleet are necessary, for example construction of vessel and adaptation of standard conditions of rivers. Innovation can take place through the construction of new vessels (long term) and modification of existing vessels (short and medium term). Also the investments to modernization and reconstruction of road infrastructure, using quality materials with connection on ports and intermodal terminals are necessary too. The possibility financing can be through state aid and EU funds.

There are still many points, where is European legislation weak, but the most burning issue is in National legislation and its harmonization. Each country developed their national legislation independently for a long time and now it is really furcated. Therefore it will take a long time to harmonize all national rules into one level. We can take the example of air transport, but we have to bear in mind that also in air transport it was a long term process which started at a much earlier stage of development.

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