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**Working Party on Rail Transport**

**Seventy-seventh session**

Geneva, 15-17 November 2023

Item 13 of the provisional agenda

**Climate Change and Rail Transport**

 Saving energy in Railway Transport

 Submitted by the secretariat

 Questionnaire

 First Part: Energy Consumption in the ECE region

1. Please provide an estimate of the total annual amount of energy used by locomotives (excluding shunting ones).
	1. Electricity:
	2. Diesel fuel:
	3. 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).
	1. Passenger Transport
		1. Electricity:       /p-km
		2. Diesel fuel:       /p-km
		3. Other (biodiesel, hydrogen…), please specify:       /p-km
	2. Freight Transport
		1. Electricity:       /t-km
		2. Diesel fuel:       /t-km
		3. 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.
	1. Electricity:
	2. Other, please specify:
4. How much of the energy used is produced using renewable energy sources?
	1. Percentage:
	2. Total Amount:

 Second Part: Energy saving projects

1. Have you implemented projects to improve energy efficiency?

Yes [ ]

No [ ]

1. Which of the following were the targets of the projects?
	1. Trains:
		1. Traction locomotives [ ]
		2. Shunting locomotives [ ]
		3. Coaches
			1. Passenger [ ]
			2. Freight [ ]
		4. Other, please specify
2. Rail stations and offices
	* 1. Lighting system [ ]
		2. Heating and/or climate conditioning system [ ]
		3. Other, please specify:
3. 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.
4. **Fleet, rail network and rail station capital investments**
	1. Replacing old rail vehicles. [ ]

(amount of energy saved – if available:       )

* 1. Replacing diesel locomotives with electric ones, when possible, or dual/multi ones. [ ]

(amount of energy saved – if available:       )

* 1. Using locomotives equipped with recovery braking systems. [ ]

(amount of energy saved – if available:      )

* 1. Using locomotives equipped with anti-idling systems. [ ]

(amount of energy saved – if available:      )

* 1. Using new shunting vehicles or energy-saving dual locomotives in freight terminals. [ ]

(amount of energy saved – if available:      )

* 1. Installing driving-assistance technologies. [ ]

(amount of energy saved – if available:      )

* 1. Renovating passenger-comfort appliances, such as lighting and air conditioning. [ ]

(amount of energy saved – if available:      )

* 1. Installing sensors, timers, and energy-saving technologies. [ ]

(amount of energy saved – if available:      )

* 1. Installing appliances that use renewable energy. [ ]

(amount of energy saved – if available:      )

* 1. Electrifying lines [ ]

(amount of energy saved – if available:      )

* 1. installing high-voltage overhead lines [ ]

(amount of energy saved – if available:      )

* 1. Other, please specify

(amount of energy saved – if available:      )

1. **Energy saving actions**
	1. Planning routes with few stops.[ ]

(amount of energy saved – if available:      )

* 1. Lowering the average and maximum speed and coasting. [ ]

(amount of energy saved – if available:      )

* 1. Loading the trains more to plan fewer journeys. [ ]

(amount of energy saved – if available:      )

* 1. Developing systems which save energy through aerodynamics and weight control [ ]

(amount of energy saved – if available:      )

* 1. Using the optimal power distribution for trains with more than one locomotive [ ]

(amount of energy saved – if available:      )

* 1. Reducing the working time of offices [ ]

(amount of energy saved – if available:      )

* 1. Optimizing the usage of auxiliary appliances in railway stations and in trains [ ]

(amount of energy saved – if available:      )

* 1. Training the workforce to consume less energy [ ]

(amount of energy saved – if available:      )

* 1. 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.

1. Do you have a system to monitor the energy consumption of rail vehicles?

Yes [ ]

No [ ]

1. Did you register improvements in energy efficiency resulting from the projects which you have implemented? Please quantify the total amount of energy saved.
	1. Percentage:
		1. Electricity:
		2. Diesel fuel:
		3. Other (biodiesel, hydrogen…), please specify:
	2. Total Amount:
		1. Electricity:
		2. Diesel fuel:
		3. Other (biodiesel, hydrogen…), please specify: