D.T 2.5.11 – ACTION PLAN ON ECO-SOLUTIONS DEPLOYMENT – ÚSTI REGION

Eco-innovation solutions

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Executive summary

This document is elaborated as the deliverable DT2.5.11 of the project TalkNET (Transport and Logistics Stakeholders Network).The actions, presented in this document are the answers to the problems, needs and challenges identified within the first step of the project activities, that is to say the analysis phase of the TalkNET nodes' regions, both for Multimodality and Eco-innovation as the two main fields of action of the whole project.

The TalkNET project has set up five thematic clusters, corresponding to the 5 sub – topics of Multimodality and and ECO-innovation, presented in the table below.

1	LAST MILE CONNECTIONS OF MULTIMODAL NODES	MULTIMODALITY
2	NODE MANAGEMENT OPTIMIZATION	
3	ASSESSMENT OF MULTIMODAL SERVICES	
4	ALTERNATIVE FUELS DEPLOYMENT	ECO-INNOVATION
5	ENERGY EFFICIENCY SOLUTIONS	

Table 1 Five sub – topics of the TalkNET project Source: TalkNET project

Existing possibilities to reduce the negative effects of freight transport are in the widespread use of alternative fuels and energy efficient solutions in freight transport itself (road, rail and waterborne transport) and in the implementation of energy efficient solutions through modern energy-saving technologies for transhipment and storage of goods at transport hubs. The greatest opportunity to reduce the impact of freight transport across the continent is to transfer part of the transported cargo from road to rail or waterway. The European Commission responded to this fact by its "White Paper".

But the basic objectives set by the European Commission in the White Paper of 30% of long-distance transport over distances of more than 300 km by rail will require a number of railway and also water infrastructure measures to meet them. As the Czech Republic does not yet have the infrastructure to operate alternative-powered trucks (gas filling stations, truck charging stations), nor are alternative-powered trucks available, possible practical measures

in this area are considerably limited. It should be noted here that the Operational Program Transport in the Czech Republic in the period 2014 - 2020, which is financed from two funds, the European Regional Development Fund (ERDF) and the Cohesion Fund (CF) supports infrastructures for alternative fuels. The challenges of this program relate to: support for the development of the infrastructure of hydrogen filling stations, support for the development of the supplementary network of charging stations, support for the development of the infrastructure of CNG filling stations and LNG filling stations. This program also supports the development of combined transport by supporting the acquisition of combined transport units. The development of alternative fuel infrastructure in the Czech Republic, with the exception of urban public transport, is in its infancy. The main measures in the field of eco-innovation are therefore focused on the promotion of "combined transport", the expansion of which is essential to reduce the negative impact of freight transport on the environment.

This document presents the action plan on ecological solutions in freight transport in the Ústí Region, one of the Czech Republic regions in the sub – topic “ECO-INNOVATION”.

The alternative to the still prevalent road freight transport is combined transport, where a significant part of the transport is provided by rail or by inland waterway transport. In recent years, in the Czech Republic, the trend in the development of combined transport has been clear: the number of semi-trailers and containers transported has steadily increased and it is clear that combined transport is the future. But some of the problems mentioned below hinder the further development of a combined transport.

- limited availability of the Elbe waterway for water transport of cargoes form part of a year
- insufficient throughput of the railway network
- very high load on the main railway corridors and insufficient throughput of diversion lines during construction measures on the track
- practically no alternative route to the main railway corridor and any lockout or emergency will result in network collapse
- lack of investment in new lines and modernization of lines
- missing public terminals and transhipment terminals (the vast majority of terminals are owned by private companies and the prices for transhipment at Czech private terminals are 2 to 2.5 times higher than for example in neighbouring Germany)

The largest part of the investment is needed in the area of modernization of rail and water transport infrastructure, because transport capacities by water and rail transport are now not

ready to take over another significant part of the cargo transport, which takes place by road. Since this infrastructure is the property of the Czech Republic and the necessary investments are huge, projects for infrastructure from the state budget of the Czech Republic are gradually being prepared and implemented. The situation in long-distance freight transport in the Ústí Region follows the situation in the whole Czech Republic. The implementation of the infrastructure projects will increase the capacity of the main railway routes and the Elbe waterway. Important projects linked to the Ústí Region include several projects, described in the TalkNET project document "D.T 1.5.11 – Action plan on multimodal nodes efficiency and connections – ÚSTI REGION".

