



Economic Commission for Europe**Inland Transport Committee****Working Party on Rail Transport****Seventy-eighth session**

Geneva, 13 (pm)–15 November 2024

Item 12 of the provisional agenda

Productivity in Rail Transport**Updated productivity questionnaire****Note of the secretariat****I. Mandate**

1. This document sets out the updated questionnaire on productivity as requested at the last session of the Working Party (ECE/TRANS/SC.2/243, paragraph 65). The questionnaire has been prepared considering the data already available within the databases of the Economic Commission for Europe and the International Union of Railways (UIC) as well as regular studies prepared by the European Commission.

II. Productivity questionnaire details

2. This section sets out the format of the questionnaire to be sent to national stakeholders. It is likely that the questionnaire will be made available as an online form to complete to facilitate further analysis of the results.

Rail productivity indicators – 2025

1. Introduction

This questionnaire aims to collect rail productivity indicators, in line with the programme of work of the Working Party on Rail Transport (SC.2) to analyse the various elements of railway productivity growth, in particular in freight transport.

Please note that you can skip a question if you do not have the answer. In this case, proceed to the next page. Do not hesitate to contact Francesco Dionori if you have any question (francesco.dionori@un.org).

The deadline for submission is 15 June 2025, COB.

2. Contact details

Please enter your contact details:

First Name Last Name



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Organisation/Company Country

Email Address

3. Labour productivity of railway undertakings per net tonne-km

Labour productivity is defined as output per unit of labour. This indicator measures labour productivity by dividing the net tonne-km of freight rail by the total number of employees working in freight railway undertakings.

Please indicate the values below:

Net tkm
value/year of data
Number of employees
value/year of data

Remarks:

Net tkm: net tkm refers to the movement of one tonne of goods over a distance of one kilometre. Only the weight of the goods is included, excluding the weight of tractive units (locomotives), railcars, passengers, and their luggage. The tonne-kilometres should be declared in million tkm. For instance, 115,000,000,000 tonne-kilometres should be calculated in the indicator as 115,000 million tkm.

Number of employees: including only those working in freight railway undertakings.

4. Labour productivity of infrastructure manager per net tonne-km

Labour productivity is defined as output per unit of labour. This indicator measures labour productivity by dividing the net tonne-km of freight rail by the total number of employees working for the infrastructure manager.

Please indicate the values below:

Net tkm
value/year of data
Number of employees
value/year of data

Remarks:

Net tkm: net tkm refers to the movement of one tonne of goods over a distance of one kilometre. Only the weight of the goods is included, excluding the weight of tractive units (locomotives), railcars, passengers, and their luggage. The tonne-kilometres should be declared in million tkm. For instance, 115,000,000,000 tonne-kilometres should be calculated in the indicator as 115,000 million tkm.

Number of employees: including only those working for the infrastructure manager.

5. Labour productivity of railway undertakings for high-speed and conventional passenger rail (network length per employee)

Labour productivity is defined as output per unit of labour. This indicator measures labour productivity by dividing the kilometres of network in use for both high-speed and conventional passenger rail by the total number of employees working in railway undertakings, excluding employees dedicated to freight operations and infrastructure manager(s).

Please indicate the values below:

Km of network in use
value/year of data
Number of employees (excluding freight employees and infrastructure manager(s))
value/year of data

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Remarks:

Km of network in use: for the calculation of kilometres of network used, each section of the network should be counted only once, regardless of whether it is made up of one or more tracks.

Number of employees: excluding employees dedicated to freight operations and infrastructure manager(s) and including employees working in high-speed and conventional passenger rail services. In the event that the split is not clearly defined in your railway, please provide comments on what has been included.

6. Labour productivity of railway undertakings for high-speed and conventional passenger rail (passenger-km per employee)

Labour productivity is defined as output per unit of labour. This indicator measures labour productivity by dividing the passenger-kilometres of high-speed and conventional passenger rail by the total number of employees working in passenger railway undertakings.

Please indicate the values below:

Passenger-km
value/year of data
Number of employees
value/year of data

Remarks:

Passenger-km: the passenger-km should be declared in million pkm. For instance, 80,000,000,000 passenger-kilometres should be calculated in the indicator as 80,000 million pkm.

Number of employees: including only those working in passenger railway undertakings, for both high-speed and conventional rail.

7. Freight rail productivity (domestic and international)

Freight rail productivity is defined as output per unit of network and is calculated by dividing the output produced by the measure of network used (kilometres). This indicator measures productivity by dividing the net tkm transported by freight trains (both domestic and international) by the total number of the kilometres of network in use.

