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Inland Transport Committee

Working Party on Transport Statistics

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Monitoring of transport-related Sustainable Development Goals

Monitoring the transport-related Sustainable Development Goal indicators in the Economic Commission for Europe region

Note by the secretariat

Summary

　　　　This document sets out monitoring the transport-related Sustainable Development Goal indicators in the context of member States of the Economic Commission for Europe. It presents the available global indicators as well as the additional indicators that were decided upon at the previous session. It is an update of ECE/TRANS/WP.6/2023/1.

I.　Background

1.　With seventeen goals, 169 targets and over 230 indicators, monitoring the Sustainable Development Goals requires local, national, regional and global monitoring, as well as thematic focusses. Without its own stand-alone goal, the indicators relating to transport are not always reported on in an integrated manner, either at the national or international levels. The Economic Commission for Europe (ECE) is addressing this, both through its involvement in the Sustainable Mobility for All[1] initiative, and through the Inland Transport Committee's Strategy (ECE/TRANS/288/Add.2) to 2030 that was adopted in 2019. In particular, the Working Party on Transport Statistics (WP.6) will aim to become the platform where methodology for transport-related Sustainable Development Goal indicators will be discussed.

2.　With this in mind, this document briefly reports on progress on transport-related Sustainable Development Goals in the ECE region. This assessment is based on both the globally recognized indicators and the region-specific indicators that were established by the Working Party during its prior session. As a reminder, the global indicators most relevant for transport are: 3.6.1 on halving road traffic accident fatalities; 9.1.1 on rural population access

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[1]　www.sum4all.org/.

to an all-season road; 9.1.2 on passenger and freight volumes, by mode of transport; and 11.2.1 on convenient urban access to public transport.

3.   In addition to these global indicators, a key part of the 2030 Development Agenda is the idea of national and regional ownership. This is confirmed by the Road Map on Statistics for Sustainable Development Goals,[2] the second edition of which was published in February 2022. Therefore, regions can choose their own indicators as applicable when both data availability is good and also when a certain indicator is considered to be appropriate for measuring progress in their circumstances. To take one example from the ECE region, Eurostat defines a set of 100 Sustainable Development Goal indicators,[3] some of which agree completely with the global indicators, whereas others have been chosen that have strong links with the policy framework set out in the European Commission's "Next Steps for a sustainable European future – European action for sustainability." The Interstate Statistical Committee of the Commonwealth of Independent States takes a similar approach.[4]

4.   Therefore, at its previous session in May 2023, the Working Party decided that the following additional indicators are appropriate for monitoring the transport-related Sustainable Development Goals in the ECE Region: percentage of new passenger cars that are zero emission; trends in new passenger car vehicle weight; and breakdown of road fatalities by type of road user (ECE/TRANS/WP.6/185).

5.   The rest of this document shows progress on the transport-related Sustainable Development Goals, both using the global indicators as well as the above-mentioned region-specific indicators.

