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Item 12 of the provisional agenda
Productivity in Rail Transport

Rail Productivity Indicators 2019

Note by the secretariat*

I. Background

1. At the seventy-second session of the Working Party on Rail Transport, participants asked the secretariat to send out the revised questionnaire on rail productivity. The questionnaire was sent to all member States in 2019. A total of seven responses were received from member States.

2. Given the limited number of responses received, the secretariat proceeded to integrate this information with data from the publicly available the UIC RAILISA statistical database. For the purpose of this analysis information has only been used where it can be easily identified. For example, some of the indicators require a split between passenger and freight data which is not always available in the UIC data. Only data from countries where this split is possible and relevant (in addition to the questionnaire responses) have been used in the individual indicators.

3. The data shown generally refers to 2018 data, where 2018 data is not available it has been identified with an asterisk and the most recent data available has been inserted. If a result presented a significant outlier it has been included in a different colour.

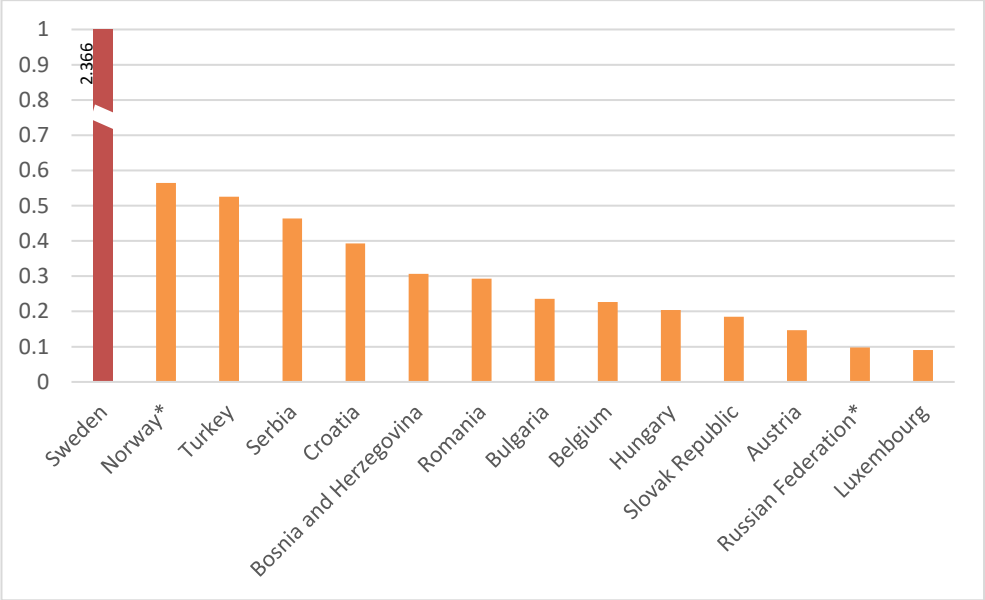
4. The data collected was analysed and revised so to avoid and correct the visible outliers. Where this was altering unnaturally the data, values where left untouched. Also, in the case of non-clarity of outliers, these are maintained and explained in the following points.

II. Summary of results

5. The figures and description below set out the results according to the individual productivity indicators with a brief review for each of the results.

* The present document was submitted after the standard deadline as a result of consultations with the Member State and owing to circumstances beyond the secretariat's control.

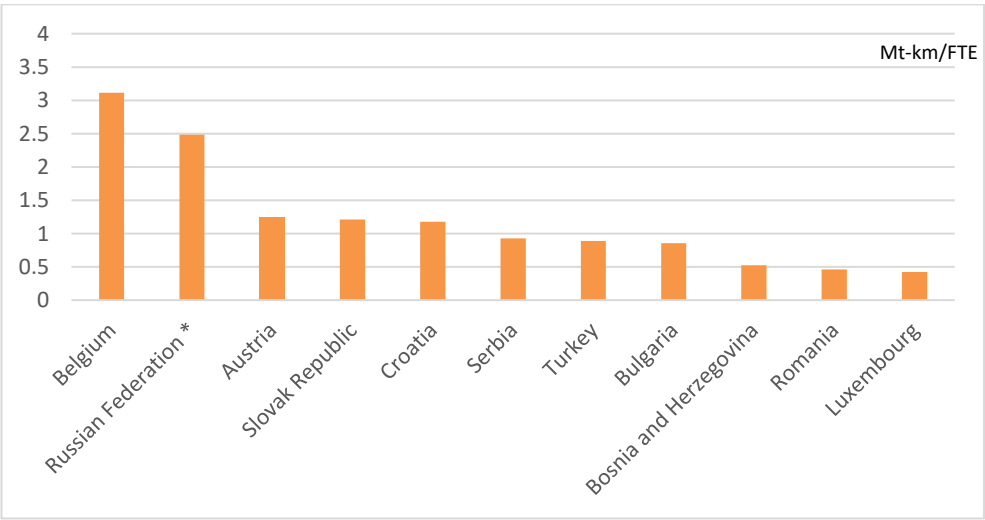
Figure I
Labour productivity (high-speed and passenger conventional rail)



