Economic and Social Council

Economic Commission for Europe

Inland Transport Committee

Working Party on Transport Statistics

Seventy-fourth session
Geneva, 15–17 May 2023
Item 2 of the provisional agenda
**Transport indicators and monitoring
the 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 global indicators, discusses data availability and sub-indicators for specific population groups, as well as proposing a few regional-specific indicators that member States may deem appropriate for the region. It is an update of ECE/TRANS/WP.6/2022/1.

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 and considers strategies for expansion of regional-specific transport monitoring. As a reminder, the global indicators most relevant for

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[1] www.sum4all.org/.

transport are: 3.6.1 on halving road traffic accident fatalities; 9.1.1 on rural population access 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.   The rest of this document shows progress on the transport-related Sustainable Development Goals, both using the global indicators as well as considering additional transport indicators that may be appropriate for the ECE region. When considering these, good data availability is a pre-requisite; after this, indicators need to show progress towards the different pillars of sustainable transport: safety, access and affordability, efficiency and environmental impact. The overarching theme of the 2030 Development Agenda, of Leaving No-One Behind, is addressed by suggesting indicator breakdowns to consider.

II.   Transport safety

5.   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 2020. It is known that data comparability across countries is not always perfect, which is why the World Health Organisation publishes an adjusted fatality figure partly based on modelling, in addition to the nationally reported total[5]. ECE and other actors encourage countries to harmonise their definitions with international norms; this is clearly demonstrated in road fatality data for Turkey, 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.
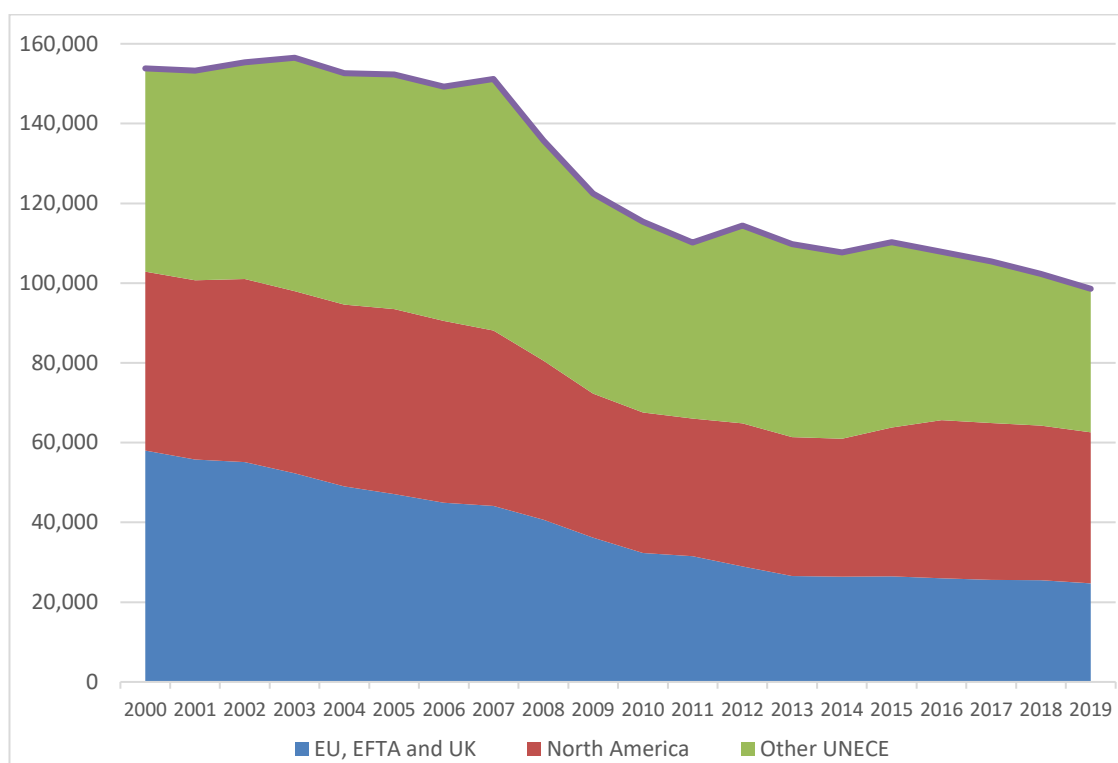
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[2] https://unece.org/statistics/publications/CES-roadmap-sdg-2.
[3] https://ec.europa.eu/eurostat/web/sdi/indicators.
[4] www.cisstat.com/sdgs/sb-monitoring_2016-2019.pdf.
[5] www.who.int/publications/i/item/9789241565684.

Figure 1
ECE road fatalities over time, by sub-region

6.	Figure 1 shows total UNECE fatalities over time (split by sub-region). This graph highlights both the very good progress made since 2000, with a 36 per cent reduction in total fatalities in the ECE region. Over half a million ECE citizens would not be alive today if the fatality numbers of 2000 had been maintained.

7.	Notwithstanding this positive trend, it is notable that only a 15 per cent reduction has occurred in the 2010-2019 period. This modest progress is far away from the 3.6.1 target of halving fatalities in the 2011-2020 decade. It is also worth noting that seven member States have seen increases in fatalities since 2015.

8.	Since the COVID-19 pandemic started drastically changing mobility options in 2020, there has been much speculation on how this would affect road fatalities. Despite unprecedented decreases for some member States when the strictest lockdowns were in force in spring 2020, the overall picture has not been as promising. Of the 22 ECE member States who have already provided 2020 fatality figures, fifteen saw decreases (in the range of 0-20 per cent) compared to 2019, whereas seven member States saw increases or the same number of fatalities. Preliminary data for some countries also suggested that 2021 has seen a rebound and a strong increase in fatalities in some countries, for example the United States[6]. In the context of less traffic (at least at the start of the pandemic), these numbers are not encouraging.

9.	Given the near-complete data availability and clear relevance to transport safety (in all countries) of this indicator, the only possible improvements at the ECE level may be to include additional indicators that can further measure the impact on road safety, for example breaking the data down by sex, age, and type of road user. In this regard, reporting can try to Leave No-One Behind. Figure 2 shows, for example, the trend in recent years in fatalities of passenger car occupants against vulnerable road users, showing that progress in fatality reduction does not seem to be consistent between the two groups (it should be noted that this

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[6]	https://www.nhtsa.gov/press-releases/traffic-fatalities-estimates-jan-sept-
2021#:~:text=NHTSA%20projects%20that%20an%20estimated,first%20nine%20months%20of%20
2020.

is only for countries who have data available in every year between 2010 and 2019, so not necessarily a representative sample).

Figure 2
Index of fatalities for passenger car occupants against pedestrians and cyclists, average of ECE countries where data are available, 2010-2019 (2010=100)
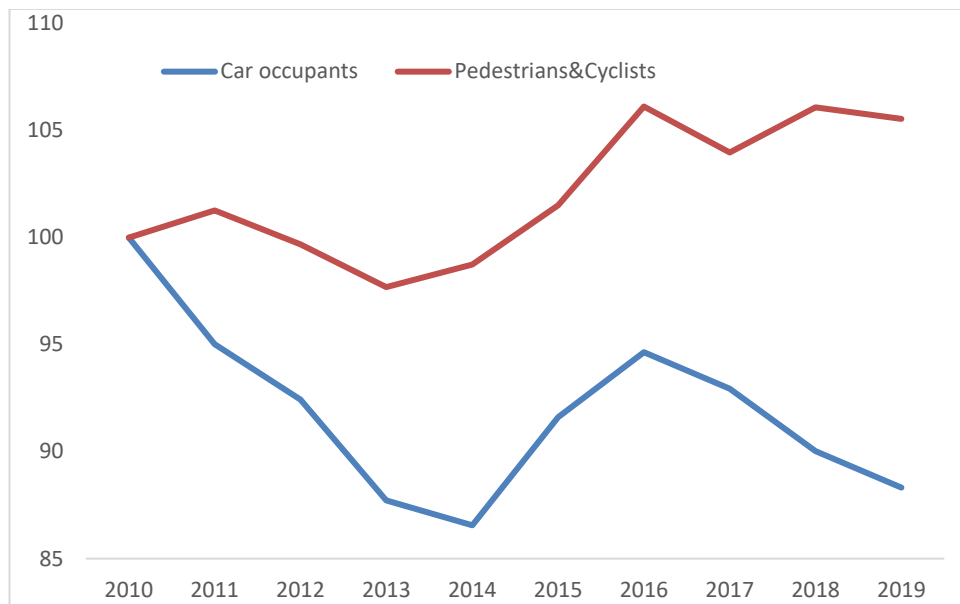