II.   Road safety

6.   On the side of road safety, the global indicator 3.6.1 (to reduce the number of road fatalities by half) has excellent data availability for ECE countries, with all 56 ECE member States reporting data at least for total fatalities for at least one year between 2017 and 2022. ECE and other actors encourage countries to harmonise their definitions with international norms; this is clearly demonstrated in road fatality data for Türkiye, where for 2017 the total fatality rate approximately doubles, due to a methodology change including fatalities within thirty days of the accident, in line with international guidance.
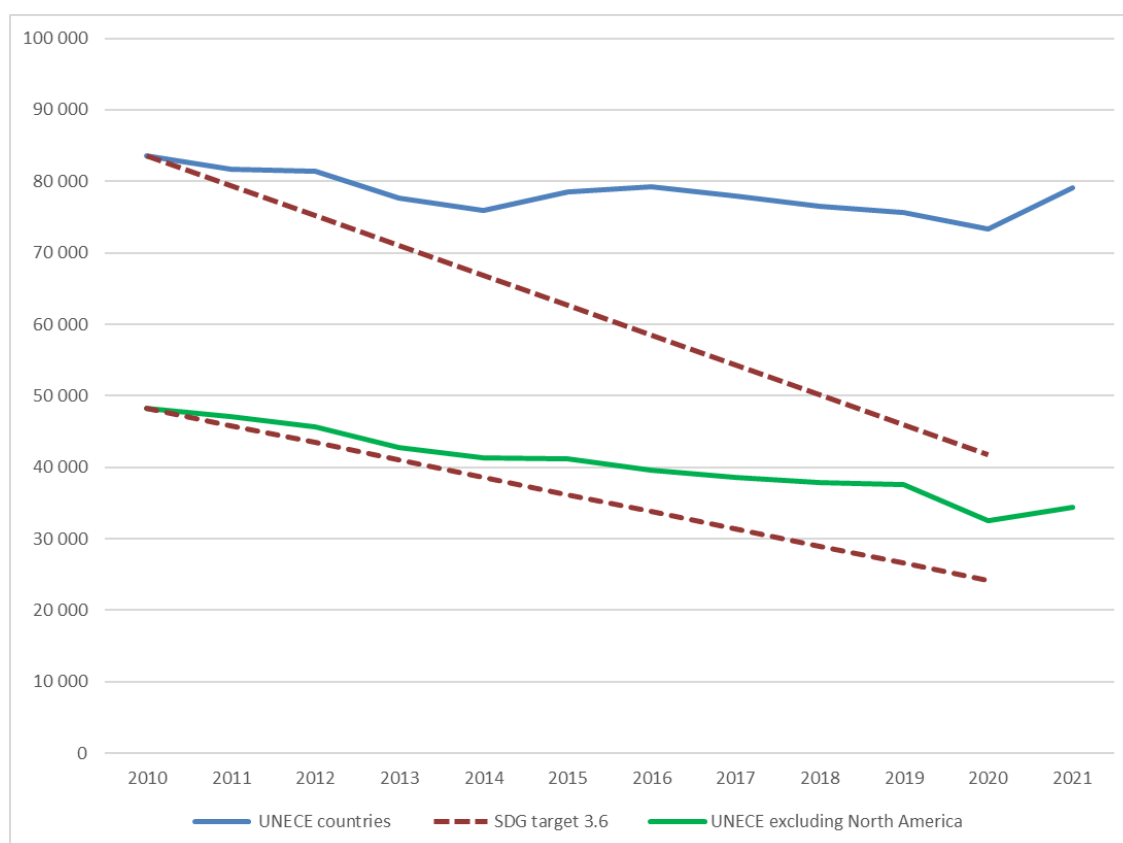
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[2]   https://unece.org/statistics/publications/CES-roadmap-sdg-2.
[3]   https://ec.europa.eu/eurostat/web/sdi/indicators.
[4]   www.cisstat.com/sdgs/sb-monitoring_2016-2019.pdf.

Figure I
**Road traffic fatalities in ECE region**

Source: UNECE Transport Database.

7.   Figure I illustrates the modest progress achieved in reducing road traffic fatalities within the ECE region, albeit with limited improvements. It is worth noting that the data presented here covers 49 UNECE countries, as complete data for all years is unavailable for the remaining nations. From the period spanning 2010 to 2021, road fatalities decreased by a mere 5.3 per cent. Much better improvement is observed in the ECE region excluding North America, mainly due to the large and constant fatalities in the United States of America. In the ECE region, excluding North America, the road fatalities decreased by 28.8 per cent.

8.   It is noteworthy that a relatively large decline in road traffic fatalities was observed in 2020, likely attributable to reduced traffic during pandemic lockdowns. However, these numbers rebounded in 2021, approaching or even exceeding pre-pandemic levels in numerous UNECE countries. However, it is anticipated that this rebound will be short-lived, and a decreasing trend is expected in the upcoming years. Although the long-term decrease represents a step in the right direction, it falls short of the objectives set out in Sustainable Development Goal target 3.6. This target aimed to halve the number of global deaths and injuries from road traffic accidents by 2020. The progress in the ECE region has not met this benchmark.

9.   Given the near-complete data availability and clear relevance to transport safety (in all countries) of this indicator, the Working Party, at its previous session, decided to disaggregate the data by type of road user to enhance measurement at the ECE level. Figure II illustrates the trend in recent years in fatalities of passenger car occupants against vulnerable road users (VRUs), which include pedestrians, cyclists, and motorcyclists. The data reveals that progress in reducing fatalities does not appear to be uniform between these two groups. The situation for VRUs has not shown as significant an improvement as that for car occupants and has worsened in 2021. It is important to note that these figures only pertain to 20 UNECE countries who have data available in every year between 2010 and 2021, and thus may not necessarily represent a fully representative sample.