On the figure below, there is displayed the positive trend in goods transport by rail loaded in intermodal trailers:

Fig.2 Road semi-trailers transported from and to the Czech Republic by rail Source: CZSO

Problems preventing the combined transportation development:

Although statistics on the transport of intermodal semi-trailers by rail have shown very positive figures over the past decade, satisfaction with the quality of this type of transport is definitely not appropriate. There are a number of Czech road hauliers who were willing to invest their money in intermodal transport units after 2010 in the hope of benefiting from continental combined transport and rail transport at a high level of quality. However, many of them, after gaining practical experience in real operation of intermodal trains, had to return to the road based on their customers' requirements - mainly because of repeated

failures in service reliability. According to the Bohemiakombi, the combined transport operator, the main causes of unsatisfactory operational reliability are the relatively frequent abnormalities in the rail infrastructure with high impacts on train delays, staff problems in the train driver profession, very high load on the main railway corridors and insufficient diversion tracks. Significant operational problems arise in connection between the railway infrastructures of individual EU countries and in the necessary transfer of trains between railway carriers.

The vast majority of exports and imports from the Czech Republic are carried out westward to the EU and beyond, through Saxony and Bavaria. However, there is only one single electrified double-track capacity railway line across the Czech-German border, which is approaching its parameters the conditions necessary for the operation of efficient rail freight transport, which is therefore very intensively used. With its high utilization at levels between 85 - 105%, significant operational problems with very adverse impacts on the quality and reliability of rail freight transport arise due to any extraordinary operation in the Děčín - Dresden section or during necessary construction measures on the track. Given the current impossibility of diverting trains on another line, this is a fundamental problem that logically discourages all potential customers from switching from road to rail.

In the Czech Republic, unlike, for example, Germany, Austria or Italy, there is a lack of public combined transport terminals with guaranteed non-discriminatory access for all rail carriers, train operators and road carriers. The only exception in this respect was the ČD DUSS terminal in Lovosice, which was established in 2008 and is operated on a public railway transport infrastructure. The negative result of this situation is inadequately high prices for transhipments in Czech private terminals, which are 2 to 2.5 times higher than the prices for transhipments e.g. in neighbouring Germany. This is, of course, an obstacle that significantly hinders the more dynamic development of combined transport on the Czech rail network, which is demanded by politicians and the public.

If, in practice, the fundamental objectives set by the European Commission are to be achieved by 2030, a number of measures will have to be implemented on the railway infrastructure to increase the capacity of the main railway routes. Important projects linked to the Ústí Region include several important projects, which are described at the TalkNET project document “D.T 1.5.11 – Action plan on multimodal nodes efficiency and connections – ÚSTI REGION”.

It follows from the above that the main obstacles to the further development of combined transport in the Czech Republic are in the area of infrastructure, both railway and waterway.

The development of this infrastructure is handled by the Czech Government. Also, multimodal freight transport terminals in order to increase the efficiency of their services and performance are ready to implement the investment measures. This document presents the "Action Plan to improve multimodal nodes efficiency and connections – Ústí Region" that will focus on the development of multimodal terminal optimization, one of the sub-topics dealt with the TalkNET project in the field of ECO-INNOVATION.

Cluster 5 – Energy efficiency solutions: overview of needs and good practices in cooperation with stakeholders to develop the action plan

Rail freight transport in the Czech Republic has shown a consistently positive trend over the last 10 years, and forecasts for the coming years also expect further growth in transport volumes, which can only be limited by insufficient rail transport capacity. The situation in river water transport is somewhat complicated due to the low water levels in the river Elbe, which is crucial for river freight transport in the Czech Republic, and therefore river transport is stagnating.

In terms of eco - innovation, the Czech Republic and entities that are part of the transport chain (terminals, river ports, operators, carriers, etc.) are gradually implementing investment projects leading to a reduction in the negative effects of transport on the state of the environment. It is a long-term, investment-intensive process, limited by the investment funds available. Despite the provided support from public sources, both from the EU and from sources in the Czech Republic, the development in the field of ECO - INNOVATION is still below expectations.

The use of electricity, LPG or CNG in transport is just beginning to develop. So far, the use of these alternative sources is limited to public transport and passenger cars. Due to the lack of customers (alternative propulsion trucks), investors in LPG or CNG filling stations for trucks are hesitant to invest. It is a kind of "vicious circle". The development of alternative fuels depends on private companies, for which, of course, costs and return on investment are decisive.

There are important inland ports Mělník, Lovosice, Ústí nad Labem and Děčín and multimodal terminals ČD-DUSS terminal Lovosice, Metrans terminal Ústí nad Labem, M.I.T. Mělník,

operators MAERSK and RCO ČSKD, UPLINE terminal Obrnice at the Ústí Region and its close proximity.

