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Inland Transport Committee Strategy for Reducing Greenhouse Gas Emissions from Inland Transport for Government Delegates only with the Participation of the Chairs of the Committee's Subsidiary Bodies

In-depth Report on Inland Transport and Climate Change, Part 2: Decarbonization Policy Commitments, Challenges and Opportunities

Note by the secretariat*

Summary

Two in-depth reports have been prepared by the secretariat with the support of an external consultant (Nikola Medimorec) as background material to the draft Inland Transport Committee strategy to reduce Greenhouse gas (GHG) emissions from inland transport.

This second in-depth report provides detailed analysis of the commitments of countries to decarbonize their inland transport sector, specially scrutinizing Nationally Determined Contributions (NDCs), Long-Term Strategies (LTS) under the UN Framework Convention on Climate Change (UNFCCC) and Voluntary National Reviews (VNRs) under the Sustainable Development Goals.

It then looks at actions and commitments taken at the national level to support the timely reduction of GHG emissions from inland transport. Despite enormous progress done in the recent past, the inland transport sector is not on track to meet the objectives set by the Paris Agreement.

Finally, the report highlights major regional trends and challenges to further decarbonize inland transport, showing that regional and national situations are diverse and the type of actions taken and their effectiveness are likely to depend on the regional and national context.

* The present document is being issued without formal editing.

I. Policy Commitments by Member States

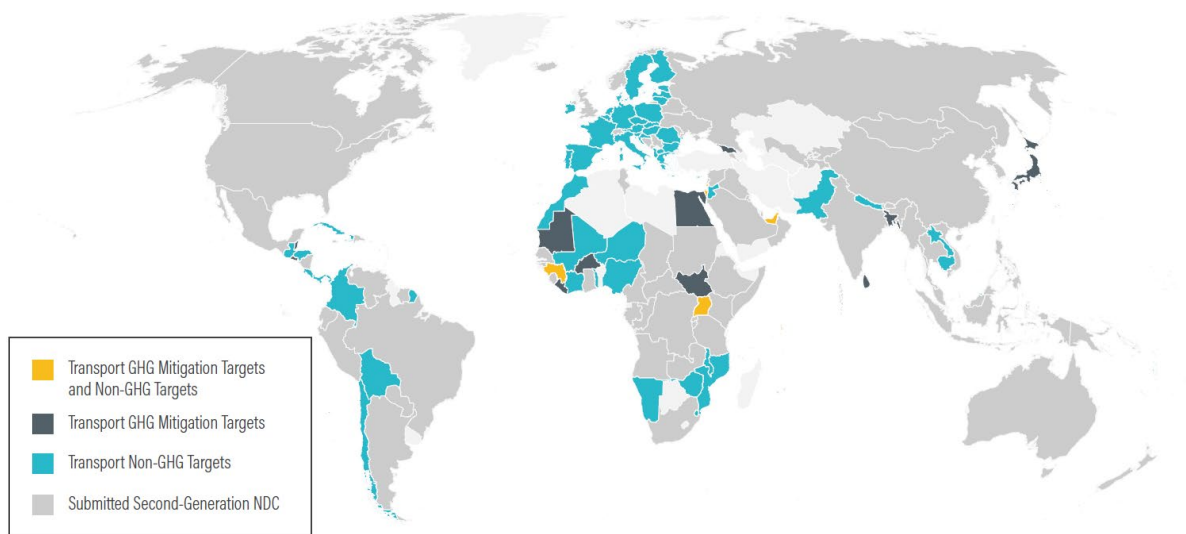
A. Inland Transport in Nationally Determined Contributions and Long-term Strategies

1. Global Situation

1. Most countries (169 countries in total) submitted second-generation nationally determined contributions (NDCs) before the end of 2022 and strengthened their overall climate ambitions. Of the second-generation NDCs, 16 per cent of the countries (23 countries), predominantly European and African countries, had a target for mitigating transport greenhouse gas (GHG) emissions for the year 2030. This was up from only 13 first-generation NDCs (or 8 per cent) (see Annex I).

Figure I

Transport targets, by type, in second-generation NDCs



Source: SLOCAT.

2. The main focus of the NDCs and long-term strategies (LTS) is on inland transport. Among the over 800 transport mitigation actions identified in second-generation NDCs, as of July 2023, less than 5 per cent are associated with aviation or maritime transport.¹

3. An analysis of the Avoid-Shift-Improve (A-S-I) measures set out in the second generation of NDCs shows a greater imbalance across the measures compared to the first generation of NDCs. “Avoid” only represents 4 per cent of transport mitigation actions, while “Shift” has a 25 per cent share in second-generation NDCs. The large majority of actions are, however, associated with “Improve” (60 per cent). In the first-generation NDCs, Avoid, Shift and Improve measures represent 3 per cent, 32 per cent and 54 per cent respectively, the rest being cross-cutting.²

4. In both generations of NDCs, there were very few explicit mentions of freight-related actions. Around two-thirds of the transport mitigation actions in each generation of NDCs did not explicitly mention freight or passengers, while 25 per cent mentioned passenger transport and only around 5 per cent mentioned freight transport.

5. Adaptation was still neglected for the transport sector, as few second-generation NDCs feature transport adaptation targets and actions. While there were on average 5.2 mitigation actions per second-generation NDC, there were only 1.2 adaptation actions per

¹ GIZ and SLOCAT (2023), “NDC Transport Tracker”, <https://changing-transport.org/tracker>.

² SLOCAT (2022), “Climate Strategies for Transport: An Analysis of Nationally Determined Contributions and Long-Term Strategies”, October 2022 Update. www.slocat.net/ndcs

second-generation NDC. Only 6 second-generation NDCs (Antigua and Barbuda, Burundi, Cambodia, Kenya, Liberia and Papua New Guinea) had transport adaptation targets.³

6. NDCs focus on climate action at the national level, but it is essential that subnational governments/cities are considered and supported in decarbonisation efforts. However, second-generation NDCs do not consider supporting frameworks for urban transport.⁴ Several actions across A-S-I require local action.

7. By the end of 2022, only a quarter of the world's countries (58 countries) had developed LTS. 11 countries (see Annex II) outline transport targets in their LTS (representing 21 per cent of submitted LTS by end of 2022). Nearly every LTS features transport actions but with a similar imbalance of A-S-I as the second-generation NDCs.⁵

2. Situation in Different Regions

(a) Africa

8. As of the end of 2022, Africa accounted for 43 per cent of the countries that included time-bound targets for reducing transport greenhouse gas emissions in their second-generation NDCs. The African countries – representing 10 out of the 23 total countries – were Burkina Faso, Egypt, Gambia, Guinea, Liberia, Mauritania, Mauritius, Seychelles, South Sudan and Uganda. Several African NDCs also included other types of transport targets, such as for vehicle efficiency, zero-emission vehicles, mode share, biofuels and transport infrastructure.⁶

(b) Asia

9. The NDCs of six Asian countries – Bangladesh, Georgia, Israel, Japan, Sri Lanka and the United Arab Emirates – are among the 23 second-generation NDCs submitted under the Paris Agreement that feature targets for transport greenhouse gas mitigation. This is the second highest share by region after Africa.⁷

10. As of 2022, at least 14 Asian countries had made economy-wide pledges towards net zero-emissions in addition to transport targets (which mostly aimed at electric mobility).

Box 1. Singapore's LTS

Singapore made strong linkages between transport and land use planning:

- Establish active mobility, public and shared mobility as preferred way of travel
- Develop 20-minute cities supporting walking, cycling, riding and 40-minute cities (mostly for commuting) with public transport
- Expand active mobility network
- Expand and improve mass public transport and shared transport
- Promote zero-emission vehicles and phase out sales of internal combustion engine vehicles by 2040

³ SLOCAT (2022), "Climate Strategies for Transport: An Analysis of Nationally Determined Contributions and Long-Term Strategies", October 2022 Update. www.slocat.net/ndcs

⁴ SLOCAT (2022), "Climate Strategies for Transport: An Analysis of Nationally Determined Contributions and Long-Term Strategies", October 2022 Update. www.slocat.net/ndcs

⁵ SLOCAT (2022), "Climate Strategies for Transport: An Analysis of Nationally Determined Contributions and Long-Term Strategies", October 2022 Update. www.slocat.net/ndcs

⁶ GIZ and SLOCAT (2023), "NDC Transport Tracker", <https://changing-transport.org/tracker>.