Figure II

Index of fatalities for passenger car occupants against pedestrians and cyclists, average of ECE countries where data are available, 2010-2019 (2010=100)
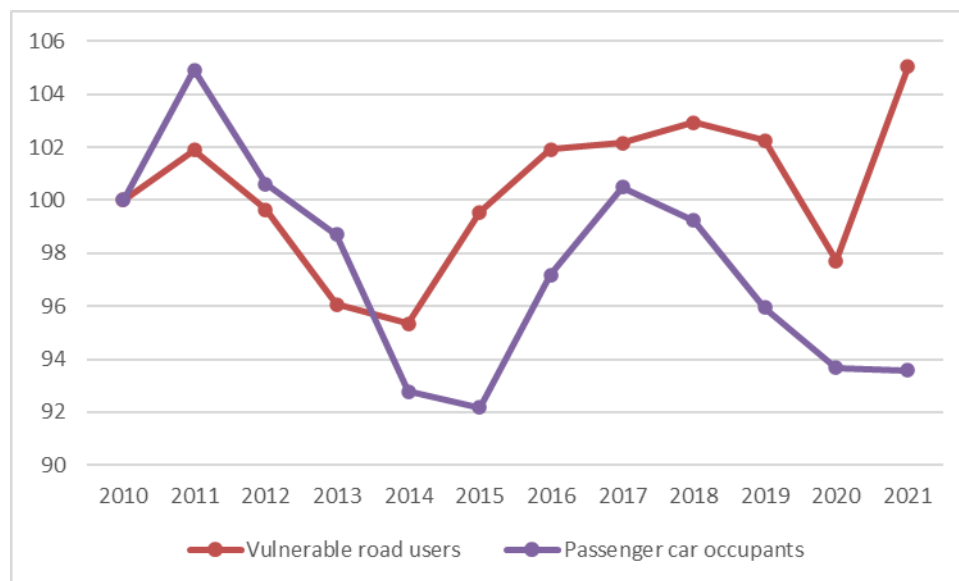

Source: UNECE Transport Database.

10. While these observations are instructive, they should be interpreted cautiously. One potential issue is the underreporting of VRU-related fatalities, which could skew the overall understanding of these trends. Additionally, the COVID-19 pandemic may have led to an increase in the number of VRUs, particularly cyclists. This could, in turn, result in higher fatality rates within this group, especially if road infrastructure and safety measures have not adapted to accommodate the change. Despite these complexities, it is widely acknowledged that car users benefit more from modern vehicle safety features. Furthermore, many countries may have prioritized road safety measures that predominantly benefit car users.

III. Access and affordability

11. The most relevant Sustainable Development Goal indicators for measuring access to transport services are 9.1.1 on rural access (specifically the proportion of the rural population with access to an all-season road) and 11.2.1 on urban public transport access (specifically the proportion of the urban population that lives within 500 m of a public transport stop). ECE does not collect data that directly measure either of these indicators, although the recent tram and metro dataset provides city-level figures on public transport use, which is a very useful supporting indicator when trying to understand access (see ECE/TRANS/WP.6/2021/5).

Figure III
Proportion of rural population with access to an all-season road in ECE region
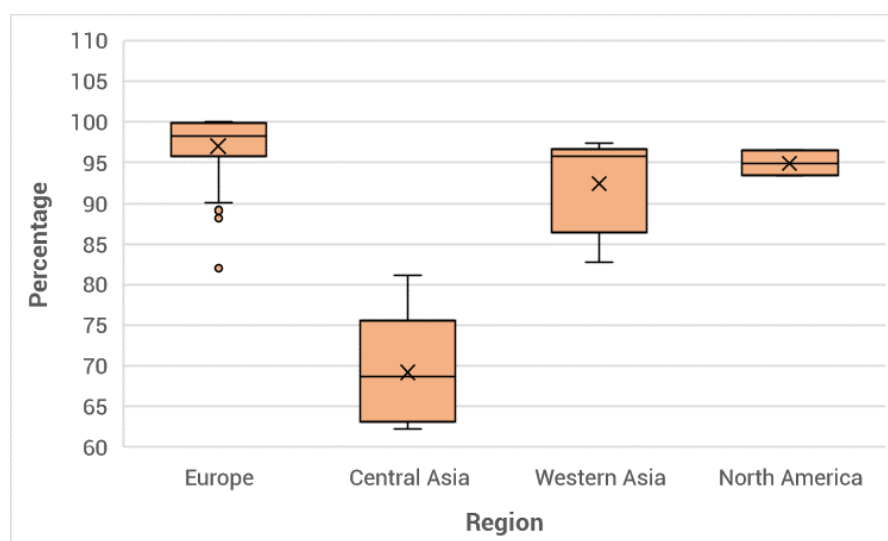
Source: Center for International Earth Science Information Network – CIESIN – Columbia University.[5]