Please indicate the values below:

Net tkm
value/year of data
Km of network
value/year of data

Remarks:

Net tkm: net tkm refers to the movement of one tonne of goods over a distance of one kilometre. Only the weight of the goods is included, excluding the weight of tractive units (locomotives), railcars, passengers, and their luggage. The tonne-kilometres should be declared in million tkm. For instance, 115,000,000,000 tonne-kilometres should be calculated in the indicator as 115,000 million tkm.

Km of network in use: for the calculation of kilometres of network used, each section of the network should be counted only once, regardless of whether it is made up of one or more tracks.

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8. Operational productivity of freight transport

Freight rail productivity is defined as output per unit of network and is calculated by dividing the output produced (net tonne kilometres) by the measure of network used (kilometres). The indicator measures productivity by dividing the net tkm transported by freight trains by the total kilometres of network in use.

Please indicate the values below:

Net tkm
value/year of data
Km of network
value/year of data

Remarks:

Net tkm: net tkm refers to the movement of one tonne of goods over a distance of one kilometre. Only the weight of the goods is included, excluding the weight of tractive units (locomotives), railcars, passengers, and their luggage. The tonne-kilometres should be declared in million tkm. For instance, 115,000,000,000 tonne-kilometres should be calculated in the indicator as 115,000 million tkm.

Km of network in use: for the calculation of kilometres of network used, each section of the network should be counted only once, regardless of whether it is made up of one or more tracks.

9. Operational productivity of passenger transport (high-speed and conventional rail)

Passenger rail productivity is defined as output per unit of network and is calculated by dividing the output produced (passenger-kilometres) by the measure of network used (kilometres). This indicator measures productivity by dividing the passenger-kilometres moved by high-speed and conventional trains by the total kilometres of network in use.

Please indicate the values below:

Passenger-km
value/year of data
Km of network
value/year of data

Remarks:

Passenger-km: the passenger-km should be declared in million pkm, for instance 80,000,000,000 passengers per kilometre should be calculated in the indicator as 80,000 million pkm.

Km of network in use: for the calculation of kilometres of network used, each section of the network should be counted only once, regardless of whether it is made up of one or more tracks.

10. Energy consumption (freight transport)

The energy consumption indicator for freight transport measures the amount of energy used for traction power per 1,000 gross tonne-km. It is calculated by dividing the total energy consumed (in megajoules) by 1,000 gross tonne-km.

Please indicate the values below:

Energy consumed (megajoules)
value/year of data
1,000 gross tonne-km
value/year of data

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Remarks:

Gross tonne-km: Gross tonne-km refers to the movement over a distance of one kilometre of one tonne of railway vehicle that includes the weights of the tractive unit, hauled railway vehicle, and its load.

11. Energy consumption (passenger transport)

The energy consumption indicator for passenger transport measures the amount of energy used for traction power per passenger-km. It is calculated by dividing the total energy consumed (in megajoules) by the total passenger--km.

Please indicate the values below:

Energy consumed (megajoules)
value/year of data
Passenger-km
value/year of data

Remarks:

Passenger-km: the passenger-km should be declared in million pkm, for instance 80,000,000,000 passengers per kilometre should be calculated in the indicator as 80,000 million pkm.

12. Revenue (freight transport)

The efficient service delivery indicator for freight transport is defined as the revenue generated per net tkm. It is calculated by dividing the annual turnover (revenue) of the freight rail undertaking by the net tkm moved.

Please indicate the values below:

Annual turnover (in US\$ or local currency, specify the currency and exchange rate used if applicable)
value/year of data
Net tkm
value/year of data

Remarks:

Annual turnover: indicates the annual revenue of the freight rail undertaking in million US\$.

Net tkm: net tkm refers to the movement of one tonne of goods over a distance of one kilometre. Only the weight of the goods is included, excluding the weight of tractive units (locomotives), railcars, passengers, and their luggage. The tonne-kilometres should be declared in million tkm. For instance, 115,000,000,000 tonne-kilometres should be calculated in the indicator as 115,000 million tkm.

13. Revenue (high-speed and conventional passenger transport)

The efficient service delivery indicator for passenger transport is defined as the revenue generated per passenger-km. It is calculated by dividing the annual turnover (revenue) of the passenger rail undertaking by the passenger-km transported.

Please indicate the values below:

Annual turnover (in US\$ or local currency, specify the currency and exchange rate used if applicable)
value/year of data
Passenger- km
value/year of data

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Remarks:

Annual turnover: indicates the annual revenue of the passenger rail undertaking in million US\$.

Passenger-km: the passenger-km should be declared in million pkm. For instance, 80,000,000,000 passenger- kilometres should be calculated in the indicator as 80,000 million pkm.

14. Service quality (freight transport speed)

This indicator calculates the average speed, in kilometres per hour, of freight train movements operated during one year.