⁷ GIZ and SLOCAT (2023), "NDC Transport Tracker", <https://changing-transport.org/tracker>.

(c) Europe

11. In Europe, the EU (European Union) submitted a second-generation NDC on behalf of its 27 member states. The second-generation NDC of 2020 points to the binding CO₂ performance targets for road transport until 2030.⁸

(d) Latin America and the Caribbean

12. Nearly all LAC (Latin America and the Caribbean) countries (90 per cent) had submitted a second-generation NDC, while only 20 per cent of countries had submitted Long-Term Strategies. Countries in the region show the strongest linkages to renewable energy in transport globally, with nearly 12 per cent of their NDC actions associated with alternative fuels. Four countries (Belize, Dominica, El Salvador and Grenada) included targets for reducing transport greenhouse gas emissions in their second-generation NDCs. Eight countries in the region (Antigua and Barbuda, Barbados, Bolivia, Chile, Colombia, Costa Rica, Dominica and Panama) included e-mobility targets in their second-generation NDCs (see Annex III).⁹

Box 2. Updated NDC by Colombia¹⁰

The updated NDC by Colombia features a variety of transport mitigation actions that can be associated with “Avoid”, “Shift” and “Improve” pillars. Urban planning will be enhanced by working towards compact cities taking into favour of proximity and the human scale. Such a paradigm will ensure benefits for public transport, walking and cycling. Freight transport emissions will be tackled through logistics optimisation strategies, vehicle emission standards. A shift from road to inland waterways for goods transport is being envisioned by improving the navigability along major rivers. Colombia takes a comprehensive approach applying regulatory and financial frameworks in support of electric mobility. The NDC features the target to have 600,000 electric vehicles (buses, taxis, trucks, government fleets) by 2030.

(e) North America

13. The NDC by the United States of America (USA) includes the target to reduce economy-wide emissions 50-52 per cent below 2005 levels by 2030.¹¹ Canada aims to reduce emissions by 40-45 per cent below 2005 levels by 2030.¹²

(f) Oceania

14. Oceania countries’ NDC offer a wide-ranging set of climate change mitigation and adaptation activities. The only second-generation NDC with a transport greenhouse gas mitigation target in this region was submitted by Samoa. Only five countries in the region (Australia, Fiji, Marshall Islands, New Zealand and Tonga), or 33 per cent, had submitted Long-Term Strategies under the Paris Agreement as of the end of 2022.¹³

(g) Practices from NDCs and LTS on “Avoid”, “Shift” and “Improve”

15. The following overview shows illustrative examples on each of the three elements of the A-S-I framework. The examples are based on all LTS submissions and the current

⁸ https://unfccc.int/sites/default/files/NDC/2022-06/EU_NDC_Submission_December_per_cent202020.pdf

⁹ GIZ and SLOCAT (2023), “NDC Transport Tracker”, <https://changing-transport.org/tracker>.

¹⁰ https://unfccc.int/sites/default/files/NDC/2022-06/NDC_per_cent20actualizada_per_cent20de_per_cent20Colombia.pdf

¹¹ US Government (2021), “The United States’ Nationally Determined Contribution, Reducing Greenhouse Gases in the United States: A 2030 Emissions Target”, <https://unfccc.int/sites/default/files/NDC/202206/United%20States%20NDC%20April%202021%202021%20Final.pdf>.

¹² GIZ and SLOCAT (2023), “NDC Transport Tracker”, <https://changing-transport.org/tracker>.

¹³ GIZ and SLOCAT (2023), “NDC Transport Tracker”, <https://changing-transport.org/tracker>.

second-generation NDCs. The association to “Avoid”, “Shift” and “Improve” depends on the context and how it is stated within the policy document.

(i) *Avoid Actions*

- Chile’s LTS: Low- and zero-emission mobility practices will be considered in territorial planning on all government levels. The goals are to improve accessibility and to reduce travel times and distances.
- France’s LTS: It is being pursued to develop high-density urban areas supported through transport. Land use mix should avoid urban sprawl. New ways of working will be encouraged, taking into consideration changed travel patterns.
- Singapore’s updated NDC: The need for travel will be minimised, commuting distances and times reduced. Financing instruments will be changed to charge road users based on vehicle travel and also introduce a fuel-based carbon tax and improve parking management.

(ii) *Shift Actions*

- Ethiopia’s LTS: To increase the share of rail transport for freight and passenger transport. Public transport, walking and cycling will be enhanced as well through new services and more dedicated infrastructure.
- India’s LTS: Transport will be integrated with urban planning, multi-modal connectivity, and enhanced railway capacity to achieve a modal shift towards public transport.
- United Arab Emirates’ second NDC: A 1,200 kilometres long freight rail network is being constructed since 2014 to shift road freight to rail. The Dubai metro network will be expanded from the current 89 kilometres to 379 kilometres.

(iii) *Improve Actions*

- China’s updated NDC: Green logistics will be scaled up through efficiency measures. New energy road vehicles and railway electrification will be expanded.
- Guatemala’s updated NDC: A fleet renewal program will target the private vehicle fleet by enacting vehicle regulations, tax credits and other fiscal measures to scale up the purchase of more efficient vehicles.
- Marshall Islands’ LTS: Electrification actions will include tax incentives for the import of electric vehicles, transition of the government fleet and taxis as well as electric bicycles.

B. Inland Transport in Voluntary National Reviews under the Sustainable Development Goals

16. Sustainable, low carbon mobility is a powerful driver for positive, systemic transformation of our societies. This transformation is outlined in the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (Sustainable Development Goals), the global ‘blueprint to achieve a better and more sustainable future for all by 2030’. The 2030 Agenda was designed to be a cross-cutting and interconnected agenda, with the achievement of one Sustainable Development Goal often dependent on the achievement of a series of others. While sustainable, low carbon transport and mobility is not represented by a stand-alone Sustainable Development Goal, its successful implementation supports the achievement of almost every Sustainable Development Goal.¹⁴

¹⁴ SLOCAT (2022), “Transport and Voluntary National Reviews 2022”, www.slocat.net/vnr.

Box 3. Croatia's 2023 Voluntary National Review (VNR)¹⁵

Croatia intends to support the 2030 Agenda for Sustainable Development by implementing transport actions on infrastructure, rail transport, inland water and digital connectivity. The country aims to establish a competitive and carbon-neutral transport infrastructure.

Transport activities in Croatia's VNR connect to several Sustainable Development Goals (Sustainable Development Goal 1 Poverty, Sustainable Development Goal 4 Education, Sustainable Development Goal 7 Energy, Sustainable Development Goal 8 Work, Sustainable Development Goal 9 Infrastructure, Sustainable Development Goal 10 Inequalities, Sustainable Development Goal 12 Consumption (via fossil fuels subsidies), Sustainable Development Goal 13 Climate and Sustainable Development Goal 14 Below water).

17. Enabling sustainable, low carbon transport and mobility worldwide has explicit as well as implicit implications for the success of the entire 2030 Agenda, with social, environmental and economic 'multiplier effects' that go well beyond the scale of financial investment. Some areas where transport has the greatest positive impacts include: ending poverty (Sustainable Development Goal 1); ending hunger (Sustainable Development Goal 2); promoting healthy lifestyles and well-being (Sustainable Development Goal 3); empowering women and girls (Sustainable Development Goal 5); ensuring sustainable and modern energy (Sustainable Development Goal 7); building resilient infrastructure (Sustainable Development Goal 9); making cities sustainable (Sustainable Development Goal 11) and taking action to combat climate change and its impacts (Sustainable Development Goal 13).¹⁶

Box 4. Bahrain's 2023 VNR

Transport activities in Bahrain's 2023 VNR align to several Sustainable Development Goals including Sustainable Development Goal 3 Health, Sustainable Development Goal 4 Education, Sustainable Development Goal 7 Energy, Sustainable Development Goal 9 Infrastructure, Sustainable Development Goal 11 Cities, Sustainable Development Goal 12 Consumption (via fossil fuel subsidies) and Sustainable Development Goal 13 Climate, covering both passenger and freight transport.

