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Working Party on Rail Transport

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Item 13 of the provisional agenda
Climate Change and Rail Transport

Energy efficiency in the railways: questionnaire

Note by the secretariat

Introduction and Mandate

At the seventy-seventh session of the Working Party on Rail Transport (SC.2) document ECE/TRANS/SC.2/2023/10 was presented. This document provided an initial assessment of potential energy saving measures for the sector and best practice solutions. The secretariat noted at the time that this was only initial work and that it would seek to send a questionnaire to delegates to gather further information on this with the aim of preparing a more detailed analysis. The Working Party asked that the secretariat proceed with this approach (ECE/TRANS/SC.2/243, paragraph 68). Based on initial comments received at the seventy-seventh session, the secretariat has prepared the questionnaire as set out in the annex. The Working Party may wish to review and consider the questionnaire set out below before it is sent to stakeholders in the new year.

Annex

Questionnaire

Part I: Energy Consumption in the ECE region

1) Please provide an estimate of the total annual amount of energy used by locomotives (excluding shunting ones).

a. Electricity:

b. Diesel fuel:

c. Other (biodiesel, hydrogen…), please specify:

2) Please provide an estimate of the AVERAGE energy consumption of the locomotives per passenger-kilometer and/or ton-kilometer (excluding shunting ones).

a. Passenger Transport

i. Electricity: /p-km

ii. Diesel fuel: /p-km

iii. Other (biodiesel, hydrogen…), please specify: /p-km

b. Freight Transport

i. Electricity: /t-km

ii. Diesel fuel: /t-km

iii. Other (biodiesel, hydrogen…), please specify: /t-km

3) Please provide an estimate of the total annual amount of energy used in rail stations and other infrastructures.

a. Electricity:

b. Other, please specify:

4) How much of the energy used is produced using renewable energy sources?

a. Percentage:

b. Total Amount:

Part II: Energy saving projects

1) Have you implemented projects to improve energy efficiency?

Yes ☐

No ☐

2) Which of the following were the targets of the projects?

a. Trains:

i. Traction locomotives ☐

ii. Shunting locomotives ☐

iii. Coaches

1. Passenger ☐

2. Freight ☐

iv. Other, please specify

3) Rail stations and offices

i. Lighting system ☐

ii. Heating and/or climate conditioning system ☐

iii. Other, please specify:

4) Please provide information on the energy-saving projects which have been implemented according to the following categories. When appropriate, please estimate the amount of energy saved.

A. Fleet, rail network and rail station capital investments

a. Replacing old rail vehicles ☐

(amount of energy saved – if available:)

b. Replacing diesel locomotives with electric ones, when possible, or dual/multi ones ☐

(amount of energy saved – if available:)

c. Using locomotives equipped with recovery braking systems ☐

(amount of energy saved – if available:)

d. Using locomotives equipped with anti-idling systems ☐

(amount of energy saved – if available:)

e. Using new shunting vehicles or energy-saving dual locomotives in freight terminals ☐

(amount of energy saved – if available:)

f. Installing driving-assistance technologies ☐

(amount of energy saved – if available:)

g. Renovating passenger-comfort appliances, such as lighting and air conditioning ☐

(amount of energy saved – if available:)

h. Installing sensors, timers, and energy-saving technologies. ☐

(amount of energy saved – if available:)

i. Installing appliances that use renewable energy ☐

(amount of energy saved – if available:)

j. Electrifying lines ☐

(amount of energy saved – if available:)

k. Installing high-voltage overhead lines ☐

(amount of energy saved – if available:)

l. Other, please specify

(amount of energy saved – if available:)

B. Energy saving actions

a. Planning routes with few stops ☐

(amount of energy saved – if available:)

b. Lowering the average and maximum speed and coasting ☐

(amount of energy saved – if available:)

c. Loading the trains more to plan fewer journeys ☐

(amount of energy saved – if available:)

d. Developing systems which save energy through aerodynamics and weight control ☐

(amount of energy saved – if available:)

e. Using the optimal power distribution for trains with more than one locomotive ☐

(amount of energy saved – if available:)

f. Reducing the working time of offices ☐

(amount of energy saved – if available:)

g. Optimizing the usage of auxiliary appliances in railway stations and in trains ☐

(amount of energy saved – if available:)

h. Training the workforce to consume less energy ☐

(amount of energy saved – if available:)

i. Providing information and suggestions to clients and passengers to consume less energy ☐

(amount of energy saved – if available:)

Please, where possible, provide documents or links to webpages which contain more information on the projects.

5) Do you have a system to monitor the energy consumption of rail vehicles?

Yes ☐

No ☐

6) Did you register improvements in energy efficiency resulting from the projects which you have implemented? Please quantify the total amount of energy saved.

a. Percentage:

i. Electricity:

ii. Diesel fuel:

iii. Other (biodiesel, hydrogen…), please specify:

b. Total Amount:

i. Electricity:

ii. Diesel fuel:

iii. Other (biodiesel, hydrogen…), please specify: .