12.   Figure III shows the proportion of the rural population of different regions who live within 2 kilometers of an all-season road, according to Center for International Earth Science Information Network (CIESIN) in its 2023 Release of Sustainable Development Goal Indicators Data Sets. In Europe, the figures are high, indicating robust infrastructure and widespread accessibility. The lowest percentage recorded in this region is 82 per cent. In contrast, the highest access rate in Central Asia is 81 per cent. North America, with its two countries, shows high accessibility with figures between 93 and 96 per cent. Western Asia shows a more varied range, with access rates spanning from 82 to 97 per cent.

13.   In its 2023 Release, CIESIN also produced data sets for Sustainable Development Goal indicator 11.2.1, which tracks access to public transport in cities. Further details on this can be found in document ECE/TRANS/WP.6/2024/2.

14.   Member States are encouraged to provide their feedback on any additional indicators that may provide insights into transport access and affordability in the ECE region. One example for the urban environment in particular is transport costs, and specifically measuring the costs of different transport modes over time. This allows a comparison of the cost of public transport compared to private car ownership for example.

15.   Another aspect of access and affordability again relates to the Leaving No-One Behind concept; measuring trip types by different population subgroups. Thus passenger-km and passenger journeys across different modes by income status, for example, allow transport access and affordability questions to be considered. In recent years, there has sometimes been pushback on certain environmental transport policies due to the possibility of them disproportionately affecting those on low incomes. Thus, the social dimension of sustainable development in transport should not be overlooked.

16.   Eurostat publishes data on household expenditure by income quintile, broken down by category. The relevant categories for transport are 071 (vehicle expenditure), 072 (operation of personal transport equipment) and 073 (passenger transport services). With this breakdown, it is possible to see how expenditure of each income quintile has varied over time for private vehicle usage against public transport usage.

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5   https://sedac.ciesin.columbia.edu/data/set/sdgi-9-1-1-rai-2023.

IV. Efficiency and environmental impact

17.   The principal global indicator for measuring both efficiency and environmental impact of transport is indicator 9.1.2 on passenger and freight volumes by mode of transport. The secretariat has previously highlighted the potential importance of this indicator and its possible future utility (ECE/TRANS/WP.6/2020/1, ECE/TRANS/WP.6/2020/2, ECE/TRANS/WP.6/2020/3). At the latest United Nations Statistical Commission, this indicator was included in a list prepared by the Inter-Agency and Expert Group on Sustainable Development Goal indicators (IAEG-SDGs) as being likely to be highly affected by the COVID-19 pandemic (Fifty-second Statistical Commission session, background document for agenda item 3a6). This partly recognises that the modal split of transport, and not just total transport volumes, is a key metric as economies move out of the pandemic.

18.   In terms of data availability, on the goods transport side data are quite complete, with 38 member States having recent complete modal split data. But on the passenger side, by far the biggest issue is that many countries either do not provide passenger-km data for road, or when they do the passenger-km data for cars only cover private taxi journeys, a very small percentage of total passenger car passenger-km. This remains the largest area of improvement in ECE data for measuring efficiency and environmental impact.

19.   In addition to the global indicator, there are a number of other indicators that may be suitable for monitoring efficiency and environmental impact in the ECE region. New registrations of passenger cars by fuel type allows insights into the carbon intensity of the vehicle fleet in the years to come. This is shown in figure IV, which shows the percentage of new passenger car registrations that are not fully petrol or diesel (thus grouping electric cars with hybrid and plug-in hybrids). As can be seen from the graph, in 2021, data is available for only 16 ECE member States. This is potentially a very revealing indicator with expected significant fleet changes in the years to come, highlighting the importance of providing detailed data through the web common questionnaire.