The VNR reported on the implementation of electric vehicle regulations and strategies to promote transport in a sustainable manner (mainly by deploying solar as an upstream source of electricity), setting up electric vehicle charging stations among others. Bahrain also announced plans to develop a network of bike and electric bicycle lanes throughout the country, recognising the role of cycling to healthier lifestyles, safe environment for cyclists and sustainable transportation. The Bahrain metro is also expected to be completed in 2027 (109 km), with the first phase being implemented using an integrated public-private partnership model.

18. The VNRs from 2016 to 2022 revealed consensus on the role of transport as a key contributor to implementation of the Sustainable Development Goals. In the first VNR reporting cycle (2016-2019), 92 per cent of VNRs highlighted progress in the transport sector, and 18 per cent of VNRs reported specific targets covering 12 areas in sustainable transport. The transport dimension of the VNRs reported between 2020 and 2022 revealed consensus around transport as a key contributor to implementation of the Sustainable Development Goals, largely following a pattern similar to the first reporting cycle (2016-2019). All 40 VNRs submitted in 2021 included references to sustainable transport policies and, for the first time since the inaugural High-Level Political Forum in 2016, they also

¹⁵ [https://hlpf.un.org/sites/default/files/vnrs/2023/VNR_per cent202023_per cent20Croatia_per cent20Report_0.pdf](https://hlpf.un.org/sites/default/files/vnrs/2023/VNR_per%20cent202023_per%20cent20Croatia_per%20cent20Report_0.pdf)

¹⁶ SLOCAT (2022), "Transport and Voluntary National Reviews 2022", www.slocat.net/vnr.

included transport measures. In 2022, the number of VNRs mentioning transport decreased to 36 out of the 42 submitted VNRs, or 86 per cent, the lowest share since 2017. However, the share of specific transport targets in VNRs stayed at a similar level: In 2022, 21 per cent of the VNRs (9 out of 42 VNRs) mentioned specific transport targets, similar to 22 per cent (9 out of 40) in 2021 and 17 per cent (8 out of 47) in 2020.¹⁷

Box 5. Morocco's 2020 VNR

Morocco's 2020 VNR is aligned with several Sustainable Development Goals including Sustainable Development Goal 3 Health, Sustainable Development Goal 4 Education, Sustainable Development Goal 7 Energy, Sustainable Development Goal 9 Infrastructure, Sustainable Development Goal 11 Cities, and SDG13 Climate, covering both passenger and freight transportation (aviation, railway, rural transport, marine transport, and urban transport).

Morocco reported vast infrastructure development programs and the liberalisation of different modes of transport, in support of the country's economic development. Several master plans for 2030-2035 have been defined with a focus on inland transport modes. There have been efforts to improve energy efficiency through several sector-specific measures, such as a ban on imports of old vehicles. Morocco also adopted a pollution abatement standard equivalent to the "Euro IV" standard for the approval of new vehicles, which has resulted in a substantial reduction in fuel consumption and an improvement in air quality.

C. Major National and Regional Commitments advancing Transport Decarbonisation

1. Avoid-related Commitments

19. Integrated land-use and transport planning reflects the change of an automobile-focused planning approach towards focusing on people's ability to reach goods, services and activities. The new approach embraces vehicle-travel reduction strategies in order to enhance the mobility needs of people and achieve a better quality of life. Tools supporting this approach are Sustainable Urban Mobility Plans (SUMPs), National Urban Mobility Plans (NUMPs), transit-oriented development and low-emission zones.

20. SUMPs have been a well-established planning tool in European cities since 2013. Over 1,000 cities in Europe have implemented SUMPs as of 2018.¹⁸ As of the end of 2022, 343 Brazilian municipalities had finalised SUMPs, and 90 of these cities have more 250,000 inhabitants.¹⁹

21. The global expansion of SUMPs and NUMPs is being supported by the MobiliseYourCity Partnership, which had supported the preparation of 12 SUMPs in Africa, 8 in Asia, 8 in Latin America and 3 in Eastern Europe, while NUMPs were prepared in 2 African countries, 2 in Asia and 5 in Latin America.²⁰

22. Transit-oriented development is in place in many regions, as decision makers recognise that encouraging the use of public transport and active travel can greatly reduce

¹⁷ SLOCAT (2022), "Transport and Voluntary National Reviews 2022", www.slocat.net/vnr.

¹⁸ ICLEI-Local Governments for Sustainability (2018), "The Status of SUMPs in EU Member States", https://sumps-up.eu/fileadmin/user_upload/Tools_and_Resources/Reports/SUMPs-Up__PROSPERITY-SUMP-Status-in-EU-Report.pdf.

¹⁹ Ministério da Integração e do Desenvolvimento Regional, 2023, "Levantamento sobre a situação dos Planos de Mobilidade Urbana", <https://www.gov.br/mdr/pt-br/assuntos/mobilidade-e-servicos-urbanos/planejamento-da-mobilidade-urbana/levantamento-sobre-a-situacao-dos-planos-de-mobilidade-urbana>.

²⁰ MobiliseYourCity Partnership (2023), "Global Monitor 2023", <https://www.mobiliseyourcity.net/global-monitor-2023>.

transport emissions.²¹ The impact of transit-oriented development on emissions can be significant, as such development is typically designed to be compact, walkable and mixed-use to minimise the need for car ownership and use.

23. Transit-oriented development is a key pillar of urban planning in many Eastern Asian cities. Indian cities are in the process of mainstreaming this planning tool. Chandigarh, the Pune Municipal Corporation and Navi Mumbai have successfully implemented transit-oriented development in their urban planning masterplans.²²

24. The USA government announced USD 13.1 million in grants in late 2022 to help cities plan for transit-oriented development, while the USA state of California and British Columbia (Canada) revised laws to support it.²³ In recent years the concept of proximity planning has received momentum through the “15-minute city” in Paris (France) and the “super blocks” in Barcelona (Spain).²⁴

25. There are 320 low-emission zones (LEZs) in Europe, as of 2022.²⁵ Outside of Europe, LEZs are being implemented in China and India.²⁶ China has implemented zero-emission freight zones in addition to LEZ policies to advance zero-emission freight vehicles and reduce congestion.²⁷ LEZs emerge in LAC with Medellín and Rio de Janeiro being in the processes of implementing LEZs throughout 2023.²⁸

2. Shift-related Commitments

26. Among the major public transport modes (bus rapid transit, metro and light rail), metro systems showed the strongest growth between 2015 and 2021. Despite budget cuts, delays, and low ridership, public transport expansion projects continued during 2020-2021 in all major regions, with the opening of dozens of new train, bus, light rail and tram lines.²⁹ New public transport services were opened in Algiers (Algeria), Cairo (Egypt), several Chinese cities, Dakar (Senegal), Lagos (Nigeria), London (United Kingdom), Paris (France), Quito (Ecuador), Washington, D.C. (US) among many others.³⁰

²¹ J. Blumgart (2022), “Are trains or buses better for the environment?” *Governing*, 11 February, <https://www.governing.com/next/are-trains-or-buses-better-for-the-environment>.

²² A. Pharande, “Transit-oriented development – Making Indian cities liveable again”, *Construction Week*, 23 November, <https://www.constructionweekonline.in/people/transit-oriented-development-making-indian-cities-liveable-again>.

²³ US Department of Transportation, Federal Transit Administration (2022), “Biden-Harris Administration Announces \$13.1 Million in Grant Awards to Help Communities Plan for Transit-Oriented Development”, 17 November, <https://www.transit.dot.gov/about/news/biden-harris-administration-announces-131-million-grant-awards-help-communities-plan>; J. Skelley (2023), “California relaxes parking mandates to free up land for multifamily development – but will neighbors and lenders approve?” *Urbanland*, 3 January, <https://urbanland.uli.org/planning-design/california-relaxes-parking-mandates-to-free-up-multifamily-development-but-will-neighbors-and-lenders-approve>; Government of British Columbia (2022), “Province to increase housing, services near transit hubs”, 5 April, <https://news.gov.bc.ca/releases/2022TRAN0030-000492>.