10.   In terms of data availability, data are less complete than the total fatalities figure. In 2017, at least some of the breakdown of fatalities by type of road user is available for 43 ECE countries; the age breakdown is available for 41 ECE countries; and the breakdown by sex of the victim is available for 41 countries too.

11.   In order to achieve the Sustainable Development Goals, targeted policies are needed. Top level figures can tell policy makers the rough direction of travel. Yet knowing for example that the majority of road fatalities are male passenger car drivers between the ages of 25 and 64 (a trend visible in virtually every country with data), or that pedestrian and cyclist deaths have not decreased in line with passenger car occupants (Figure 2), allows specific education and enforcement campaigns to be tailored accordingly.

III.   Access and affordability

12.   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 500m 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 3
Share of population with access to public transport
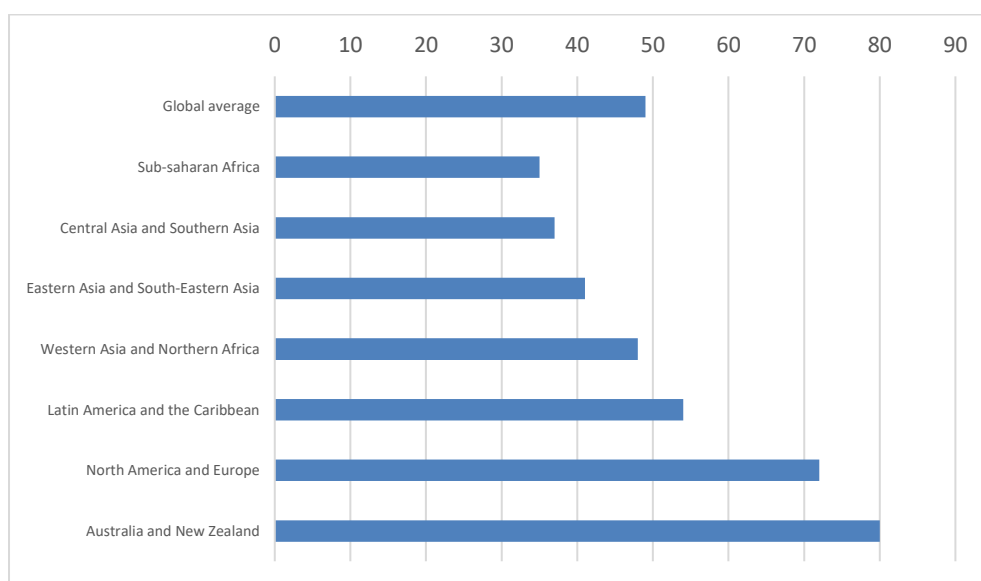
Source: UN-HABITAT

13.   Figure 3 shows the share of the total population of different sub-regions, according to UN-HABITAT[7]. The figures for parts of the ECE region are not always shown separately but show for example that North America and Europe is one of the best-performing regions. It is recognized by all that measuring access is a challenge, and so any additional indicators that are appropriate for ECE member States should be explored if data are available.

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 equipment0 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.

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

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[7] https://unece.org/DAM/trans/doc/2019/wp6/Presentations/UN_HABITATtransport_
11.2.1_Monitoring_SDG_UNCE_workshop_V2.pdf.

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 3a[8]). 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. In particular, if people are afraid to take public transport due to fears of virus transmission, and opt to take private vehicles instead, then this will have a significant impact on the efficiency and environmental impact of transport in the years to come, particularly in an urban context.

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 4, 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, data availability is only around half of 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[9].