6. Labour productivity for high-speed and passenger conventional rail is calculated by dividing the kilometres of network in use for both high-speed and conventional rail by the total number of employees working (measured in Full Time Equivalents – FTE) in both railways undertakings and infrastructure manager(s).

7. Sweden stands out with 2.366 km/FTE, significantly larger than all other networks with information available with Luxembourg showing the lowest value.

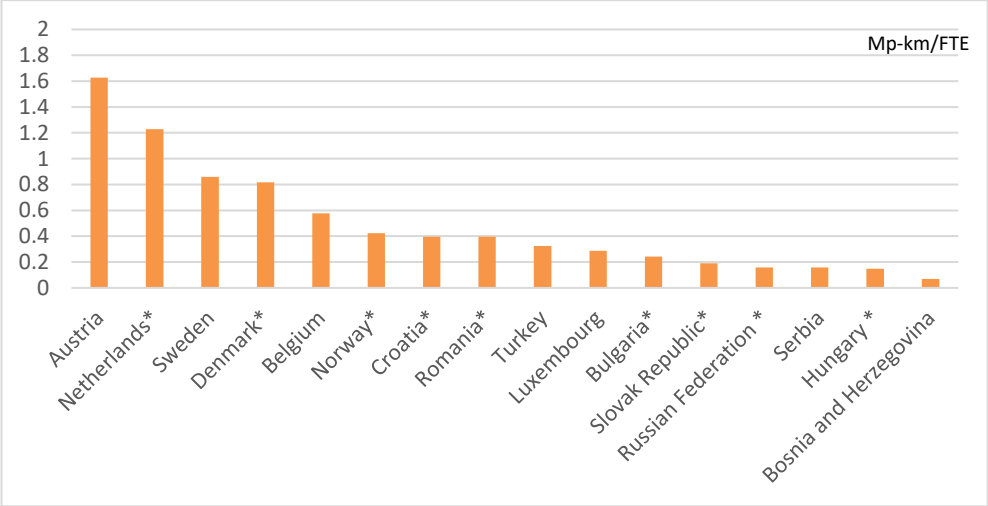
Figure II
Labour productivity indicator (freight railways)



8. The labour productivity indicator for freight railways divides the net tonnes - kilometres of freight trains by the total number of employees working in freight railway undertakings only.

9. Belgium, with a total ratio of 3.112 million tonne_km/FTE is the leader in this category followed by the Russian Federation with the lowest scores seen in Romania and Luxembourg.

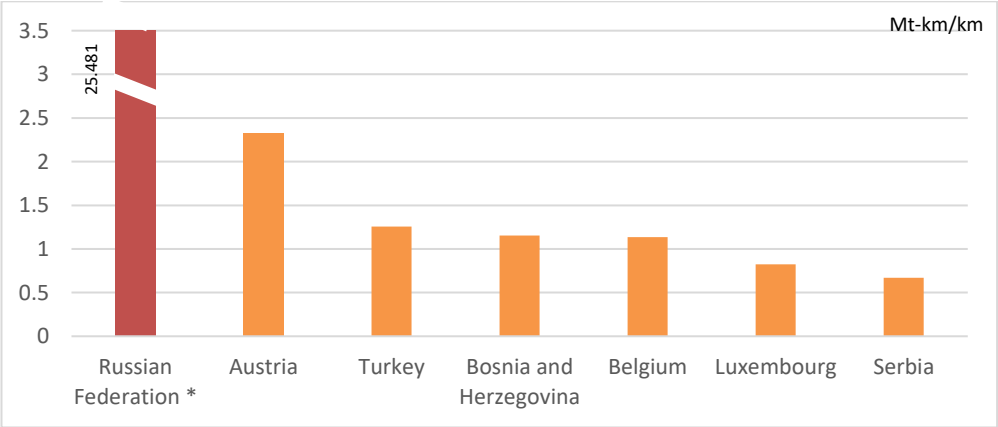
Figure III
Labour productivity indicator (passenger railways, high speed and conventional)