²⁴ University of California, Berkeley Institute of Transportation Studies (2023), “Proximity planning: A local strategy for global problems, or a global strategy for local problems?”, 10 March, <https://its.berkeley.edu/news/proximity-planning-local-strategy-global-problems-or-global-strategy-local-problems>

²⁵ Sadler Consultants (2022), “Urban Access Regulations in Europe”, <https://urbanaccessregulations.eu>.

²⁶ H. Cui, P. Gode and S. Wappelhorst (2021), “A Global Overview of Zero-emission Zones in Cities and Their Development Progress”, International Council on Clean Transportation (ICCT), <https://theicct.org/sites/default/files/publications/global-cities-zez-dev-EN-aug21.pdf>.

²⁷ C40 Knowledge Hub (2020), “Zero Emission Zones for Freight: Lessons from Beijing”, <https://www.c40knowledgehub.org/s/article/Zero-Emission-Zones-for-Freight-Lessons-from-Beijing>.

²⁸ Área Metropolitana del Valle de Aburrá (2021), “Primera zona urbana de aire protegido en Colombia”, <https://www.metropol.gov.co/Paginas/Noticias/primera-zona-urbana-de-aire-protegido-en-colombia.aspx>.; ITDP (2023), “What is a Low Emission Zone?”, 22 February, <https://www.itdp.org/2023/02/22/what-is-a-low-emission-zone/>

²⁹ ITDP (2022), “Rapid Transit Database”, Version 4.00, last modified 1 January 2022, <https://docs.google.com/spreadsheets/d/1uMuNG9rTGO52Vuuq6skyqmkH9U5yv1iSJDJYjH64MJM>

³⁰ SLOCAT (2023), “Global Status Report on Transport, Climate and Sustainability - 3rd edition, Public Transport”, www.tcc-gsr.com

27. Active travel such as walking and cycling seems to have benefited from behavioural changes instilled during the pandemic. The unprecedented rapid development in supportive infrastructure and policies – such as “pop-up” bike lanes, pedestrianizing streets, and removal of on-street parking in many cities – has increased space for people rather than cars.³¹ Similarly, the use of shared mobility has continued to increase in many places – due in part to people moving away from public transport during the pandemic and from personal vehicles experiencing rising fuel costs – although it remains minimal relative to overall vehicle use.³²

3. Improve-related Commitments

28. Electrification across all transport modes is a key activity under the “Improve” pillar. The International Energy Agency (IEA) considers electric vehicles to be the only transport-related area that is on track with global scenarios for net zero emissions.³³

29. More jurisdictions (cities, subnational and countries) are setting targets for phasing out fossil-fuelled vehicles. As of April 2023, at least 41 countries or sub-national jurisdictions had set phase-out targets for light-duty vehicles with internal combustion engines, twice as many as in 2020. The majority of the countries are in Europe and North America (see Table 1).

Table 1

Governments with official targets to phase out the sales of vehicles with internal combustion engines³⁴

<i>Target type</i>	<i>Year</i>	<i>Countries</i>
Target to allow the sale of new BEVs and FCEVs only	2035	Chile, Cabo Verde, European Economic Area, United Kingdom
	2050	Costa Rica
Target to allow the sale of new BEVs, FCEVs and PHEVs only	2030	Singapore
	2035	USA states (California, Massachusetts, New York, Oregon, Vermont, Washington)
ZEV Declaration Governments	2035-2040	Azerbaijan, Israel, New Zealand, Uruguay
ZEV Declaration Governments in Emerging Markets and Developing Economies	2040	Ghana, India, Kenya, Mexico, Morocco, Paraguay, Türkiye, Ukraine

³¹ MCC Berlin (2021), “Corona crisis lesson: Additional bike lanes induce large increases in cycling”, 30 March, <https://www.mcc-berlin.net/en/news/information/information-detail/article/corona-crisis-lesson-additional-bike-lanes-induce-large-increases-in-cycling.html> ; ECF (2023), “COVID-19 Cycling Measures Tracker”, <https://ecf.com/dashboard> , accessed 21 January 2023; H. Ohlund et al. (2022), “Building emergent cycling infrastructure during the COVID-19 pandemic: The case of Zapopan”, *Frontiers in Sustainable Cities*, Vol. 4, <https://doi.org/10.3389/frsc.2022.805125>

³² SLOCAT (2023), *Global Status Report on Transport, Climate and Sustainability - 3rd edition*, *App-Driven Shared Mobility*, Pg 279, www.tcc-gsr.com

³³ IEA (2023), “Analysis: Transport”, <https://www.iea.org/analysis/all?topic=transport>.

³⁴ ICCT (2023), “Zero-emission vehicles phase-ins - July 2023”, <https://theicct.org/zev-phase-ins/>

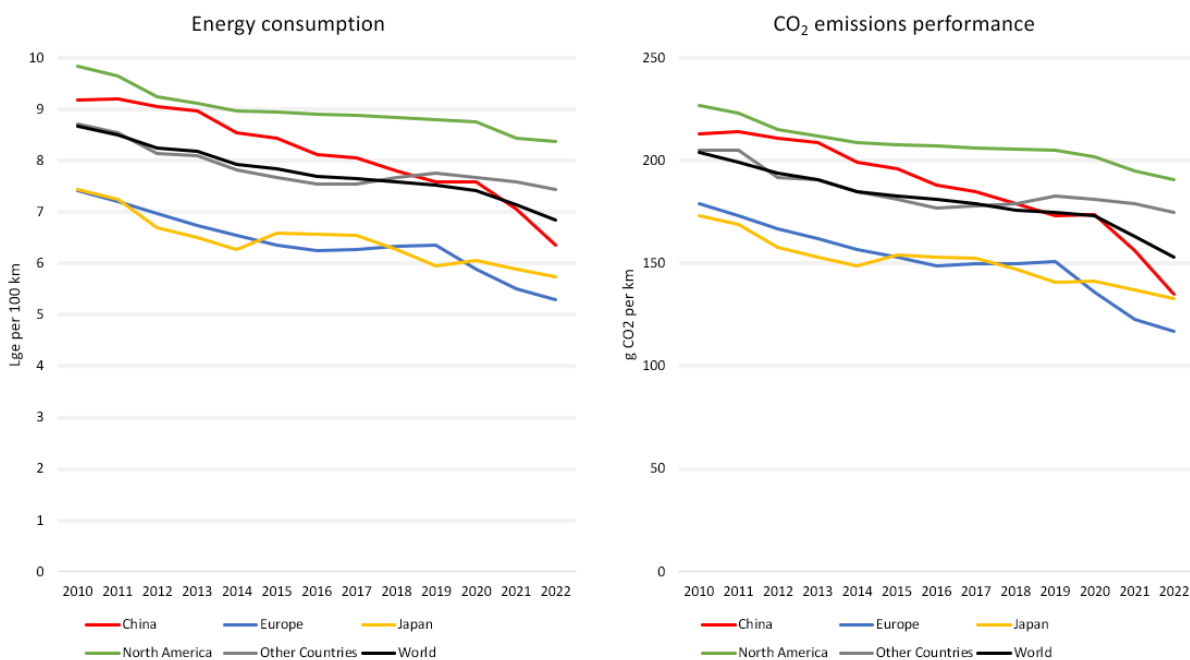
Box 6. The EU’s Fit for 55 Package

The EU’s Fit for 55 package, introduced in 2021, targets reducing the region’s greenhouse gas emissions 55 per cent by 2030 and reaching climate neutrality by 2050; for the transport sector, this would mean that tailpipe CO₂ emissions from new cars would need to reach zero by 2035. In early 2023 the EU almost unanimously approved a ban on sales of internal combustion engine vehicles (with an exception for CO₂ neutral fuels or carbon neutral fuels) as of 2035.³⁵