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

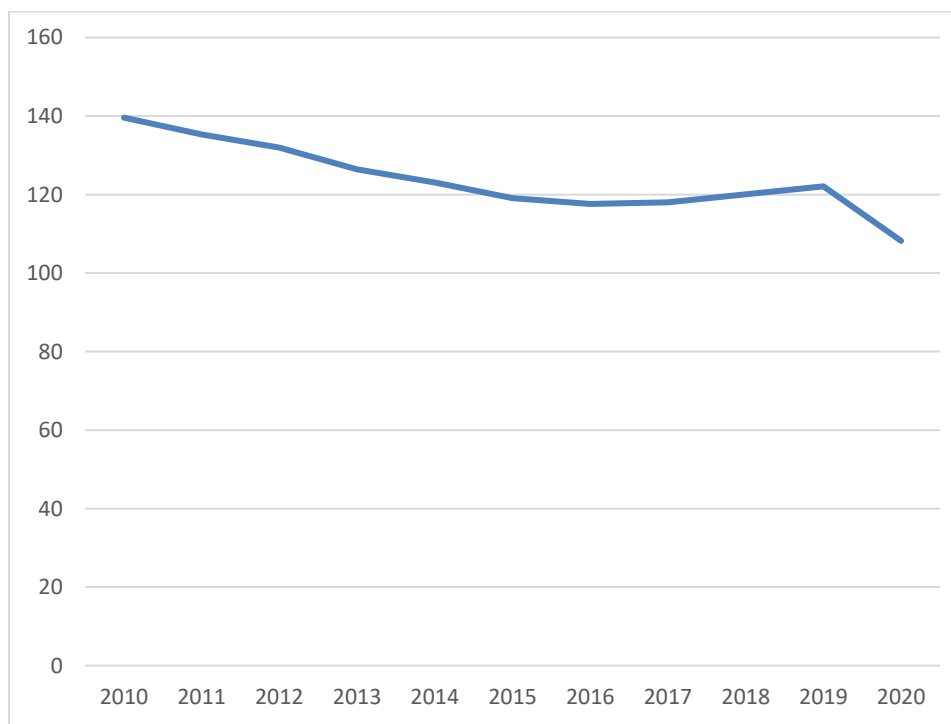9 https://ec.europa.eu/eurostat/web/sdi/responsible-consumption-and-production.

Figure 4
Percentage of new vehicle registrations that are not fully petrol or diesel models.
Data for 2017
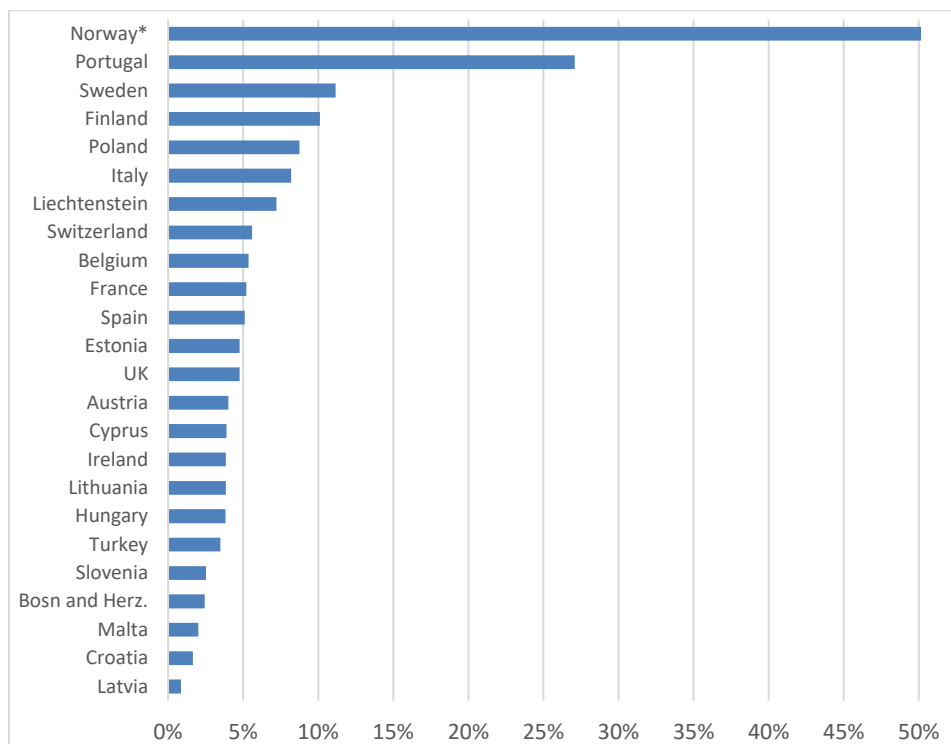
Note that the Norway figure is 52.4 %.

