

# TEMPLATE

## Output factsheet: Tools

Version 1

Project index number and acronym	CE1044 TalkNET
Lead partner	North Adriatic Sea Port Authority
Output number and title	O.T2.3.1 Training pathways ECO-innovation: training curriculum alternative fuel/energy efficiency
Responsible partner (PP name and number)	PP7 Rail Cargo Hungary and PP13 Lokomotion
Project website	<a href="https://www.interreg-central.eu/Content.Node/TalkNET.html">https://www.interreg-central.eu/Content.Node/TalkNET.html</a>
Delivery date	April 2019 (last version)

### Summary description of the key features of the tool (developed and/or implemented)

The energy efficient train transportation is a priority task for the railway undertakings RCH and Locomotion because the fee of consumed electrical energy also increases the cost of transportation. Companies are eager to rationalize their costs, to increase competitiveness. The question of energy saving achieved during train transportation depends directly on the handling of the locomotive, namely the proper driving of the train.

Currently, eco-driving program is totally missing in the official, accredited training programs in Hungary.

The training pathway elaborated during the project has two parts: a theoretic foundation and exercise on the simulator.

The aim of the theory part is to deepen and enhance the locomotive drivers' knowledge related to energy-efficiency; during which the instructor takes the most important factors having an impact on traction into account (quality and geographic conditions of the railway track, weather conditions, parameters of the train to be forwarded, traffic management, schedule and speed); demonstrating the scientific explanations with numerous practical examples.

We lay particular emphasis on exercises with the simulator during this training. This helps to implement the gained theoretic knowledge of the locomotive drivers into practice. This way the drivers can realize the significance of their driving style, their impact on energy consumption (aha-experience) and the correct driving method can be imprinted by means of simulator exercises.

We suggest getting a feedback at the end of the training: a written questionnaire from the participants about accepting and understanding the goals of this training, about the efficiency of the applied methods as well as other remarks and suggestions regarding the training.

RCH and Lokomotion have the same internal needs and market pressure in energy efficient driving of their locomotive drivers. Lokomotion drivers have to be educated to energy efficient driving of 3 countries (Germany, Austria and Northern Italy).

The content is included in the theoretical and practical part of basic and the advanced education programs of Lokomotion drivers' school, which is open to all interested parties of railway undertakings and institutions across EU and neighboring countries. Lokomotion has a partnership with the local chamber of commerce to bring this program in into industrial training partners.

### NUTS region(s) where the tool has been developed and/or implemented (relevant NUTS level)

The NUTS involved at regional level (level 1/2) are the following:

- Közép-Magyarország (Hungary)
- Bavaria, Baden-Württemberg, Nordrhein-Westfalen, Hessen, Niedersachsen, Rheinland-Pfalz, Bremen (Germany) - Oberösterreich, Wien, Niederösterreich, Burgenland, Salzburg, Tirol, Kärnten, Steiermark (Austria) - Aldo Adige, Trentino, Friuli Venezia, (Italy)

### Expected impact and benefits of the tool for the concerned territories and target groups

As a consequence of appropriate training the following advantages are expected for the railway undertakings RCH and Lokomotion:

- The railway company will benefit from efficient train driving education on short term due as significant cost reduction can be achieved thanks to the proper driving behavior.
- The successful eco-driving program results in energy conscious driving behavior which can become a general habit at the company. This also means that by time the majority of the personnel will feel it a natural behavior and thus propagate this among drivers.
- The energy conscious behavior of train drivers and the so achieved environment friendliness will clearly distinguish the railway company in this market. Hence, the marketing effect is also significant
- Upgrade of the job profile to gain more applicants for the job of driving locomotives

## Sustainability of the tool and its transferability to other territories and stakeholders

The training regarding energy-efficient locomotive driving means a whole new perspective as well, to be applied continuously by the locomotive drivers in their daily work. In order to comprehend, respectively to identify oneself with the subject energy-efficient train driving it is essential at the beginning of the training to:

- introduce the subject thoroughly,
- demonstrate the final goal of the training („what do we want to achieve”),
- explain the benefit of the subject in detail, but understandable.

As continuing tasks there is a need of:

Periodical repetition of training in locomotive simulators and group competitions events to:

- Coached trains drivers from time to time to refresh the knowledge and attention to get a routine
- Regular meetings of traffic controllers and drivers “on the job” to promote cooperation and understanding:
- Permanent training of communication in German (as native Italian speaking driver)

The demands for locomotive driver training are basically similar at the companies concerned, as we are talking about railway undertakings with identical business activities.

Further achievements are:

- Strengthen the trains system in the modal shift against intermodal competitors (Road) due to more efficiency and also resulting economic effects; this gains indirect CO<sub>2</sub>-Emission reduction
- Direct CO<sub>2</sub>-Emission reduction due to reduction energy consumption by driving more efficient

Therefore this tool and methodology can be applied at any railway undertaking - e.g. from Locomotion’s train drivers school.

### Lessons learned from the development/implementation process of the tool and added value of transnational cooperation

Energy efficient driving is of significant importance: two identical trains running on the same route, could have a 40-50% difference in energy consumption, and half of the difference could be caused by non-appropriate driving style.

Based on international experience it can be stated, that education is one of the main components when we are talking about energy-efficiency improvements.

Furthermore eco-driving education could help the future implementation of driving supporting / advisory systems: loco drivers could get used to them more easily and their functions could be utilized more efficiently.

Esp. for mountain crossing downhill (with huge gradient) trains drives this program brings extra efficiency education for the involved train drivers, because recuperation by using modern locomotives brakes creates energy. So the driving efficient behaviors of the drivers up- and down-hill are different.

In case of the cross border-interoperable trains crossing steep Alpine regions in Germany -Austria - Italy/Slovenia/Hungary the education program can work very well across Europa due to similar types of locomotives.

### References to relevant deliverables and web-links

If applicable, pictures or images to be provided as annex

This output is strictly linked to

- D.T2.2.11 “Gap analysis on training needs”, that is the step before the preparation of O.T2.3.1, highlighting the needs of sustainable solutions in transport operations.
- D.T3.2.12/3.2.13 “Testing of training pathways for energy efficiency deployment in the rail sector”, that is the next step after the implementation of O.T2.3.1. It deals with the trainings that will be carried out on the basis of the training curriculum.
- ZDF Broadcast “Planet \_2” 30.06.2019 with Lokomotion “TalkNet” Freighttrain Wuppertal- Verona and statementst of various European Railway Experts <https://www.zdf.de/dokumentation/planet-e/planet-e-volle-fahrt-aufs-abstellgleis-100.html>
- Homepage of Lokomotion [www.lokomotion-rail.de](http://www.lokomotion-rail.de)