By 2022, at least 9 European countries had adopted either a target for 100 per cent electric vehicles or a ban on internal combustion engine vehicles (typically targeting sales), while 11 countries had announced or made plans for such a target.³⁶

30. Emissions by light-duty vehicles need to be closely looked at as they are responsible for a major share in emissions by transport. Between 2019 and 2022, there was an annual improvement of 3.2 per cent in the sales-weighted specific energy consumption of light-duty vehicles in all major car markets. This results in an improvement rate twice as high as observed between 2005 and 2019 (1.6 per cent). In 2022, the energy consumption was estimated at 6.9 Lge/100 km, which is nearly 30 per cent lower than the value in 2005. Direct CO₂ emissions by light-duty vehicles have declined even faster, at a rate of 2.1 per cent per year between 2005 and 2022. Overall, the current average annual rate of energy intensity reductions (4.2 per cent between 2020 and 2022) needs to be sustained until 2030 to comply with targets set by the Global Fuel Economy Initiative.³⁷

Figure II
Energy consumption trends for light-duty vehicles



³⁵ Electrive (2021), “EU Commission Presents ‘Fit for 55’ Climate Package”, <https://www.electrive.com/2021/07/14/eu-commission-presents-fit-for-55-climate-package>; Electrive, 2022, “EU Council Confirms ICE Ban for Cars and Vans by 2035”, <https://www.electrive.com/2022/06/29/eu-council-decides-on-100-co2-reductions-for-cars-and-vans-by-2035>

³⁶ REN21, “GSR 2022 Datapack, Reference Table R10”, https://www.ren21.net/wp-content/uploads/2019/05/GSR2022_Data_Pack_Final.xlsx.

³⁷ Global Fuel Economy Initiative 2023, “Trends in the global vehicle fleet 2023”, <https://www.globalfueleconomy.org/data-and-research/publications/trends-in-the-global-vehicle-fleet-2023>

31. Fuel economy and greenhouse gas emission standards for heavy-duty vehicles are an important instrument to decarbonise the freight sector, particularly given the challenges in finding alternative fuels and propulsion systems for long-distance road freight.³⁸

32. However, policies to decarbonise heavy-duty vehicles generally lag behind policies for light-duty vehicles. As of 2022, just five countries – Canada, China, India, Japan and the United States of America – had fuel economy standards that apply to heavy-duty vehicles. Despite the low number of countries with these standards, more than 70 per cent of trucks sold in 2022 were covered by fuel economy or vehicle efficiency regulations.³⁹

33. In 2023, the EU proposed enhanced standards for 2030 that would raise the efficiency improvement target to 45 per cent up from the current 30 per cent and reduce emissions 90 per cent by 2040.⁴⁰ Chile's Energy Efficiency Law introduces the first standards for medium- and heavy-duty vehicles, which for medium-duty vehicles would be defined in 2024 and take effect in 2026 (and for heavy-duty vehicles in 2026 and 2028, respectively)⁴¹ California (USA) enacted in 2020 the Advanced Clean Trucks regulation, the first regulation worldwide requiring manufacturers to increase the sales share of zero-emission trucks. By 2035, the rule requires a zero-emission share of 40 per cent for tractor trucks (class 7-8), 75 per cent for rigid trucks (class 4-8) and 55 per cent for pick-up trucks and vans (class 2b-3).⁴²

II. National Actions by Member States in Different Regions

34. Climate action in the transport sector is still deeply insufficient, and the current policies announced or implemented are expected to contribute to average global temperature rise of 2.8°C by 2100.⁴³ For example, even if the current NDC targets for mitigating transport emissions are met, emissions in the sector will still grow. This may be attributed to the bias towards 'Improve' measures instead of 'Avoid' and 'Shift' in both generations of NDCs.⁴⁴

35. The global passenger car fleet is projected to reach between 1.4 billion and 1.55 billion vehicles by 2050, up from nearly 1.2 billion vehicles in 2020.⁴⁵ The ever-increasing passenger vehicle sizes have had a huge direct impact on increasing transport emissions. Sport utility vehicles (SUVs) and large passenger trucks consume around 20 per cent more fuel than a medium-sized car and negate as much as 40 per cent of the recent improvements in vehicle efficiency; SUVs were the only sector – even beyond transport – where emissions

³⁸ SLOCAT (2023), "Global Status Report on Transport, Climate and Sustainability – 3rd edition", www.tcc-gsr.com.

³⁹ Although the United Kingdom continues to apply EU standards, it is not yet clear whether it would continue to follow proposed changes to EU regulations; see Government of the United Kingdom (2020), "The New Heavy Duty Vehicles (Carbon Dioxide Emission Performance Standards) (Amendment) (EU Exit) Regulations 2020", <https://www.legislation.gov.uk/uksi/2020/1402/regulation/3/made>; IEA (2022), "Trucks and Buses Tracking Report", <https://www.iea.org/reports/trucks-and-buses>

⁴⁰ European Commission (2023), "Reducing CO₂ emissions from heavy-duty vehicles", https://climate.ec.europa.eu/eu-action/transport-emissions/road-transport-reducing-co2-emissions-vehicles/reducing-co2-emissions-heavy-duty-vehicles_en, accessed 8 June 2023

⁴¹ S. Pettigrew (2022), "Fuel economy standards and zero-emission vehicle targets in Chile", ICCT, <https://theicct.org/wp-content/uploads/2022/08/lat-am-lvs-hvs-chile-EN-aug22.pdf>.

⁴² B. Sharpe and D. Schaller (2021), "Analysis of heavy-duty vehicle fuel efficiency technology uptake in California and Canada", ICCT, <https://theicct.org/wp-content/uploads/2021/06/HDV-fuel-efficiency-tech-California-Canada-apr2021.pdf>

⁴³ United Nations Environment Programme (UNEP) (2022), "Emissions Gap Report 2022: The Closing Window – Climate Crisis Calls for Rapid Transformation of Societies", <https://www.unep.org/emissions-gap-report-2022>.

⁴⁴ SLOCAT (2022), "Climate Strategies for Transport: An Analysis of Nationally Determined Contributions and Long-Term Strategies", October 2022 Update. www.slocat.net/ndcs

⁴⁵ International Transport Forum (ITF) (2023), "ITF Transport Outlook 2023", <https://www.itf-oecd.org/itf-transport-outlook-2023>.

increased during the height of the pandemic.⁴⁶ While the overall size of vehicles grew 7 per cent on average between 2010 and 2019, since the onset of the pandemic some vehicle models have increased massively in size, growing nearly 30 per cent just between 2020 and 2021.⁴⁷

36. The World Bank estimates that countries' expenditures on subsidising fossil fuel consumption are six times greater than the amount pledged in commitments under the Paris Agreement.⁴⁸ With this background, fossil fuel dependence in road transport needs to decline drastically, from 95 per cent in 2020 to 10 per cent by 2050, with electricity becoming the dominant fuel in transport by the early 2040s. In the IEA Net Zero Scenario, advanced biofuels will play a role in the transition to a zero-emission vehicle fleet in the short to medium term.⁴⁹

37. In this regard, global electric vehicle sales (including plug-in hybrids) increased 55 per cent in 2022 to exceed 10 million units, accounting for 14 per cent of total vehicle sales.⁵⁰ Electrification continues to focus on passenger cars: The share of electric cars in all car sales globally increased from 9 per cent in 2021 to 14 per cent in 2022. Around 60 per cent (6.2 million) of the electric cars sold in 2022 were in Asia, followed by 26 per cent in Europe and 11 per cent in North America. However, electric cars still accounted for only around 1 per cent of vehicles globally.⁵¹

38. The slow progress in reducing emissions in "hard-to-abate" sub-sectors, to which long-distance road freight belongs, has made it difficult to translate efficiency gains of the past years into absolute emission reductions.

39. Public transport suffered a large blow early in the pandemic and still has not fully recovered, as transport operators struggle to maintain operations. During the first year of the pandemic, urban dwellers in some areas moved away from city centres, particularly in high-income countries, contributing to urban sprawl.⁵²

40. Transport expenditures often make up a high share of household budgets, and freight costs vary widely, placing a burden on low-income users in particular. A sustainable integrated transport system must be accessible to users of all income levels.