The aim of these multimodal terminals is to support their performance and further development. To this end, some future actions have been developed to improve access to the terminals by road, rail or water, and to increase their capacity and speed of transhipment. The document also describes other necessary actions in the future that will have a significant impact on the amount of freight transported off the road network, rail and water.

The analysis of the "Report on Multimodal Nodes in the Ústí Region" on the Eco - Solutions Deployment showed the situation in the key transport hubs of the Ústí Region from the point of view of eco - innovations carried out in the past. The results of the analysis are summarized in the following table.

Node	Děčín	Ústí nad Labem	Lovosice DUSS Terminal	Mělník
Eco-Projects	Only Small improvements - e.g. use of LNG - driven forklifts. organizational measures- monitoring of fuel consumption of container manipulators.	The main handling of goods is carried out by cranes with electric drive. Port of Usti nad Labem operates 5 photovoltaic power plants and produces "clean energy".	Only Small improvements - e.g. use of LNG - driven forklifts. organizational measures- monitoring of fuel consumption of container manipulators	The main handling of goods is carried out by cranes with electric drive. Port of Mělník operates a photovoltaic power plant and produces "clean energy".
Alternative Fuel Deployment	Use of electrically operated crane systems	Use of electrically operated crane systems;	Use of electrically operated crane systems, LNG - driven forklifts	Use of electrically operated crane systems Photovoltaic power station partial source of energy.
Energy	No data	Photovoltaic power	No data	In 2010, projects

Efficiency Solutions		station partial source of energy. Transition from discharge lamps to LEDs.		"Remodeling TR31 - Low Emission Propulsion Units" and "Removal of TR436 - Acquisition of Low Emission Units" were completed.

The above mentioned analysis has foreseen the assessment of the multimodal chain in which ports and logistics nodes operate, to understand how is the state of art (AS-IS analysis) and what are the methods to improve the situation (TO-BE) that will be performed in the following stages of the TalkNET implementation. The tool chosen to achieve these aims is the S.W.O.T. analysis.

All activities mentioned in this Action Plan are of interest to relevant stakeholders, both private and public, and these interests need to be taken into account.

As part of its port development framework, the České přístavy a.s. is modernising the container terminal, which is the part of the Mělník port. Now there are two tenants in the Mělník port, the companies MAERSK LINE and Rail Cargo Operator CSKD s.r.o., which operate container transport by rail. The port is operated by the owner of the infrastructure, the České přístavy a.s.

Action: Extension of handling area, tracks length and environmental measures in the Mělník container terminal

SWOT ANALYSIS - RESULTS:

STRENGTHS	WEAKNESSES
Competitive position of the terminal at the Czech Republic and Central Europe area.	Proximity to populated areas - complaints about noise at night

Trimodality of the terminal on the Elbe River Excellent road and railway accessibility to main railway and road network. Richness and industrial character of the port and terminal hinterland Port equipped with heavy static crane with a lifting capacity of 300 tons Decentralised energy production from renewable sources	Frequent unreliability of the Elbe level on the waterway to the BRD and seaports prevents container shipping Insufficient track length
OPPORTUNITIES	THREATS
Additional traffic on the railway side Environmental aspects of water transport as an economic and ecologic alternative to other transport modes New investments in terminal's facilities: construction of new noise barriers, using less noisy locomotives	Additional pressure on port and terminal operations and impacts on their efficiency Growth of railway traffic flow and need to upgrade the external railway network Increase competition by other terminals in close proximity (Prague, Central Bohemia

New planned investment in order to increase the intermodal terminal capacity: expanding the handling area and increasing the length of the track in the terminal to 740 m EU financial instruments for upgrading the infrastructure	Region, Ústí Region)

The objective of this action is to extend the handling and storing area of the terminal and build a new 740 m track, which simplifies the handling of container trains. At the same time, additional anti-noise measures will be implemented. The multimodal container terminal will have the following area requirements:

berth, handling and storage areas

rail tracks and ancillary facilities

Particular focus should be given on the work and cargo flows inside the areas, on the relations between the operators activities and their link with the outside, in order to achieve the best transport performance in line with the market requirements (e.g. delivering and forwarding time) and to optimize the available space.