10. The labour productivity indicator for passenger services takes the passenger_km values for high-speed and conventional services and divides this by the total number of employees working in passenger railway undertakings only.

11. Austria and northern Europe in general, dominate the left side of the graph ranging between 0.5 and 1.5 million passenger_km/FTE, with Hungary and Bosnia and Herzegovina showing the lowest values.

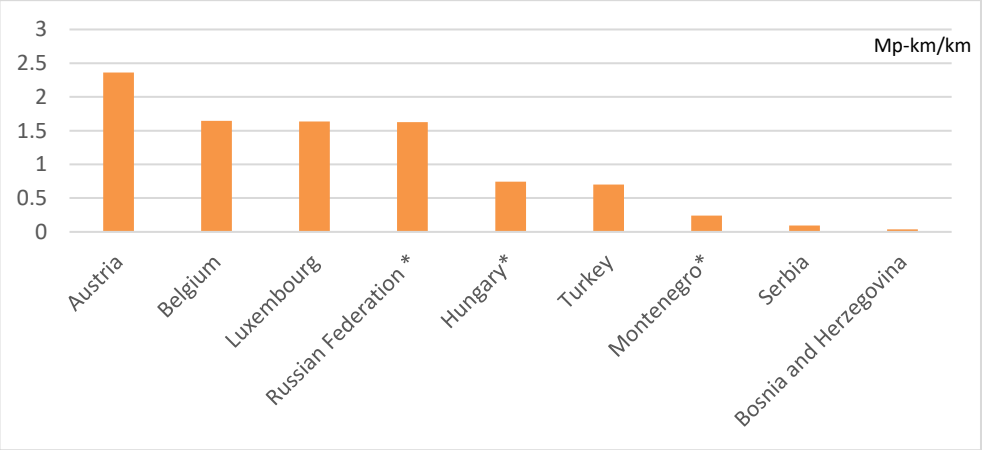
Figure IV
Productivity indicator of freight transport



12. The indicator for freight transport productivity divides the net tonne kilometres transported by freight trains by the total number of the kilometres of network in use.

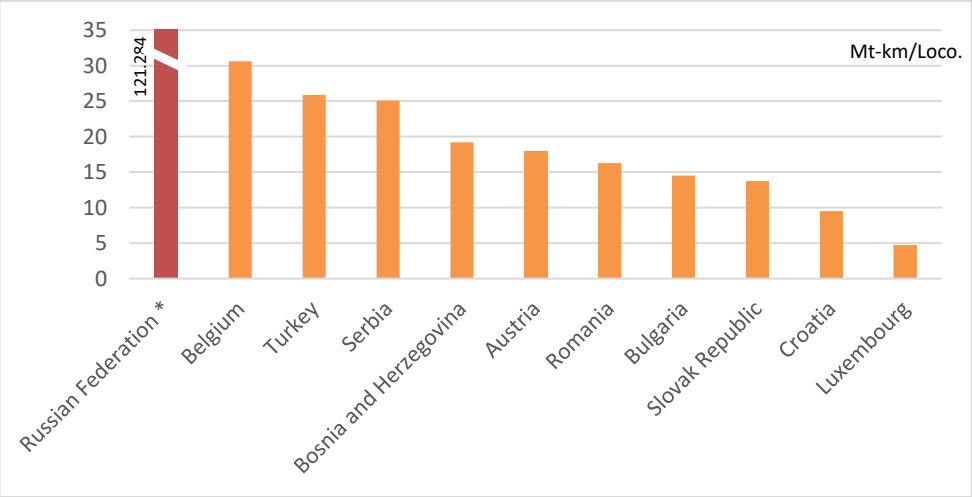
13. The Russian Federation is significantly above other countries. It is followed by a high value for Austria with the other countries providing lower values.