A. Africa - Trends and Major Challenges

41. In Africa, 78 per cent of people walk for transport purposes every day. In 2022, people in Africa spent an average of 56 minutes per day walking or cycling for transport.⁵³ However,

⁴⁶ K. Wilson (2020), "How cars waste space — in six simple images", <https://usa.streetsblog.org/2020/01/13/how-cars-waste-space-in-six-simple-images>; IEA (2021), "Global Fuel Economy Initiative 2021", <https://www.iea.org/reports/global-fuel-economy-initiative-2021/executive-summary>; L. Cozzi and A. Petropoulos (2021), "Carbon emissions fell across all sectors in 2020 except for one – SUVs", IEA, <https://www.iea.org/commentaries/carbon-emissions-fell-across-all-sectors-in-2020-except-for-one-suvs>.

⁴⁷ International Energy Agency (IEA) (2021), "Global Fuel Economy Initiative 2021", <https://www.iea.org/reports/global-fuel-economy-initiative-2021/executive-summary>, accessed 10 October 2023.

⁴⁸ World Bank (2023), "Detox Development: Repurposing Environmentally Harmful Subsidies", <https://www.worldbank.org/en/topic/climatechange/publication/detox-development>.

⁴⁹ IEA (2021), "Net Zero by 2050", <https://www.iea.org/reports/net-zero-by-2050>.

⁵⁰ IEA (2023), "Global Electric Vehicles Outlook 2023", <https://www.iea.org/reports/global-ev-outlook-2023>.

⁵¹ IEA (2022), "Global EV Outlook 2022", <https://www.iea.org/reports/global-ev-outlook-2022>; IEA (2023), "Global EV Outlook 2023", <https://www.iea.org/reports/global-ev-outlook-2023>.

⁵² E. Dong, H. Du and L. Gardner (2020), "An interactive web-based dashboard to track COVID-19 in real time", *The Lancet Infectious Diseases*, Volume 20, Issue 5, Pages 533-534, [https://doi.org/10.1016/S1473-3099\(20\)30120-1](https://doi.org/10.1016/S1473-3099(20)30120-1); Google LLC (2022), "Google COVID-19 Community Mobility Reports", <https://www.google.com/covid19/mobility>, accessed October 2022

⁵³ UN-Habitat et al., 2022, "Walking and Cycling in Africa: Evidence and Good Practice to Inspire Action", https://unhabitat.org/sites/default/files/2022/07/executive_summary.pdf

only around 59 per cent of people walking and cycling in Africa were supported by a walking and cycling policy, within only 35 per cent of the countries in the region.⁵⁴

42. In 2020, only 32 per cent of the population was able to access public transport within a walking distance of 500-1,000 metres, well below the global average of 56 per cent.⁵⁵ Informal transport can account for 40 per cent to 98 per cent of trips by collective and shared transport in some African countries.⁵⁶

43. These challenges, bundled with rapidly rising urbanisation and motorisation rates, have prompted an urgent response to Africa's growing transport needs, including through the development of sustainable urban mobility plans (SUMPs) and national urban mobility plans (NUMPs).⁵⁷ Bus rapid transit (BRT) corridors and/or systems have been implemented or are being developed in Addis Ababa (Ethiopia), Cairo (Egypt), Dar es Salaam (Tanzania), Lagos (Nigeria), Nairobi (Kenya) and the cities of Cape Town, George, Johannesburg and Pretoria in South Africa, with an emphasis on the importance of electric BRT buses in decarbonising their fleets and shifting towards sustainable public transport solutions.⁵⁸

B. Asia - Trends and Major Challenges

44. Asia, although the largest transport CO₂ emitter, was home to 95 per cent of the global electric road vehicles fleet, and 92 per cent of the electric vehicles in Asia were two-wheelers in 2021. A challenge in Asia is that the average carbon intensity of electricity is higher than in other regions. For example, the global average is 436 grams CO₂eq per kilowatt-hour of electricity, India records 632 grams CO₂eq per kilowatt-hour of electricity and China 531 grams CO₂eq per kilowatt-hour of electricity in 2022.⁵⁹

45. Use of renewables in transport increased annually by 14 per cent from 2010 to 2019, the fastest annual growth among all regions, that need to be further sustained to maximise the benefits of transport electrification.

46. The number of Asian cities with bus rapid transit increased by 36 per cent and cities with metros and light-rail transit increased by 49 per cent from 2015 to 2021. Asia is also the world's largest bike sharing market, with nearly 800 bike sharing schemes operating across Asia in 2021.

C. Europe - Trends and Major Challenges

47. The number of registered passenger cars in the EU reached 253 million in 2021, up 8.6 per cent from 2016.⁶⁰ Although Europe is the second largest electric car market in the world after China, nearly all European countries have maintained a heavy reliance on fossil-fuelled vehicles.

⁵⁴ UN-Habitat et al., 2022, "Walking and Cycling in Africa: Evidence and Good Practice to Inspire Action", https://unhabitat.org/sites/default/files/2022/07/executive_summary.pdf.

⁵⁵ UN-Habitat, 2021, "11 2 1 Percentage Access to Public Transport", <https://data.unhabitat.org/datasets/GUO-UN-Habitat::11-2-1-percentage-access-to-public-transport/about>

⁵⁶ R. Behrens, D. Mfinanga and D. McCormick, eds., 2016, "Paratransit in African Cities: Operations, Regulation and Reform", <https://www.routledge.com/Paratransit-in-African-Cities-Operations-Regulation-and-Reform/Behrens-McCormick-Mfinanga/p/book/9780415870337>

⁵⁷ UN-Habitat (2022), "Walking and Cycling in Africa – Evidence and Good Practice to Inspire Action", https://unhabitat.org/sites/default/files/2022/07/walking_and_cycling_in_africa.pdf.

⁵⁸ H. Fan, E. Beukes and X. Sheng (2021), "Improving the Viability of Bus Rapid Transit Systems: Nine Factors for Sub-Saharan Africa", World Bank, <https://blogs.worldbank.org/transport/improving-viability-bus-rapid-transit-systems-nine-factors-sub-saharan-africa>

⁵⁹ Our World in Data (2023), "Carbon intensity of electricity, 2022", <https://ourworldindata.org/grapher/carbon-intensity-electricity>

⁶⁰ Eurostat (2023), "Passenger Cars in the EU", https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Passenger_cars_in_the_EU

48. Sales of battery electric and plug-in hybrid cars grew more than 15 per cent in 2022, and over 1.6 million pure battery electric cars were sold, a more than four-fold increase from 2019.⁶¹ In 2022, only 2.4 per cent of all the region's registered passenger cars were electric.⁶²

49. In 2022, the EU announced that it had achieved its 2020 target of 10 per cent renewables in the transport energy mix, with 12 of the 27 EU Member States surpassing the target.⁶³ In 2019, Europe as a whole accounted for 18 per cent of the global demand for renewables for transport.⁶⁴

50. Across Europe, the number of SUMP's increased from 800 in 2013 to 1,000 in 2018, with several cities having updated their SUMP's at least once.⁶⁵ As part of the EU's Efficient and Green Mobility Package, the EU Urban Mobility Framework was released in December 2021 and the framework foresees that all major cities in the network develop a sustainable urban mobility plan (SUMP) by 2025.⁶⁶ An increasing number of European cities have also adopted low-emission zones, ultra-low emission zones, or zero-emission zones, including those targeting freight vehicles.⁶⁷

51. By 2023, EU and other key European countries had adopted a target for zero CO₂ tailpipe emissions for cars and vans (see Box 6).