This action will not be followed by a pilot action within TalkNET project, but it will have the following funds leverage foreseen after the project end:

Extention of the handling area and new track: € 7 400 000

5.1 Extension of handling area, tracks length and environmental measures in the Mělník container terminal

In order to respond new logistic needs in accordance with ecology standards, the České přístavy a.s. is planning for a new part of the container terminal in Mělník. The last prepared action is the acquisition of 2 rail gantry cranes with electric drive. The aim of the project is the acquisition of 2 rail gantry cranes with electric drive for the Mělník terminal. The cranes will enable fast, safe, ecological and efficient reloading of transport units in the newly built

combine transport transhipment depot with open access. Part of the project is also the acquisition of a camera and integrated information system. The implementation of the project will enable the commissioning of a new combine transport transhipment depot with a guarantee of open access at a time of significantly growing demand for handling.

The Mělník Public Port is the largest port in the Czech Republic, occupying approximately 50 hectares. There are two container terminals that are rented by private companies. Several hundred containers are reloaded in the port every day and several freight trains and dozens of trucks arrive here. In 2020, the last phase of the modernization of the port is to be carried out, with the extension of the handling area and the construction of new tracks to which part of the train handling will be moved. The project also includes the construction of a noise barrier and fixed rail for electric gantry cranes.

The following actions to increase the intermodal terminal capacity will be carried out:

- expanding the handling and storage area
- increasing the length of the track in the terminal to 740 m
- building a new noise barrier of the length 120 m and a fixed rail for electric gantry cranes.

By the end of 2020, the modernization of the port should be completed, including the final stage of the construction of the handling area and the new track, where part of the train handling will be moved. Completing the modifications will allow trains to go deeper into the terminal and further away from the city. In addition, it will not be necessary to close the level crossing several times for handling.

5.2 Main challenges tackled

The Mělník container terminal should increase its capacity in response to increasing demand by increasing the container handling and storage area and the length of three tracks in order to reduce the amount of train handlings. At the same time, it is necessary to ensure safe compliance with environmental limits, lower the use of a diesel fuel and especially noise levels in the surrounding buildings. The container terminal will be able to improve the logistic chain performance thanks to reduction of turn-around time and at the same time to introduce important eco – innovations.

5.3 Results to be achieved

The Mělník container terminal has made a number of investments in recent years to increase the capacity and efficiency of the terminal. The planned investment in 2020 will achieve the following results:

- increasing its multimodal efficiency

- increasing its logistic efficiency

- ensuring the protection of the environment against noise from terminal operations and lower the diesel fuel consumption

The implementation of the project will increase the productivity of the terminal and at the same time there will be an important eco - innovation.

From the point of view of eco-innovation, the most important results are:

- Construction of fixed crane tracks for electric Gant cranes, which will be used for loading and unloading goods in the terminal instead of diesel-powered loaders

- Extension of the track length to 740 m, which will reduce the number of necessary manipulations with trains in the terminal. This will reduce the diesel consumption of shunting locomotives and reduce the diesel consumption of lorries waiting in front of the port barriers when handling trains.

- Construction of noise barriers that will lead to a reduction of noise levels near the terminal

- New lighting with energy saving lamps.

