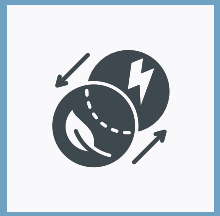
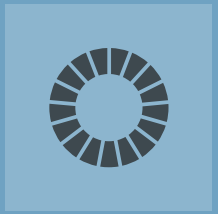
MODULE 1



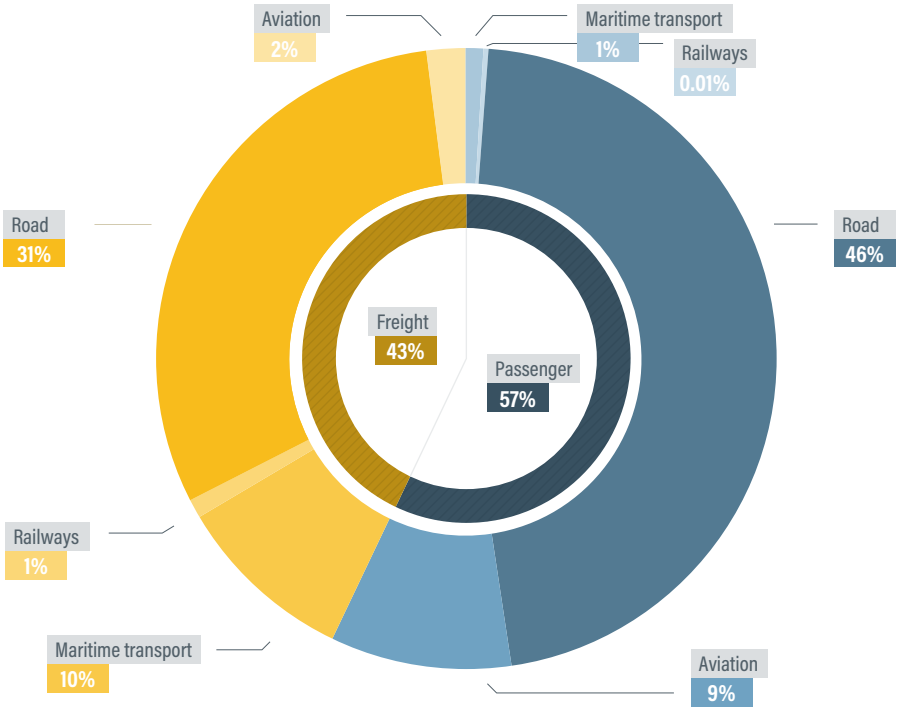
SHAPING THE JUST TRANSITION: CHALLENGES AND OPPORTUNITIES TOWARDS SUSTAINABLE TRANSPORT