Figure V
Productivity of passenger transport (high-speed – conventional rail)



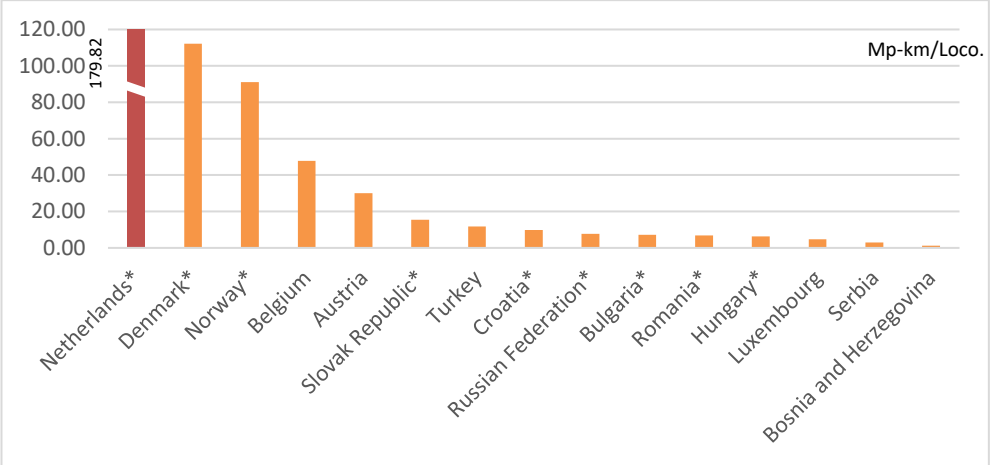
14. The productivity of passenger transport for high-speed and conventional rail is measured by dividing the passenger kilometres moved by conventional and high-speed trains by the total number of the kilometres of network in use. Austria provides the highest score with Bosnia and Herzegovina the lowest in this case.

Figure VI
Productivity of the locomotive fleet (freight transport)



15. The measure for productivity of the locomotive fleet for freight transport divides the net tonne kilometres transported by freight trains by the total number of locomotives used in freight transport. The value for the Russian Federation remains a significant outlier in this analysis with a total value almost four times the value of the next highest country, Belgium. For this indicator, Luxembourg provides the lowest result.

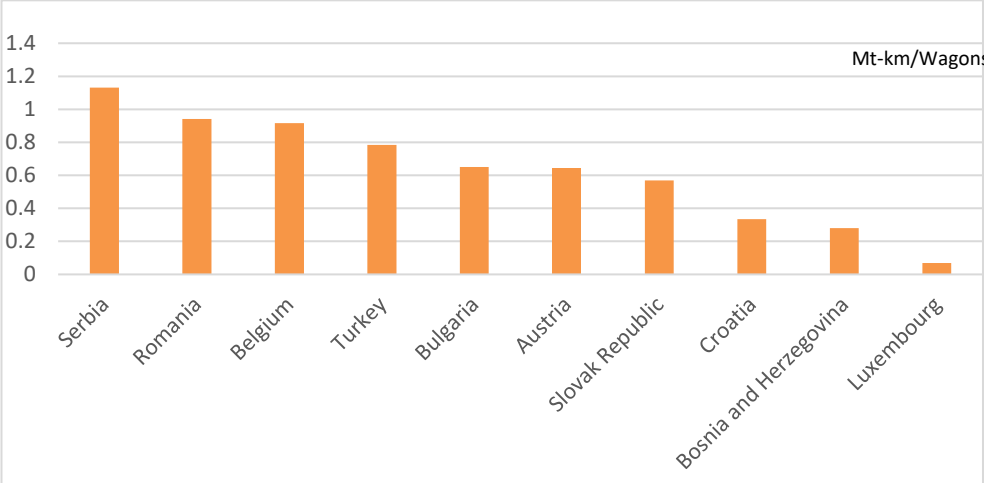
Figure VII
Productivity of passenger locomotive fleet



16. The indicator for the productivity of the locomotive fleet for passenger transport both in high-speed and conventional rail divides the passenger_km moved by conventional and high-speed trains by the total number of locomotives used in passenger transport. This value does not include (diesel and electric) multiple units.

17. The Netherlands is a significant outlier here with a value more than 50 per cent more than the next highest – Denmark and almost twice the third place – Norway. All other countries provide significantly lower values.

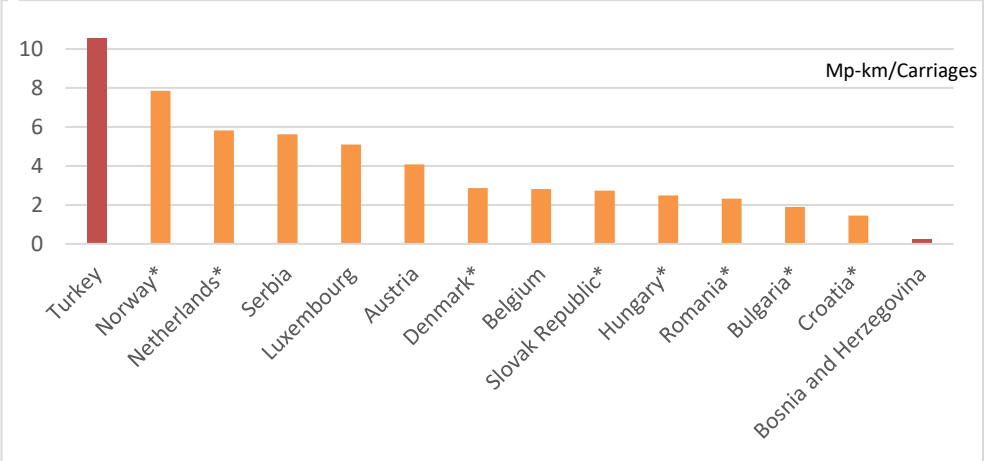
Figure VIII
Productivity of wagons (freight transport)



18. The indicator for productivity of wagons for freight transport divides the net tonne kilometres transported by freight trains by the total number of wagons used in freight transport.

19. Serbia ranks first in this category indicating that their freight wagons could be used the most of those countries identified in this analysis. Luxembourg provides the lowest value for this category.

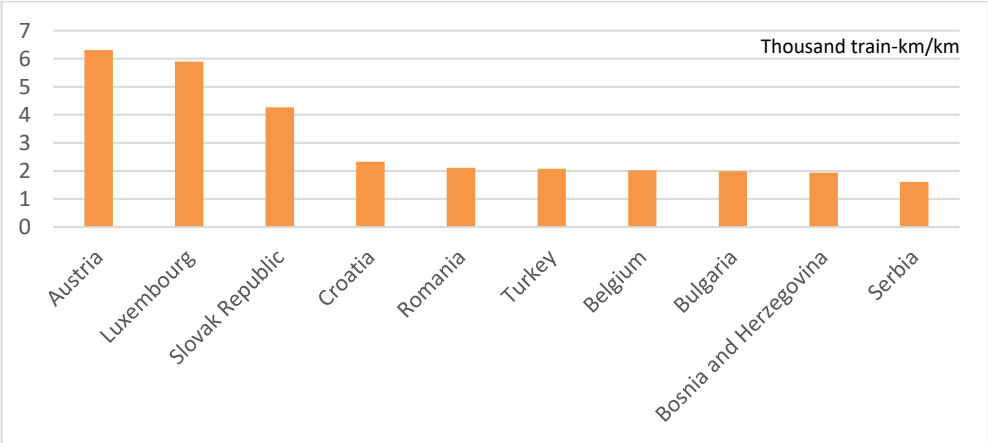
Figure IX
Productivity of passenger carriages



20. The productivity of passenger carriages used in high-speed and conventional rail is calculated by dividing the passengers' kilometres moved by conventional and high-speed trains by the total number of passenger carriages.

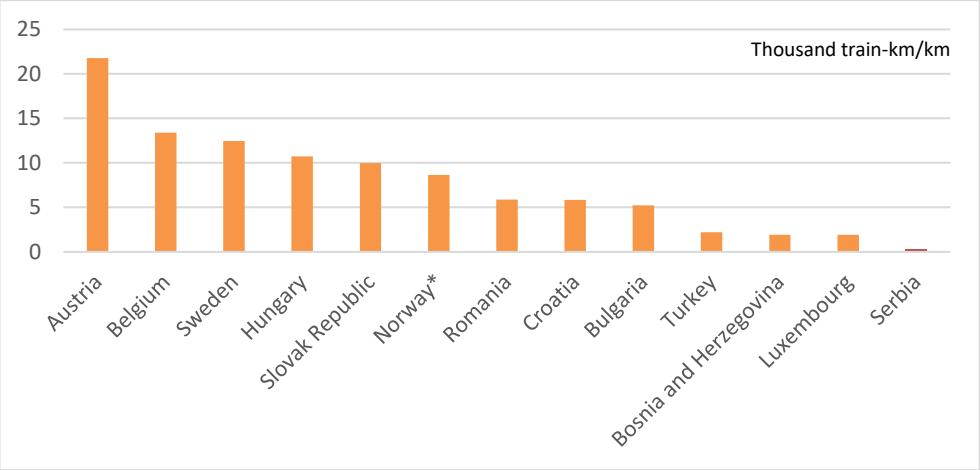
21. Turkey stands out as a clear outlier at 10.6 million passenger_km per carriage both due to the very high number of passenger traffic and the low count of carriages. The low number of carriages could also have influenced the high value for Norway. At the other end of the spectrum, Bosnia and Herzegovina is also a clear outlier in this analysis.

Figure X
Productivity of lines (freight transport)



22. The productivity of lines for freight transport divides the total kilometres of freight trains by the total kilometres of network used. As can be seen from the figure above, Austria, Luxembourg and the Slovak Republic are higher than other countries have a clear edge with regards to the rest of the members, with the first two significantly higher than the rest.

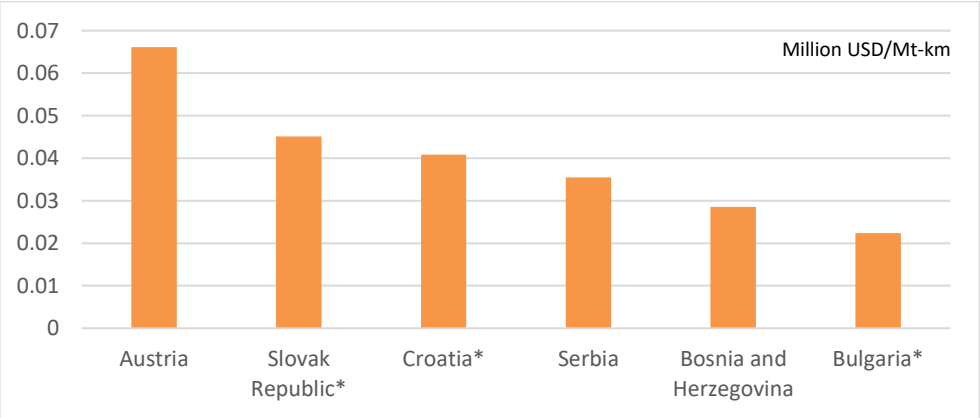
Figure XI
Productivity of lines (passengers transport: high-speed – conventional rail)



23. Productivity of lines for passengers' transport both in high-speed and conventional rail divides the total kilometres of passengers' trains by the total kilometres of network used.

24. Austria leads the way with 21.8 thousand train_km per km, followed by Belgium and Sweden with lower values under 15. Turkey, Bosnia and Luxembourg have very low values averaging around 2, whilst Serbia may be a possible outlier with a minimal value of 0.2 thousand train_km per km.

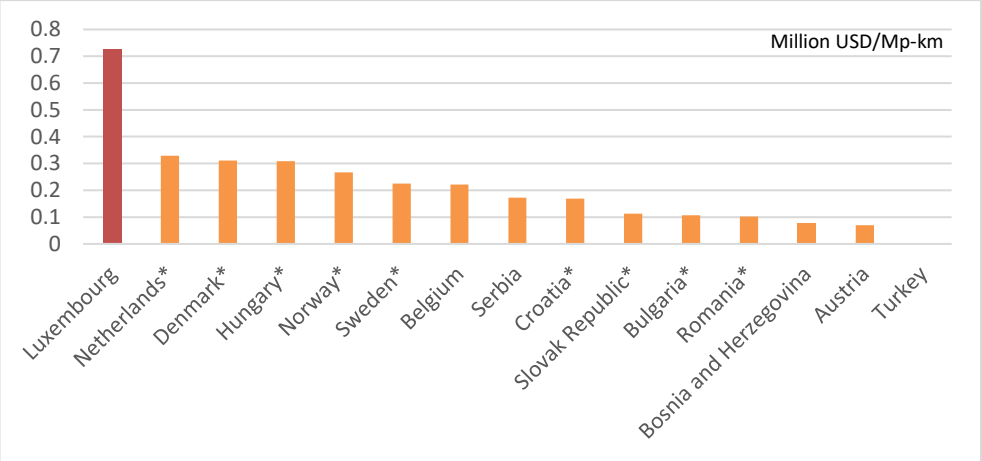
Figure XII
Efficient service delivery (freight transport)



25. Efficient service delivery for freight transport divides the annual turnover of freight rail undertakings by net tonne kilometres moved. Direct data from the UNECE questionnaire was received in million US Dollars and was implemented directly. When direct responses were unavailable, the data was taken in Million National Currency Unit (MNCU) and then converted using the average exchange rate in August 2019.

26. Austria is the only country with a value above 0.05, while Slovak Republic, Croatia and Serbia are between 0.045 and 0.035 million USD per million tonne_km. Bosnia and Bulgaria are respectively at 0.029 and 0.022 million USD per million tonne_km.

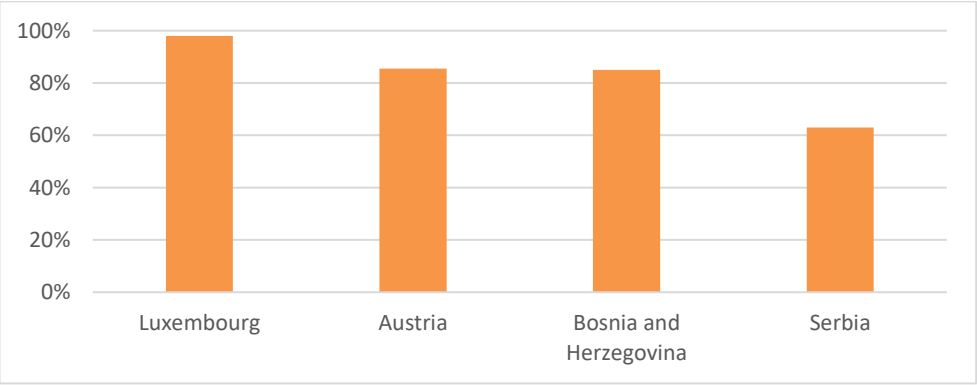
Figure XIII
Efficient service delivery (passengers transport: conventional and high speed)



27. Efficient service delivery for passenger transport both in conventional and high-speed divides the annual turnover of rail undertaking for passengers by passengers' kilometres transported.

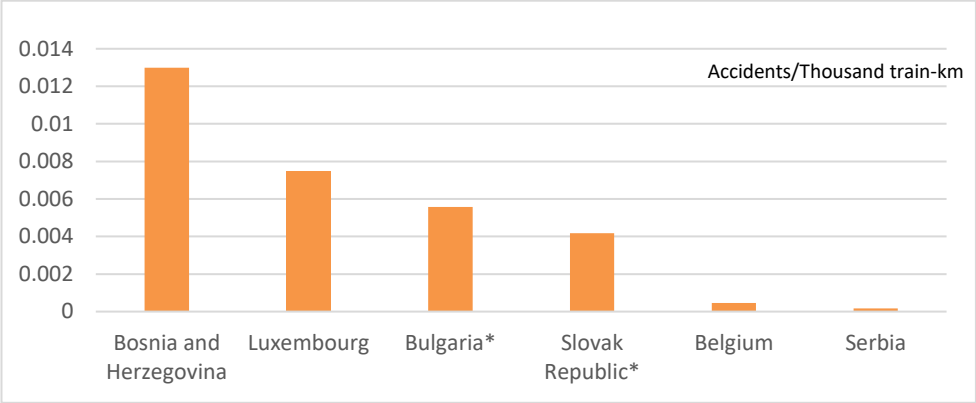
28. Luxembourg ranks as a possible outlier standing at more than the double the other member States present. This is maybe due to the relatively low number of passengers per kilometre in respect of the high annual turnover. Turkey is also a clear outlier with a value approaching zero.