20.   While the passenger car new registration data by fuel type data is an indirect indication of environmental performance, a more direct measure is available for some countries, namely the CO_2 emissions from new passenger cars. This is recognised by Eurostat as a useful measure of sustainable development in the European context, specifically for goal 12 on sustainable consumption and production.[7]

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[6] https://unstats.un.org/unsd/statcom/52nd-session/documents/BG-3a-COVID-19_and_the_global_SDG_indicators-E.pdf.

[7] https://ec.europa.eu/eurostat/web/sdi/responsible-consumption-and-production.
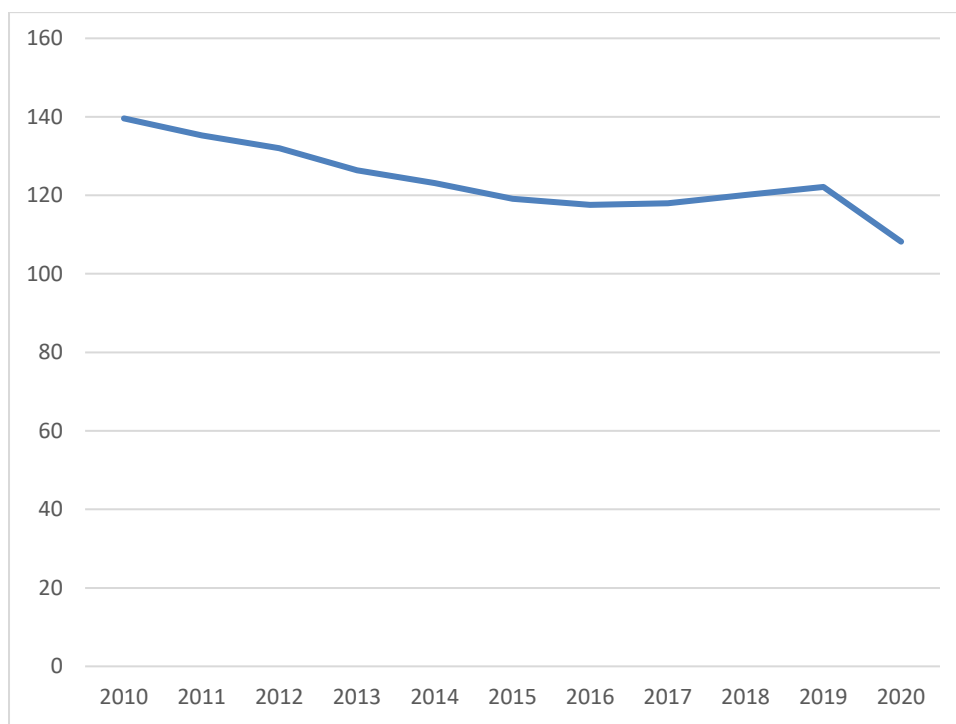
Figure IV
Percentage of new passenger car registrations that are not fully petrol or diesel models
Data for 2021

Source: UNECE Transport Database.