5.4 Tasks to be performed

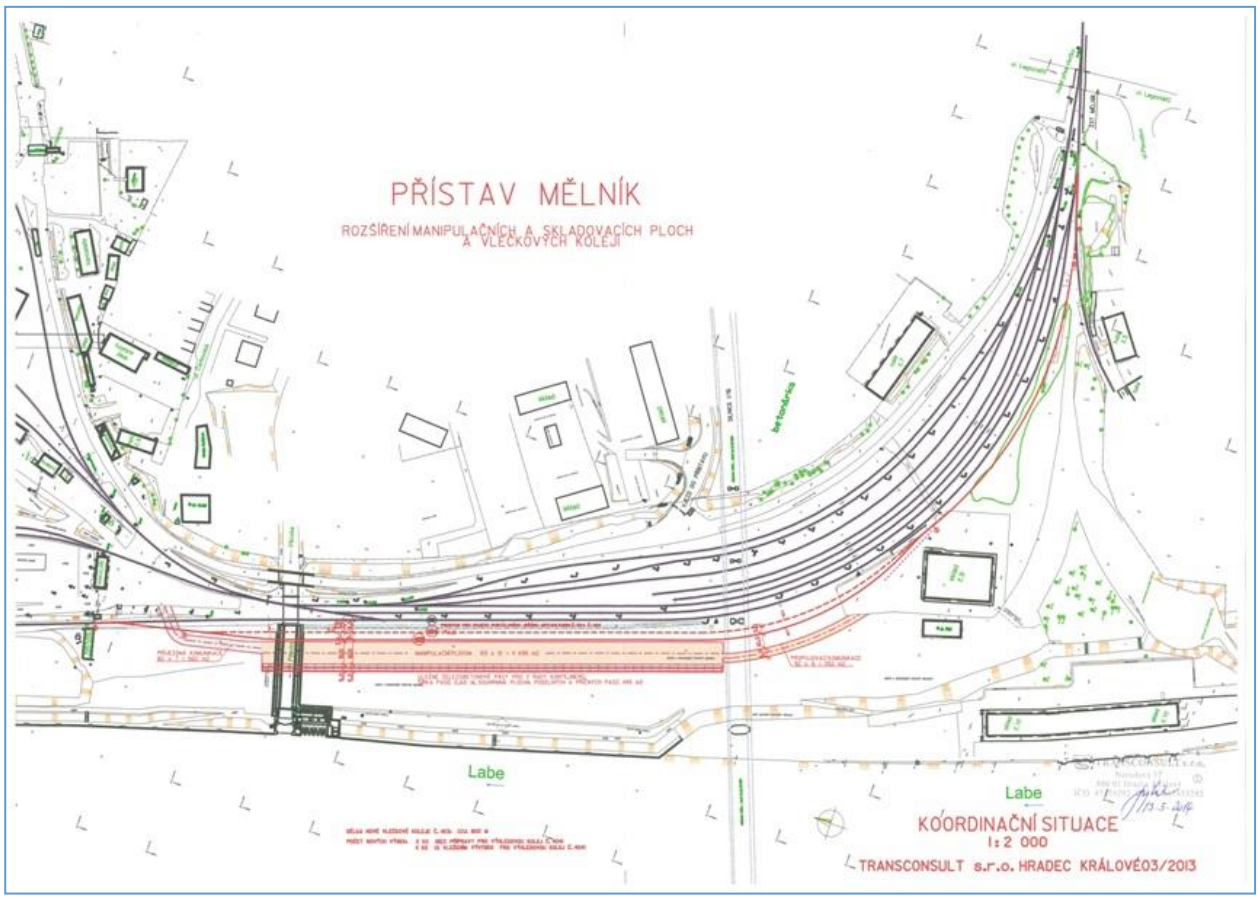
Main tasks to be performed to extend the handling area, tracks length and made environmental measures in the Mělník container terminal are the following:

- extension of three siding tracks

- completion of storage and handling areas

- drainage, lighting and construction of fixed crane tracks for gantry cranes with electric drive

The layout A shows the construction situation inside the terminal:



Layout A

5.5 Key actors

Stakeholder	Level of involvement	Relevance of participation
České přístavy, JSC	High	High
Two terminal operators	High	Medium
Railway operators	High	High
Ministry of transportation of the Czech Republic	High	High

Local public authorities	High	Medium

5.6 Timeline and financial sources

Action	2019	2020	2021	2022	2023	2024	2025
Extension of handling area, tracks length and environmental measures							

Financial forecast:

Completion of the container terminal: € 7 600 000

5.7 Expected results

The completed terminal, which would have extended area for handling and storage of containers, new rails with sufficiently long pull-out track, a noise barrier and fixed crane tracks for gantry cranes with electric drive, would be able to handle more containers. Operations at the terminal will be more environmentally friendly after the project realization thanks to the use of modern electric cranes for transhipment of goods, reduction of train handlings, reduction of road vehicles standing at railway crossings in the port when handling trains and improvement of terminal noise parameters.The port of Mělník is the largest in the Czech Republic. It is spread over more than 50 hectares on the right bank of the Elbe River, it is open all year round and is designed mainly for transhipment of goods between water, road and rail transport. In particular, agricultural products, building materials, substrates, iron, chemical products, individual packages or investment units flow through the port. It also serves as a stand for vessels and serves as a flood protection function in two port pools. It includes two container terminals. Hundreds of containers are reloaded every day in the port, where several freight trains and dozens of trucks arrive. The facility will serve the Central and Eastern Europe market which implies that intermodal rail freight services will be a key element of the overall offer.

The purpose of the Mělník container terminal completion is:

- increasing the capacity of shipment of import and export containers via river, road and rail
- simplified handling of trains / siding operation optimization
- ensure environmental standards when operating the terminal
- simplified shipment of import/export container loads to/from local destinations

5.8 References

- TalkNET - D.T 1.5.11 – Action plan on multimodal nodes efficiency and connections – ÚSTI REGION

- Intermodal terminal Melnik (Kontejnerový terminál Mělník), phase 2. a 3., project No. 2015-CZ-TM-0406-W

- Operační program doprava