Please indicate the values below:

Average freight train speed (km/h)

value/year of data

Remarks:

Average speed: The average speed of freight train movements is calculated by adding the speeds of all individual freight train movements operated during one year and dividing by the total number of freight train movements operated during the same year.

A freight train movement is defined as a single journey of a freight train from its origin to its destination.

15. Service quality (passenger transport speed)

This indicator calculates the average speed, in kilometres per hour, of passenger train movements operated during one year.

Please indicate the values below:

Average passenger train movement speed (km/h)

value/year of data

Remarks:

Average speed: The average speed of passenger train movements is calculated by adding the speeds of all passenger train movements operated during one year and dividing by the total number of passenger train movements operated during the same year.

A passenger train movement is defined as a single journey of a passenger train from its origin to its destination.

16. Service quality (punctuality of domestic freight services)

This indicator calculates the percentage of domestic freight trains arriving at their final destination with a delay of less than 15 minutes.

Please indicate the values below:

Percentage of domestic freight trains arriving with a delay of less than 15 minutes

value/year of data

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17. Service quality (punctuality of international freight services)

This indicator calculates the percentage of international freight trains arriving at their final destination in the reporting country with a delay of less than 15 minutes.

Please indicate the values below:

Percentage of international freight trains arriving with a delay of less than 15 minutes

value/year of data

18. Service quality (punctuality of regional and local passenger services)

This indicator calculates the percentage of regional and local passenger trains arriving at their final destination with a delay of less than 5 minutes .

Please indicate the values below:

Percentage of regional and local passenger trains arriving with a delay of less than 5 minutes

value/year of data

19. Service quality (punctuality of long-distance and high-speed passenger services)

This indicator calculates the percentage of long-distance and high-speed passenger trains arriving at their final destination with a delay of less than 5 minutes .

Please indicate the values below:

Percentage of long-distance and high-speed passenger trains arriving with a delay of less than 5 minutes

value/year of data

20. Service quality (reliability of regional and local passenger services)

This indicator calculates the percentage of scheduled regional and local passenger services that are cancelled. It is calculated by dividing the number of cancelled regional and local passenger services by the total number of scheduled regional and local passenger services.

Please indicate the values below:

Percentage of regional and local passenger services cancelled

value/year of data

21. Service quality (reliability of long-distance and high-speed passenger services)

This indicator calculates the percentage of scheduled long-distance and high-speed passenger services that are cancelled. It is calculated by dividing the number of cancelled long-distance and high-speed passenger services by the total number of scheduled long-distance and high-speed passenger services.

Please indicate the values below:

Percentage of long-distance and high-speed passenger services cancelled

value/year of data

22. Safety (freight transport)

Safety in freight transport is defined as the number of freight train accidents per freight train kilometre. It is calculated by dividing the total number of freight train accidents by the total freight train kilometres operated during the year.

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Please indicate the values below:

- Number of freight train accidents
value/year of data
- Total freight train kilometres
value/year of data

Remarks:

Freight train kilometres: the total freight train kilometres should be expressed in million freight train kilometres (ftkm). For instance, 115,000,000 freight train kilometres should be calculated in the indicator as 115 million ftkm.

Freight train accidents: Freight train accidents are considered “significant accidents”, which means any accidents involving at least one rail vehicle in motion that result in at least one killed or seriously injured person, significant damage to stock, track, other installations, or the environment, or extensive disruptions to traffic. Accidents in workshops, warehouses and depots are excluded.

23. Safety (passenger transport)

Safety in passenger transport is defined as the number of passenger train accidents per passenger train kilometre. It is calculated by dividing the total number of passenger train accidents by the total passenger train kilometres operated during the year.

Please indicate the values below:

- Number of passenger train accidents
value/year of data
- Total passenger train kilometres
value/year of data

Remarks:

Passenger train kilometres: the total passenger train kilometres should be expressed in million passenger train kilometres (ptkm). For instance, 600,000,000 passenger train kilometres should be calculated in the indicator as 600 million ptkm.

Passenger train accidents: Passenger train accidents are considered “significant accidents”, which means any accidents involving at least one rail vehicle in motion, that result in at least one killed or seriously injured person, significant damage to stock, track, other installations, or the environment, or extensive disruptions to traffic. Accidents in workshops, warehouses and depots are excluded.

24. Network density

Accessibility and network density is defined as the kilometres of railway network per unit area of a country (km²). It is calculated by dividing the total kilometres of railway network by the total area of the country in km².

Please indicate the values below:

- Total kilometres of network
value/year of data
- Total area of the country (km²)
value/year of data

Remarks:

Km of network: For the calculation of kilometres of the network, each section of the network should be counted only once, regardless of whether it is made up of one or more tracks.