Figure 5
CO2 emissions from new passenger cars, European Union Average
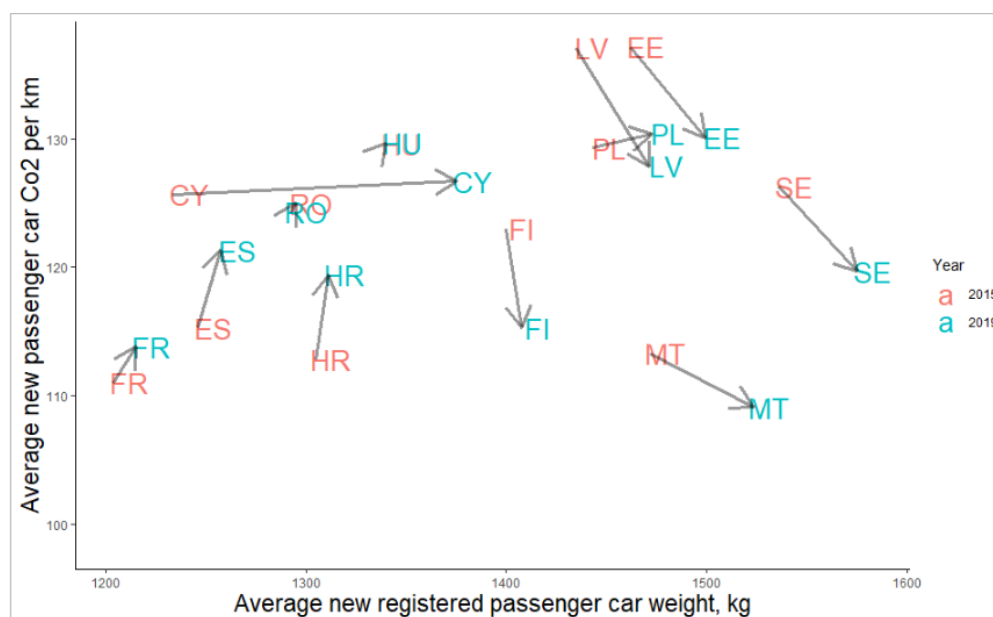

Source: Eurostat sdg_12_30 table

21.   Figure 5 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 5 suggests that this has not yet occurred sufficiently.

23.   Figure 6 therefore tracks changes in CO_2 emissions of new passenger cars against changes in vehicle weight of new passenger cars, for 2015 and 2019. Some countries have decreased their average CO2 emissions while their average weights have increased, sometimes significantly. This could be the result of the weight of batteries. However, some countries have seen their emissions increase, and the corresponding increase in vehicle weights may be causing this.

Figure 6
New Passenger car CO2 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.   There follows a non-exhaustive list of examples of country-specific indicators for monitoring the transport-related Sustainable Development Goals in national contexts.

State Statistical Committee of Belarus

26.   In addition to the global indicators, The State Statistical Committee of the Republic of Belarus has chosen a single transport-relevant additional indicator: 9.1.3.1 is the density of paved public roads (km per 1000 square kilometres[10].)

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[10]   http://sdgplatform.belstat.gov.by/sites/belstatfront/index-info.html?indicator=9.1.3.1.

Statistics Canada

27. An additional indicator chosen by Statistics Canada under Goal 9 relates to modern and sustainable infrastructure and sets an explicit target for the number of electric vehicle chargers, natural gas stations and hydrogen stations along major highways and freight corridors to be available by 31 March 2024[11].