MODULE 1.1



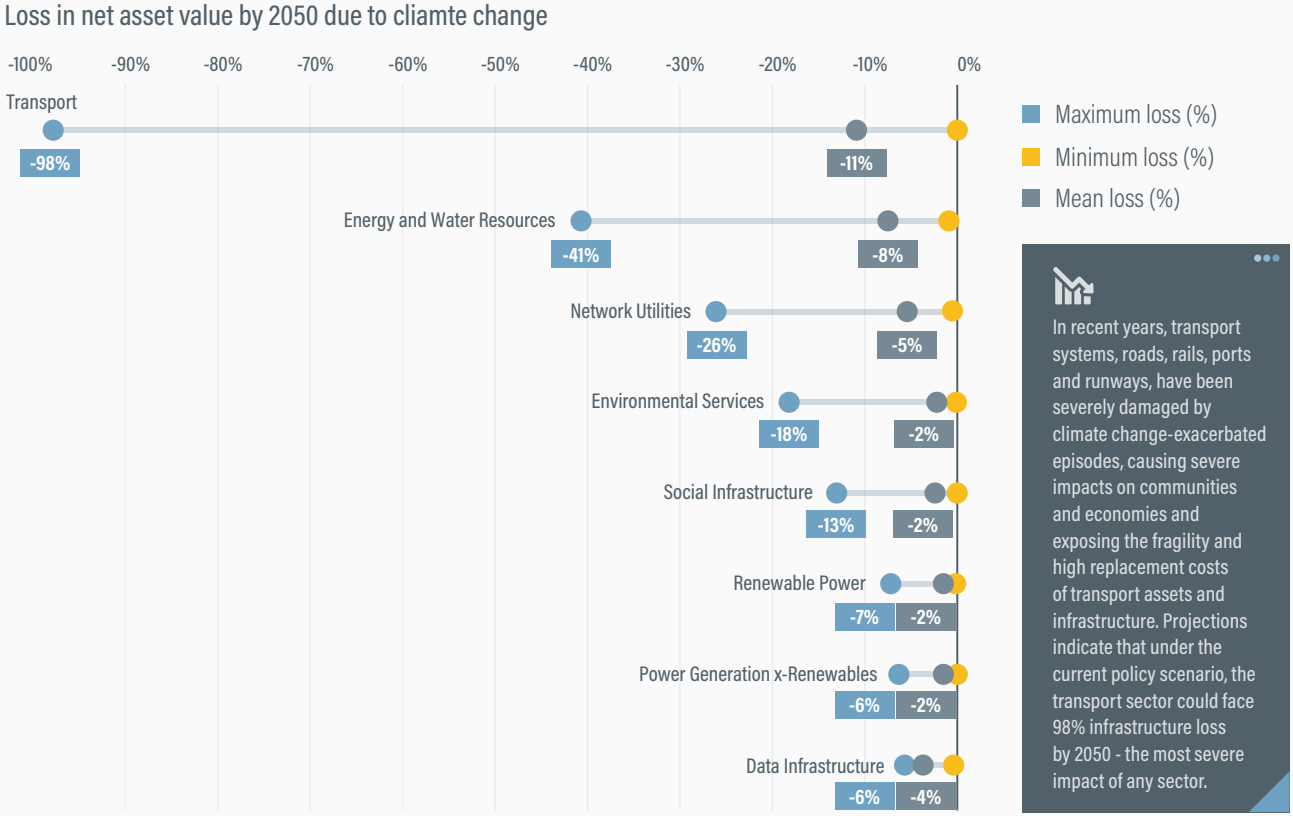
10 YEARS AFTER THE PARIS AGREEMENT AND THE 2030 AGENDA, ON THE PATH TO THE UN DECADE OF SUSTAINABLE TRANSPORT