D. Latin America and the Caribbean - Trends and Major Challenges

52. The average motorisation rate in Latin America and the Caribbean from 2016 to 2020, was 267 vehicles per 1,000 people; 1.35 times higher than the global average⁶⁸. 43 per cent of the urban population has convenient access to public transport,⁶⁹ and the region is served by semi-formal and informal transport services which provide a flexible and demand-responsive option to the inadequate public transport supply.⁷⁰

53. Sustainable Urban Mobility Plans (SUMP's) continued to expand in Brazil, Chile, Cuba, Ecuador and Peru. Low-emission zones are also emerging in the region and in early 2023, Medellín (Colombia) and Rio de Janeiro (Brazil) had begun processes for their implementation.⁷¹

54. Electric buses fleet doubled between 2020 and 2023, operating in 30 cities across 11 countries and accounting for nearly 5 per cent of the regional urban bus fleet. Additionally, some countries have developed vehicle efficiency labels to encourage the purchase and use of less-polluting vehicles or to regulate the circulation of certain vehicle types.

⁶¹ IEA (2023), *Global Electric Vehicle Outlook*, Paris, <https://www.iea.org/reports/global-ev-outlook-2023>

⁶² IEA (2023), "Global Electric Vehicle Outlook 2023", <https://www.iea.org/reports/global-ev-outlook-2023>.

⁶³ Eurostat (2022), "EU Meets 2020 Renewable Energy Target in Transport", <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220202-2>.

⁶⁴ REN21 (2023), *Renewables 2023 Global Status Report: Energy Demand*, p. 46, https://www.ren21.net/wp-content/uploads/2019/05/GSR2023_Demand_Modules.pdf.

⁶⁵ ICLEI-Local Governments for Sustainability (2018), "The Status of SUMP's in EU Member States", https://sumps-up.eu/fileadmin/user_upload/Tools_and_Resources/Reports/SUMPs-Up_PROSPERITY-SUMP-Status-in-EU-Report.pdf.

⁶⁶ F. Ripa (2021), "European Commission Releases New Urban Mobility Framework", <https://www.eltis.org/in-brief/news/european-commission-releases-new-urban-mobility-framework>

⁶⁷ Sadler Consultants (2022), "Urban Access Regulations in Europe", <https://urbanaccessregulations.eu>

⁶⁸ International Road Federation, 2022, "World Road Statistics 2022", <https://datawarehouse.worldroadstatistics.org>

⁶⁹ UN-Habitat (2023), "Urban Indicators Database", <https://data.unhabitat.org/pages/urban-transport>, accessed 7 March 2023

⁷⁰ WRI, GEF and IDB (2020), "Informal and Semiformal Services in Latin America: An Overview of Public Transportation Reforms", <http://dx.doi.org/10.18235/0002831>

⁷¹ Área Metropolitana del Valle de Aburrá (2021), "Primera zona urbana de aire protegido en Colombia", <https://www.metropol.gov.co/Paginas/Noticias/primera-zona-urbana-de-aire-prottegido-en-colombia.aspx>.; ITDP (2023), "What is a Low Emission Zone?", 22 February, <https://www.itdp.org/2023/02/22/what-is-a-low-emission-zone/>

E. North America - Trends and Major Challenges

55. In 2021, North America had the highest per capita emissions amongst all regions. In the USA, the number of people working from home increased three-fold between 2019 and 2021 induced by the pandemic. Public transport usage fell by around 30 per cent nationwide in 2021.⁷²

56. Overall vehicle sales declined in 2022 due to inflation, energy prices and supply chain issues. Battery electric vehicle sales in Canada and USA tripled to account for more than 6 per cent of total vehicle sales in 2022. Projections of the future energy demand from light-duty vehicles in North America indicate that the energy savings through more efficient electric vehicles and stricter US Corporate Average Fuel Economy standards will be between 3 per cent and 28 per cent by 2050 compared to 2022, despite continued growth in travel demand.⁷³

Box 7. The US Inflation Reduction Act of 2022⁷⁴

The US Inflation Reduction Act of 2022 has the goal to reduce economy-wide emissions 31-44 per cent below 2005 levels by 2030. The Inflation Reduction Act covers a variety of transport activities, such as electric car purchase incentives, transport access and road safety grants, rebates and grants for clean heavy-duty vehicles and surface transport infrastructure funding.

The Inflation Reduction Act strongly prioritises vehicle electrification and it is estimated that the transport sector will contribute the least to the planned emission reductions and most likely stay at current levels.^{75,76}

F. Oceania - Trends and Major Challenges

57. Australia and New Zealand had the world's highest share of the urban population with access to public transport in 2021 (82.8 per cent), compared to the global average of 56 per cent. Despite this, private car use has continued to dominate passenger transport in Australia, with 87 per cent of work commutes in 2021 being completed by drivers or passengers of a car, motorcycle, or truck, while only 7 per cent were completed by public transport and 5 per cent were completed by walking or cycling.

58. Although EV sales have grown exponentially in Australia, Australia and New Zealand's electric passenger cars accounted for less than 1 per cent of global stock. During 2021 and 2022, countries in Oceania, including small-island states, enacted policy measures to enable and support electric vehicle uptake and to improve fuel efficiency standards.

⁷² US Census Bureau (2022), "The Number of People Primarily Working from Home Tripled Between 2019 and 2021", <https://www.census.gov/newsroom/press-releases/2022/people-working-from-home.html>

⁷³ IEA (2022), "By 2030 EVs Represent More Than 60 per cent of Vehicles Sold Globally, and Require an Adequate Surge in Chargers Installed in Buildings", <https://www.iea.org/reports/by-2030-evs-represent-more-than-60-of-vehicles-sold-globally-and-require-an-adequate-surge-in-chargers-installed-in-buildings>.

⁷⁴ Bipartisan Policy Center (2022), "Inflation Reduction Act (IRA) Summary: Energy and Climate Provisions", <https://bipartisanpolicy.org/blog/inflation-reduction-act-summary-energy-climate-provisions>.

⁷⁵ Y. Freemark (2022), "What the Inflation Reduction Act Did, and Didn't Do, for Sustainable Transportation", Urban Institute, <https://www.urban.org/urban-wire/what-inflation-reduction-act-did-and-didnt-do-sustainable-transportation>.

⁷⁶ M. Mahajan et al. (2022), "Updated Inflation Reduction Act Modeling Using the Energy Policy Simulator", Energy Innovation Policy and Technology LLC, <https://energyinnovation.org/wp-content/uploads/2022/08/Updated-Inflation-Reduction-Act-Modeling-Using-the-Energy-Policy-Simulator.pdf>.

Additionally, Australia has increased its ambition on alternative fuels, such as hydrogen and sustainable aviation fuels since 2019.⁷⁷

59. Small-island countries in Oceania have major needs for sustainable, low-carbon transport because they are highly vulnerable to the impacts of climate change due to their limited land area, geographic location and isolation.

III. Opportunities and the Way Forward

60. As shown in the previous sections, a comprehensive, integrated approach to tackle inland transport challenges and emissions is needed. A drastic change in trajectory is necessary to achieve a systemic transformation of transport and mobility and evidence has shown that these changes will come with society-wide positive impacts, delivering cross-cutting solutions at the nexus of equity, climate, health, energy, urban planning and economic development.

61. More and more countries are delivering on transport specific NDCs and LTS to show transport-specific actions and targets. Encouraging more countries to develop transport specific decarbonization plans would help prioritize action, technical regulations and standards, policy deployment at the international level.

62. There are important synergies and trade-offs between transport actions to implement the Sustainable Development Goals and actions for transport decarbonisation, adaptation and resilience. Overall, synergies exceed trade-offs. The trade-offs can be further minimised by emphasising activities, such as capacity building, finance, technology transfer and making considerations for governance, gender and equity and with participation of Indigenous peoples, local communities and vulnerable populations.⁷⁸

⁷⁷ Lanzajet (2023), “Sustainable Aviation Fuel Readies to Take Flight in Australia”, <https://www.lanzajet.com/sustainable-aviation-fuel-readies-to-take-flight-in-australia>; Department of Climate Change, Energy, the Environment and Water, Australian Government (n.d.), “Australia’s National Hydrogen Strategy”, <https://www.dcceew.gov.au/energy/publications/australias-national-hydrogen-strategy>, accessed 10 March 2023.

⁷⁸ H. Lee et al. (2023), “AR6 Synthesis Report, Climate Change 2023”, IPCC, https://report.ipcc.ch/ar6syr/pdf/IPCC_AR6_SYR_LongerReport.pdf.