Figure XIV
Service quality (percentage of trains with less than 15 mins delay)



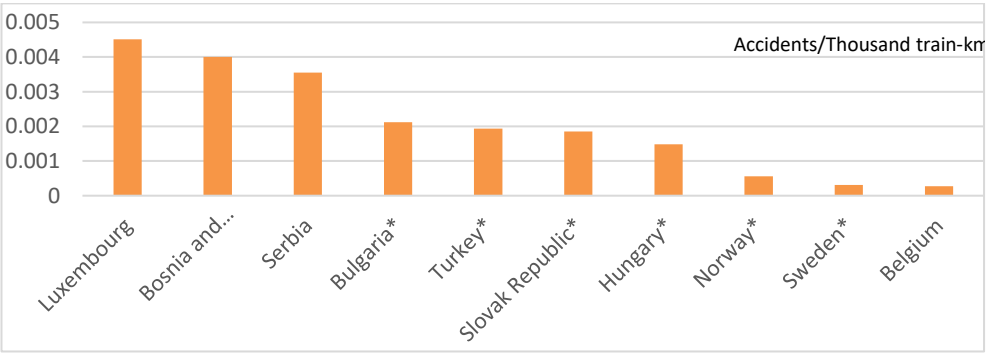
29. Service quality for passenger transport delay calculates the percentage of passenger trains arriving with less than 15 minutes delay. Only a small number of countries provided data for this indicator with Luxembourg being the best performer with 98 per cent of trains arriving with less than 15 minutes delay and with the other countries also showing high values.

Figure XV
Safety (freight transport)



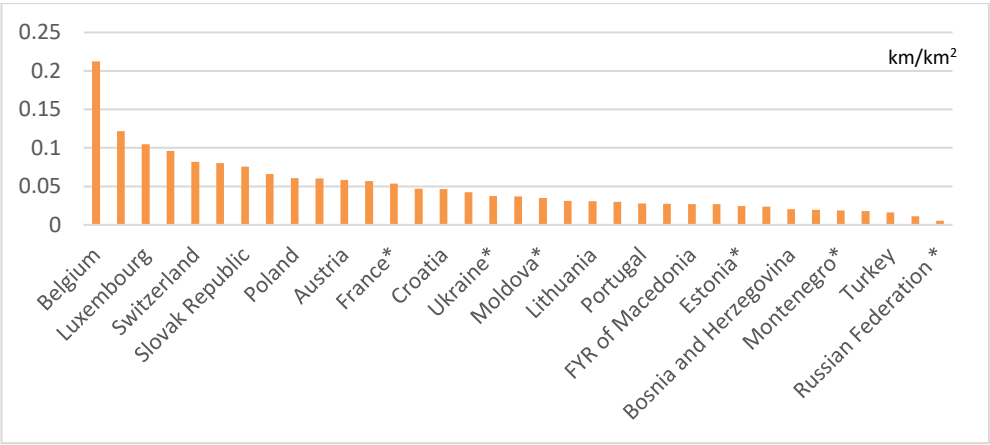
30. Safety of freight transport divides the total number of freight train accidents trains by total freight train kilometres. Bosnia Herzegovina stands as the highest with 0.13 accidents per thousand ktrain_km while Belgium and Serbia are the lowest at, respectively, 0.00045 and 0.00016.

Figure XVI
Safety (passengers transport)



31. Safety for passenger transport divides the number of passenger train accidents by the total number of passenger train kilometres. Luxembourg, Bosnia Herzegovina and Serbia show the highest values with the Nordic countries and Belgium all well under 0.001 No/ktrains-km.

Figure XVII
Accessibility and network density



32. The accessibility and network density ratio is defined according to the country's total area (km2) and is calculated by dividing the total length of the network by the total area of a country in km2. Belgium provides the highest value with its very dense network of railways and relatively small total surface area. This is the case also for Luxembourg and Switzerland. More sparsely populated countries are clearly at the other end of the scale.

III. Next steps

33. The Working Party may wish to discuss the information provided in this document and review what next steps need to be undertaken in this area.