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25. Electrification of railway network

The electrification of the railway network is defined as the percentage of electrified network compared to the total length of railway network. This indicator reflects the extent to which railway infrastructure is equipped with electric traction systems, promoting operational efficiency, environmental sustainability, and capacity improvements in rail transport.

Please indicate the values below:

Percentage of electrified network
value/year of data

Remarks:

Km of network: For the calculation of kilometres of the network, each section of the network should be counted only once, regardless of whether it is made up of one or more tracks.

26. Financial sustainability (% of costs covered from internal cash generation)

The indicator calculates the financial sustainability of railways by determining the percentage of operational costs that are covered by the turnover from passengers and freight operations. Operational costs include the cost of operations for passenger and freight transport but exclude any kind of investments and costs associated with infrastructure managers.

Please indicate the values below:

Turnover from passenger and freight operations (in US\$ or local currency, specify the currency and exchange rate used if applicable)

value/year of data

Operational costs (excluding investments and costs for infrastructure managers) (in US\$ or local currency, specify the currency and exchange rate used if applicable)

value/year of data

27. Maintenance – Maintenance costs per kilometre of railway track

The indicator measures the efficiency of maintenance activities by calculating the maintenance costs per kilometre of railway track. It is calculated by dividing the total maintenance costs by the total kilometres of railway track maintained.

Please indicate the values below:

Total maintenance costs (in US\$ or local currency, specify the currency and exchange rate used if applicable)

value/year of data

Total kilometres of track maintained

value/year of data

Remarks:

Maintenance costs: include all relevant expenditures (labour, materials, and equipment).

Railway track: a pair of rails over which rail-borne vehicles can run, maintained by an infrastructure manager. Metro, Tram, and Light rail urban lines are excluded.

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28. Management (locomotives) – Locomotive utilisation (%)

The indicator calculates locomotives utilisation by dividing the number of locomotives used in operations (for both passengers and freight trains) by the total number of locomotives available for use within a given year.

Please indicate the values below:

Number of locomotives used

value/year of data

Number of locomotives available for use

value/year of data

29. Management (wagons) – Freight wagon availability (%)

The indicator calculates freight wagon utilisation by dividing the number of freight wagons used in operations by the total number of freight wagons available for use within a given year.

Please indicate the values below:

Number of wagons used for freight services

value/year of data

Total number of wagons available for freight use

value/year of data

30. Management (carriages) – Passenger carriage availability (%)

The indicator calculates passenger carriage utilisation by dividing the number of carriages used in operations by the total number of carriages available for use within a given year.

Please indicate the values below:

Number of carriages used for passengers services

value/year of data

Total number of carriages available for passenger use

value/year of data

31. Maximum train length on the international railway network

The indicator measures the maximum train lengths on a country's international railway network (as defined by the European Agreement on Main International Railway Lines - AGC) by identifying the maximum allowable train lengths on the international network. This helps to understand the infrastructure constraints and capacity variations within the network.

Please indicate the values below:

Maximum train length on the international railway network (metres)

value/year of data

Remarks:

Respondents are requested to provide the most restricted maximum train length on their international network.

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32. Network coverage by ERTMS and national signalling systems

This indicator measures the percentage of a country's international railway network (as defined by the European Agreement on Main International Railway Lines -AGC) that is covered by the European Rail Traffic Management System (ERTMS) for EU countries, and by the national signalling system for non-EU countries who do not adopt European standards. This helps to understand the level of modernisation and standardisation of signalling systems across different railway networks.

Please indicate the values below:

Percentage of national network covered by ERTMS or the national signalling system

value/year of data

Remarks:

Km of network: For the calculation of kilometres of the network, each section of the network should be counted only once, regardless of whether it is made up of one or more tracks. The level of ETCS is not requested.

33. Network coverage with permanent speed restriction

This indicator measures the percentage of a country's national railway network that is subject to permanent speed restrictions. Permanent speed restrictions are long-term speed limits imposed on specific sections of the railway network due to infrastructure constraints, safety considerations, or other operational reasons.

Please indicate the values below:

Percentage of national network with permanent speed restrictions

value/year of data

Remarks:

Km of network: For the calculation of kilometres of the network, each section of the network should be counted only once, regardless of whether it is made up of one or more tracks.

34. Passenger customer satisfaction

This indicator measures the overall satisfaction of passengers with the railway services provided over the course of a year. It is based on passenger feedback and surveys that evaluate various aspects of the service as undertaken by relevant national authorities.

Please indicate the values below:

Overall passenger satisfaction score (%)

value/year of data

Remarks:

Overall passenger satisfaction score: This score is typically derived from survey and feedback forms collected from passengers, where they rate their satisfaction with various aspects of the railway service on a scale (e.g., 1 to 5). The overall score is then calculated as a percentage of positive ratings.