FIGURE 1. Transport CO_2 emissions by transport activity and mode, 2023



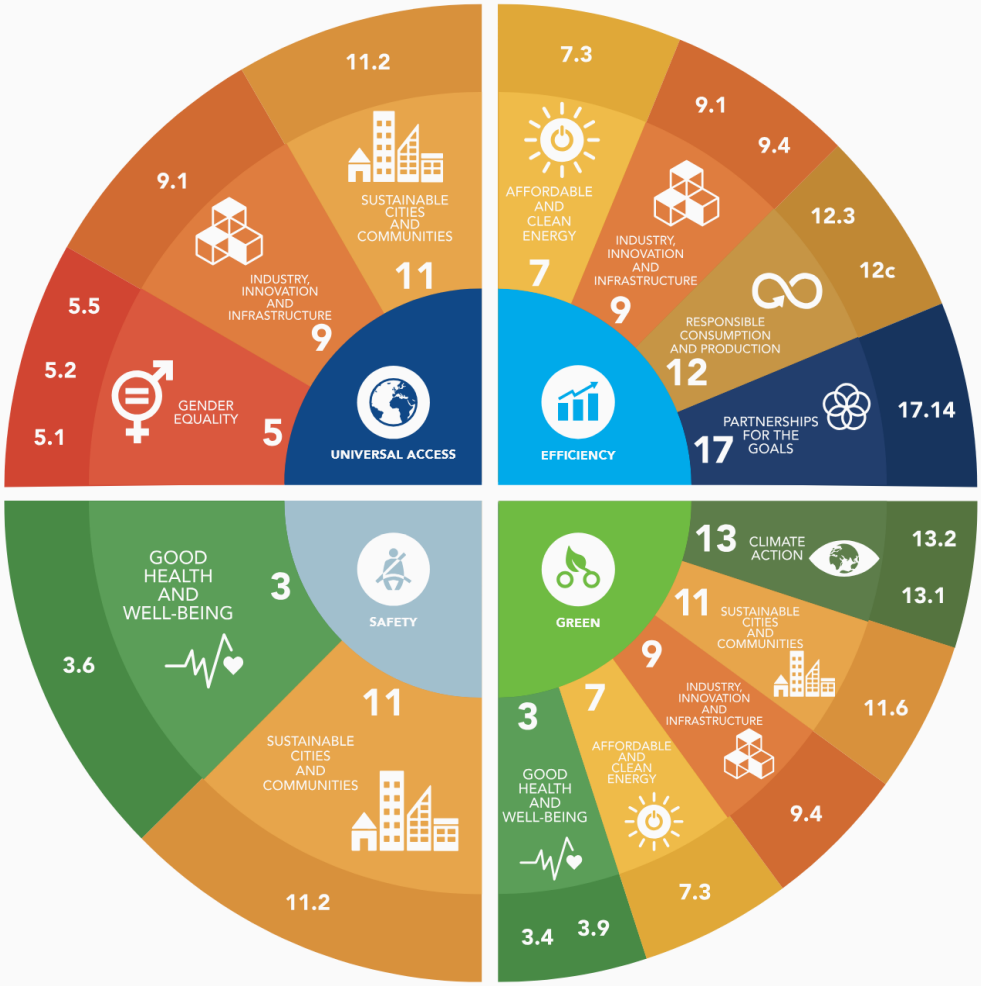
By transport activity, freight transport was estimated to contribute 43% of CO_2 emissions in 2023, while passenger transport contributed 57%. Since 2015, estimates point to an increasing role of freight transport in greenhouse gas emissions.

FIGURE 2. Average impact of physical risk on net asset value within the "current policies" scenario for 2050 for different infrastructure segments



In recent years, transport systems, roads, rails, ports and runways, have been severely damaged by climate change-exacerbated episodes, causing severe impacts on communities and economies and exposing the fragility and high replacement costs of transport assets and infrastructure. Projections indicate that under the current policy scenario, the transport sector could face 98% infrastructure loss by 2050 - the most severe impact of any sector.