Annex I

Transport Greenhouse Gas Emission Mitigation Targets in Country's Second-Generation NDCs, as of end-2022

<i>Country</i>	<i>Targeted reductions in transport emissions (in carbon dioxide equivalents)</i>	<i>Type of target</i>
Andorra	50 per cent in road transport by 2030	Unconditional
Bangladesh	9.3 per cent below business as usual (BAU) by 2030, to 32.9 million tonnes (unconditional) 27 per cent below BAU by 2030, to 26.6 million tonnes (conditional)	Unconditional, conditional
Belize	Reduce conventional transport fuel 15 per cent by 2030, to avoid 117 kilotonnes annually Achieve 15 per cent efficiency per passenger- and tonne-kilometre through appropriate policies and investments	Unconditional
Burkina Faso	Limit the emission increase to 1,210 gigagrams (Gg) by 2025, 3,563 Gg by 2030 and 8,265 Gg by 2050 (unconditional) Further limit to 267 Gg in 2025, 867 Gg in 2030 and 4,153 Gg in 2050 (conditional)	Unconditional, conditional
Dominica	20 per cent below 2014 levels by 2030; 100 per cent below 2014 levels for shipping by 2030	Unconditional
Egypt	7 per cent by 2030, reducing from 124,360 Gg under BAU to 8,960 Gg	Unconditional
El Salvador	Limit transport emissions to 334 kilotonnes below BAU by 2030	Unconditional
Fiji	40 per cent below BAU for domestic maritime shipping by 2030	Unconditional
Gambia	22.2 per cent below BAU by 2030	Conditional
Georgia	15 per cent below BAU by 2030	Unconditional
Grenada	20 per cent below 2010 levels by 2025, with further reductions by 2030 (continuation from first NDC)	Conditional
Guinea	2,300 kilotonnes per year below BAU by 2030 (unconditional)	Unconditional, conditional

<i>Country</i>	<i>Targeted reductions in transport emissions (in carbon dioxide equivalents)</i>	<i>Type of target</i>
	2,600 kilotonnes per year below unconditional scenario by 2030 (conditional)	
Israel	No more than 3.3 per cent above 2015 levels by 2030; 96 per cent below 2015 levels by 2050	Unconditional
Japan	27 per cent below 2013 levels by 2030, to reach 163 million tonnes or less (continuation from first NDC)	Unconditional
Liberia	15.1 per cent below BAU by 2030	Conditional
Mauritania	5.21 per cent by 2030, avoiding 92.7 Gg between 2021 and 2030	Unconditional
Mauritius	Limit to 129 kilotonnes per year by 2030	Unconditional
Seychelles	30 per cent below BAU for petrol vehicles by 2030	Conditional
Samoa	5.2 Gg (land transport) and 3 Gg (maritime transport) by 2030	Unconditional
South Sudan	44 per cent below BAU by 2030	Unconditional
Sri Lanka	4 per cent below BAU by 2030 (1 per cent unconditional, 3 per cent conditional)	Unconditional, conditional
Uganda	29 per cent below BAU by 2030, reducing from 9.6 million tonnes under BAU to 6.8 million tonnes	Conditional
United Arab Emirates	14 per cent below BAU by 2030 (due mainly to enhanced vehicle standards in road transport)	Unconditional

Annex II

Transport Greenhouse Gas Emission Mitigation Targets in Long-term Strategies, as of end-2022

<i>LTS</i>	<i>Transport GHG emissions mitigation targets</i>
Belgium	Expected reduction in transport sector (both passenger and freight transport) to zero emissions by 2050
Germany	Reduce transport CO _{2eq} emission 40 to 42 per cent compared to 1990 levels by 2030 (reduction of around 95 to 98 million tonnes CO _{2eq})
Japan	Reduce transport GHG emissions 80 per cent per vehicle compared to 2010 by 2050
Lithuania	Reduce transport GHG emissions at least 14 per cent compared to 2005 levels by 2030 and by 90 per cent compared to 1990 levels by 2050
New Zealand	Reduce transport emissions to net zero by 2050
Portugal	Reduce transport CO ₂ emissions potentially 43-46 per cent by 2030, 84-85 per cent by 2040 and 98 per cent by 2050 (compared to 2005 levels)
Slovenia	Reduce transport CO ₂ emissions 90 to 99 per cent by 2050 in comparison to 2005 levels
Spain	Reduce transport CO ₂ emissions 30 per cent below BAU by 2030
Sweden	Reduce domestic transport CO ₂ emissions (excluding domestic aviation) 70 per cent below 2010 levels by 2030
Switzerland	Intend to reach zero GHG emissions by domestic land transport in 2050 with few exceptions. International aviation should be net-zero by 2050 as far as possible.
United Kingdom	Achieve net zero emissions for aviation and shipping by 2050

Annex III

E-mobility Targets in Second-Generation Nationally Determined Contributions

<i>Country</i>	<i>E-mobility-related target</i>
Antigua and Barbuda	100 per cent all new vehicle sales to be electric vehicles by 2030; import of internal combustion engine vehicles from 2030 (initial start in 2025); 100 per cent of government vehicles will be electric by 2035
Barbados	100 per cent electric or alternatively fuelled vehicles in the passenger fleet by 2030
Bolivia	To achieve by 2030 an annual growth of 10 per cent in the share of electric vehicles in the public transportation fleet
Brunei Darussalam	60 per cent of sold vehicles to be electric by 2035
Cabo Verde	25 per cent of sold land transport vehicles to be electric by 2030, supported through strong renewable energy linkages
Chile	100 per cent taxis, public transportation and 58 per cent private vehicles to be electrified by 2050; 71 per cent of freight transport powered by hydrogen in 2050
Colombia	600,000 vehicles to be electrified (public transport, taxi, passenger cars, light trucks and government vehicles)
Costa Rica	By 2030, at least 8 per cent of the public transport fleet and light vehicles (private and government-owned) will be zero emission
Côte D'Ivoire	10 per cent of vehicles to be electric by 2030 (unconditional), or 25 per cent by 2030 (conditional)
Dominica	Last fossil fuel passenger car to be sold by 2035 to 2050
Israel	As of 2026, all new municipal buses purchased will be clean vehicles
Lao People's Democratic Republic	30 per cent electric vehicles penetration for 2-wheelers and passengers' cars
Monaco	Public transport will be zero-emission by 2030
Namibia	10,000 electric vehicles to be in use by 2030

<i>Country</i>	<i>E-mobility-related target</i>
Nepal	25 per cent of sold vehicles (passenger cars and two-wheelers) and 20 per cent of public transport (excl. rickshaws and tempos) to be electric by 2025; 90 per cent of sold vehicles (passenger cars and two-wheelers) and 60 per cent of public transport (excl. rickshaws and tempos) to be electric by 230; by 2030, 200 km of the electric rail to be implemented
Pakistan	By 2030, 30 per cent of all new vehicles sold in Pakistan will be electric (30 per cent shift to electric passenger vehicles and 50 per cent shift to electric two/three wheelers and buses; by 2040, 90 per cent shift to electric passenger vehicles and 90 per cent shift to electric two/three wheelers and buses)
Panama	By 2030, 10 per cent of commercial vehicles, 25 per cent of personal vehicles, 20 per cent of public transport and 30 per cent of government fleets to be electric
Republic of Korea	3 million electric vehicles and 850,000 hydrogen vehicles on the roads by 2030
Saint Kitts and Nevis	Increase the share of electric vehicles in the vehicle fleet to at least 2 per cent
Seychelles	30 per cent of vehicles by large tourism businesses and 20 per cent of small to medium-size tourism businesses to be electric
Togo	3 per cent of sold new vehicles to be electric by 2025
Uganda	Introduce at least 200 electric buses in Greater Kampala Metropolitan Authority by 2030
United Arab Emirates	2 per cent of Dubai's road fleet to be electric or hybrid cars by 2030; 30 per cent of Dubai's government-procured vehicles to be electric or hybrid by 2030
Vanuatu	By 2030, 10 per cent of public buses, 10 per cent of the government fleet and 1,000 electric two- and three-wheelers to be electric