Figure V
CO$_2$ emissions from new passenger cars, European Union Average

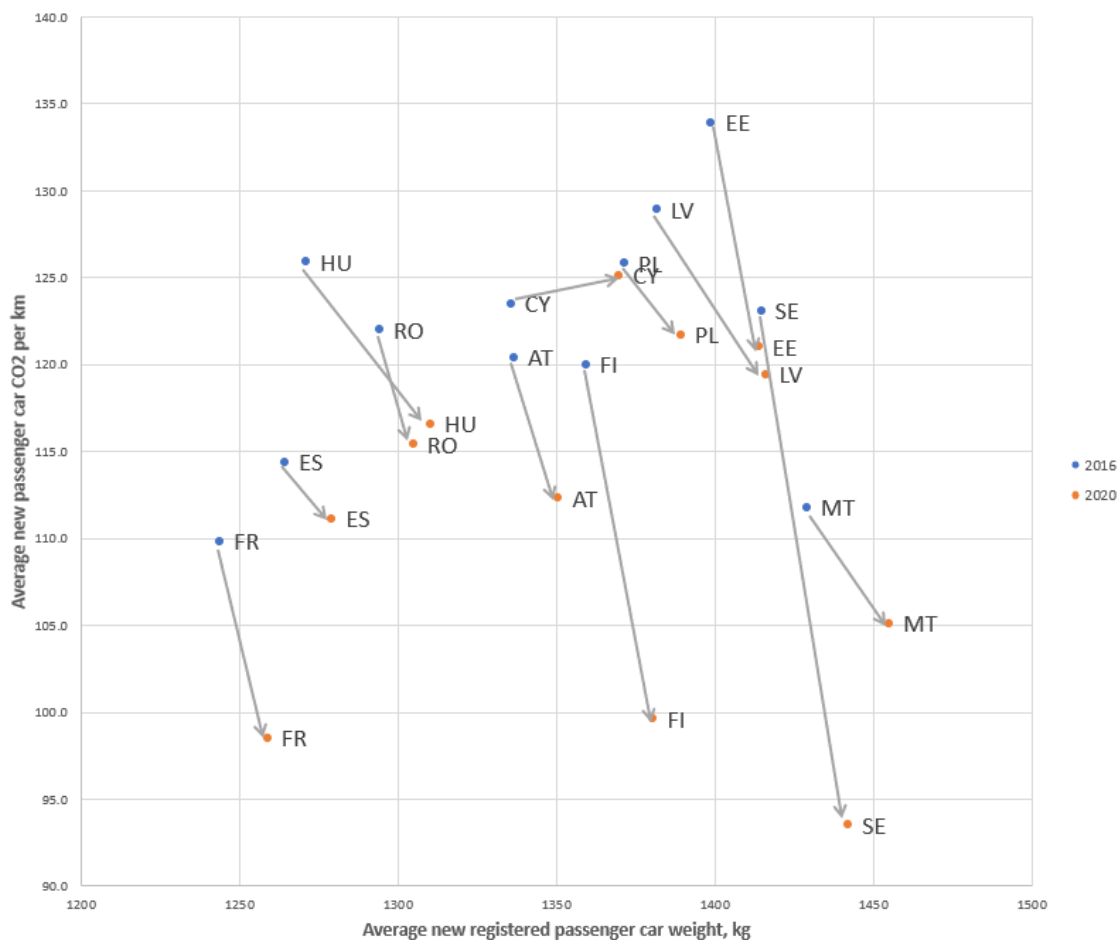*Source:* Eurostat sdg_12_30 table.

21.   Figure V shows the European Union average of this indicator over time. While progress was made between 2010 and 2016, 2016 to 2019 saw increases in the CO$_2$ of new passenger cars, only reducing again in 2020 with a sharp fall of twelve per cent.

22.   The secretariat looked into possible drivers of change in this indicator. In addition to fuel type, the weight of new vehicles is a key component of the CO$_2$ emissions from a passenger car, as heavier cars require more energy for propulsion. It is possible that this relationship will become mixed in the coming decade, with the batteries of electricity-powered vehicles creating heavy vehicles with low CO$_2$ emissions. But for the time being, figure V suggests that this has not yet occurred sufficiently.

23.   Figure VI therefore tracks the changes in CO$_2$ emissions from new passenger cars against the changes in vehicle weight for the years 2016 and 2020 across selected countries. The data indicates a trend of decreasing CO$_2$ emissions despite an increase in vehicle weight. This could be attributed to factors such as the weight of batteries and the overall improvement in fuel efficiency of newer vehicles.

Figure VI
New Passenger car CO$_2$ emissions against new passenger car average weights

Source: Eurostat road_eqr_unlweig and sdg_12_30 tables.

24.   Additional indicators that may be useful from an efficiency and environmental perspective for ECE countries include passenger car occupancy rate (derivable from passenger-km and vehicle-km data, though coverage differences with each part of the indicator often makes the indicator less reliable); and the total passenger journeys (or passenger-km) taken by public transport, or even walking and cycling.

V.   National Examples

25.   In addition to the countries presented at the previous session (ECE/TRANS/WP.6/2023/1), the following are additional examples of country-specific indicators for monitoring the transport-related Sustainable Development Goals in national contexts. The Netherlands has updated its indicators since the previous session.