Czech Statistics Office

28. Three additional indicators chosen by Czechia[12] relate to the annual vehicke-km travelled by public transport in cities, the share of low-floor public transport vehicles in cities (important both for people with mobility issues as well as parents with prams), and the average commuting time of citizens.

Statistics Denmark

29. Statistics Denmark has a publication entitled Make Global Goals our Goals. Under Goal 9:

- Punctuality of trains (broken down by long-distance, regional and local).
- Experience of quality and efficiency of infrastructure in Denmark (including road, rail aviation and ports).
- Emissions of CO_2 from transport.

Under Goal 11:

- Price of selected public transport services.
- Proportion of people who can easily use buses and trains.
- Proportion of electric cars and buses in the total.
- Proportion of public sector vehicles that are electric.

Statistics Netherlands

30. Sustainable Development Goals in the Dutch Context[13] is a web publication that Statistics Netherlands uses for monitoring of the 2030 development agenda in their own country, with global indicators combined or modified together with additional indicators suiting their circumstances. The additional national-level indicators chosen by the Netherlands related to transport are all located under the goal 9 on Industry, innovation and infrastructure, and 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 indicators chosen relating to transport:

- Density of public road network (km of roads per square kilometre).
- Volume of passenger transport relative to GDP.
- Volume of freight transport relative to GDP.
- Percentage of total passenger-kilometres travelled in a car.

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[11] https://sdgcif-data-canada-oddcic-donnee.github.io/9-6-1/.

[12] https://www.sdg-data.cz/cr-2030/obce-a-regiony.

[13] https://longreads.cbs.nl/monitor-of-well-being-and-sdgs-2022/sustainable-development-goals-sdgs-in-the-dutch-context.

- Percentage of total passenger-kilometres travelled in public transport.

- Bicycle kilometres (km per capita).

- Percentage of electric cars in total.

- 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 million inhabitants).

- CO_2 emissions from domestic transport (kg CO_2 per capita).

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

- Percentage of households experiencing noise nuisance from traffic and neighbours.

- Percentage of active population 18-74 satisfied with commuting time.

31.   The 2022 release of this publication included some improvements, notably using bicycle passenger-km figures from the national travel survey, as well as including all forms of public transport in the modal split indicators, not just train travel.

Switzerland Federal Statistics Office

32.   Switzerland produces the MONET 2030 indicators system[14] which gives an overview of sustainable development in Switzerland, providing a picture of the progress made towards the 17 sustainable development goals (SDG) of the United Nations 2030 Agenda as well as in relation to the Federal Council's sustainable development strategy 2030 and to certain topics specific to Switzerland. Additional indicators related to transport include for Goal 9: Congestion on the Swiss motorway network (caused by excess traffic, hours per year). For Goal 11, two extra indicators are:

- Independent use of public transport by persons with disabilities.

- Traffic noise pollution.

VI.   Secretariat approach and conclusions

33.   The secretariat welcomes individual country efforts in choosing nation-specific indicators appropriate for their own circumstances in achieving the Sustainable Development Goals. This is a necessary and important step in achieving the Sustainable Development Goals at the national level. If any member States have interesting transport-relevant additional indicators that they are using for this purpose, they are invited to share their experiences with the secretariat.

34.   This document is meant to provoke discussion about what additional transport indicators may be appropriate for monitoring sustainable transport in the ECE region, mindful of data availability. Delegates may reflect on these examples and consider proposing alternative indicators, including any examples that they feel useful for tracking transport trends in their own countries. As discussed at the previous session of the Working Party, a set of regional-specific transport indicators could be considered and compiled.

35.   Based on the global indicators and the country-specific indicators listed here, the secretariat plans to produce a "micro-site" on monitoring the transport-related Sustainable Development Goals in the ECE region. The idea for the site will be to look at sustainable transport in a holistic manner, and group country approaches along different themes such as accessibility, environmental protection, and social aspects. It is hoped that a prototype will be ready in time for the upcoming session of the Working Party so member States can give feedback on this.

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[14]   https://www.bfs.admin.ch/bfs/en/home/statistics/sustainable-development/monet-2030.html.