A.   Federal Statistical Office of Germany

26.   Regarding target 11.2, Germany has selected additional indicators focused on final energy consumption in both goods and passenger transport. The former is defined as the energy consumed for transporting goods within Germany, encompassing inland waterways, rail, and road transport. The latter pertains to the energy used for the transportation of people within Germany, including travel by rail, air and road (encompassing both public and private

transport).[8] This data on domestic final energy consumption, derived from the TREMOD database at the Institute for Energy and Environmental Research, specifically measures direct energy use in transport, excluding energy losses in fuel production or from pipeline transport.

B.   Statistics Netherlands

27.   Sustainable Development Goals in the Dutch Context[9] is a web publication that Statistics Netherlands uses for monitoring the 2030 development agenda domestically. This publication combines or modifies global indicators with additional indicators tailored to the Netherlands' specific circumstances. The additional national-level indicators chosen by the Netherlands related to transport are all grouped under Goal 9 (Industry, Innovation and Infrastructure). Target 9.1 in the Dutch context has been interpreted as relating to infrastructure and mobility, with indicators divided between the themes of resources and opportunities; use (of transport); outcomes; and subjective assessment. The indicators are chosen to be consistent with the Ministry of Infrastructure and Water Management's blueprint Mobility to 2040 and the National Environmental Vision. The transport-related indicators were updated in the 2023 release of the publication:

- Percentage of GDP spent on infrastructure (road, railways, bridges and tunnels construction);

- Expenditure on transport by households;

- Percentage of population of 6 years or older having a car available to them (household car ownership combined with individual driver's license);

- Percentage of electric cars in total fleet (full electric as well as hybrids);

- Percentage of recreational trips;

- Percentage of kilometres travelled emission-free by passenger car;

- Average passenger-kilometres per person travelled by car;

- Average passenger-kilometres per person travelled on public transport;

- Average passenger-kilometres per person travelled by bicycle;

- Time lost due to traffic congestion and delays (vehicle hours lost per capita) (This is also chosen as an indicator of resilience in relation to external shocks such as financial crises and pandemics);

- Traffic deaths (deaths per 100,000 inhabitants);

- CO_2 emissions from personal vehicle traffic (kg CO_2 per capita);

- CO_2 emissions from commercial vehicles (kg CO_2 per capita);

- Particulate matter emissions from mobile sources (PM_{10} kg per capita).;

- CO_2 emissions by national air carriers (kg CO_2 per capita); and

- Percentage of population of 15 years or older experiencing severe nuisance from traffic.

28. The upcoming 2024 release of the publication will include an additional indicator: Perceived accessibility (percentage of population of six years or older that cannot or can seldom reach one or more places they want to go to).

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[8]   www.destatis.de/EN/Themes/Society-Environment/Sustainable-Development-Indicators/Publications/Downloads/indicator-report-0230002219004.pdf?__blob=publicationFile.

[9]   www.cbs.nl/en-gb/dossier/dossier-well-being-and-the-sustainable-development-goals/monitor-of-well-being-and-the-sustainable-development-goals-2023.

VI. Secretariat approach and conclusions

29.   The secretariat welcomes and appreciates the efforts of individual countries in selecting nation-specific indicators that are appropriate for their own circumstances in achieving the Sustainable Development Goals. This approach is both necessary and important for realizing the Sustainable Development Goals at a national level. Member States that have developed innovative and relevant transport-related additional indicators are encouraged to share their experiences and methodologies with the secretariat, thereby fostering a collaborative learning environment.

30.   This document aims to stimulate a focused discussion on potential additional transport indicators that could enhance the monitoring of sustainable transport within the ECE region, with special attention to the challenges of data availability. Our reliance on alternative data sources, as exemplified by the use of CIESIN's data for indicator 9.1.1, highlights the value of our collective input and insights. Delegates are invited to reflect upon the examples provided and to suggest alternative indicators. These could include metrics that have proven useful in tracking transport trends within their own countries. The Working Party may be particularly interested in exploring how member States have navigated data gaps and the reporting of complex metrics.

31.   The global indicators and the country-specific indicators outlined herein will serve as foundational elements for the secretariat's ongoing efforts in developing the micro-site dedicated to monitoring the transport-related Sustainable Development Goals in the ECE region. This micro-site, currently in development, aims to provide a comprehensive perspective on sustainable transport. It will organize and showcase diverse national approached under thematic categories of infrastructure, health, cities, and climate.