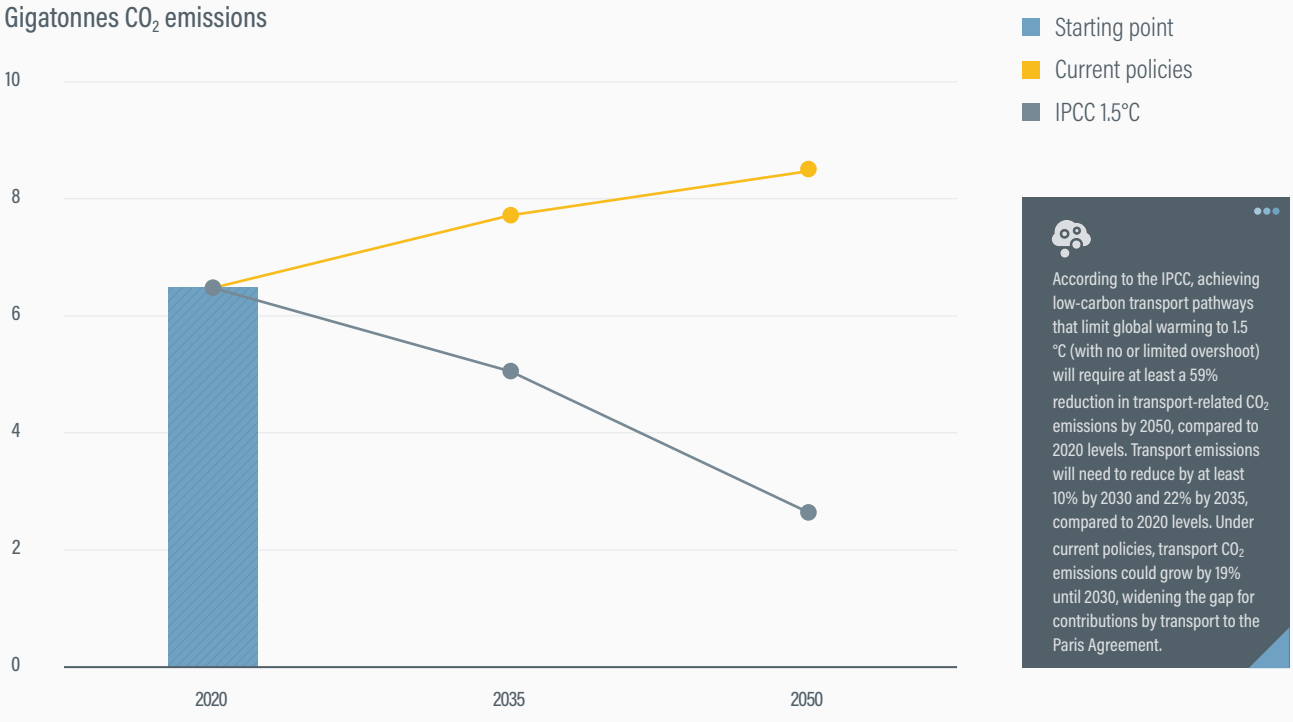
FIGURE 3. Relevant SDG targets for transport



Out of the 169 SDG targets, only three relate directly to transport, namely target 3.6 on road safety, target 9.1 on access to all-weather roads and target 11.2 on public transport access. However, another 15 targets relate indirectly to transport, and adequate transport action can contribute to their achievement.

Additionally, several transport aspects are also captured at the level of the indicators used to measure progress towards SDG targets. (NB: indicators are not represented in this figure).

FIGURE 4. Pathways for current policies versus low-carbon pathway for transport CO_2 emissions



According to the IPCC, achieving low-carbon transport pathways that limit global warming to 1.5 °C (with no or limited overshoot) will require at least a 59% reduction in transport-related CO_2 emissions by 2050, compared to 2020 levels. Transport emissions will need to reduce by at least 10% by 2030 and 22% by 2035, compared to 2020 levels. Under current policies, transport CO_2 emissions could grow by 19% until 2030, widening the gap for contributions by transport to the Paris Agreement.

FIGURE 5. Benefits of robust transport actions in new NDCs

Boosted investment and prosperity

- Attract funding through robust NDCs
- Create jobs and drive prosperity

Reduced emissions and cleaner cities

- Cut GHG in passenger and freight transport
- Improve air quality and reduce noise pollution

Inclusive, collaborative approaches

- Bring subnational and non-state actors on board
- Ensure more integrated, unified strategies

Stronger resilience and energy security

- Move away from fossil fuels
- Better resilience against global shocks

Greater efficiency and cost savings

- Save energy, land, and public funds
- Avoid costly reliance on outdated technologies

Diversified infrastructure and wider access

- Enhance services for better opportunities
- Build networks that benefit everyone

FIGURE 6. Five-Point Plan for Transport in New NDCs

FIGURE 7. Five transport priorities for climate and sustainability action at COP30

Commit to a Structured Process for Setting a Global Transport Goal

Expand inclusive access to low-carbon transport | Phase out fossil fuels by scaling up renewable and zero emission energy sources in transport | Reduce the sector's overall energy use

Deliver Bold Transport NDCs to Supercharge Climate Action

Set targets | Scale up action | Secure assets | Catalyse finance | Prioritise people

Scale up Climate Finance in Sustainable Transport to Power Change

To address multiple priorities in climate action for low- and middle-income countries, investing in sustainable transport must be part of the solution

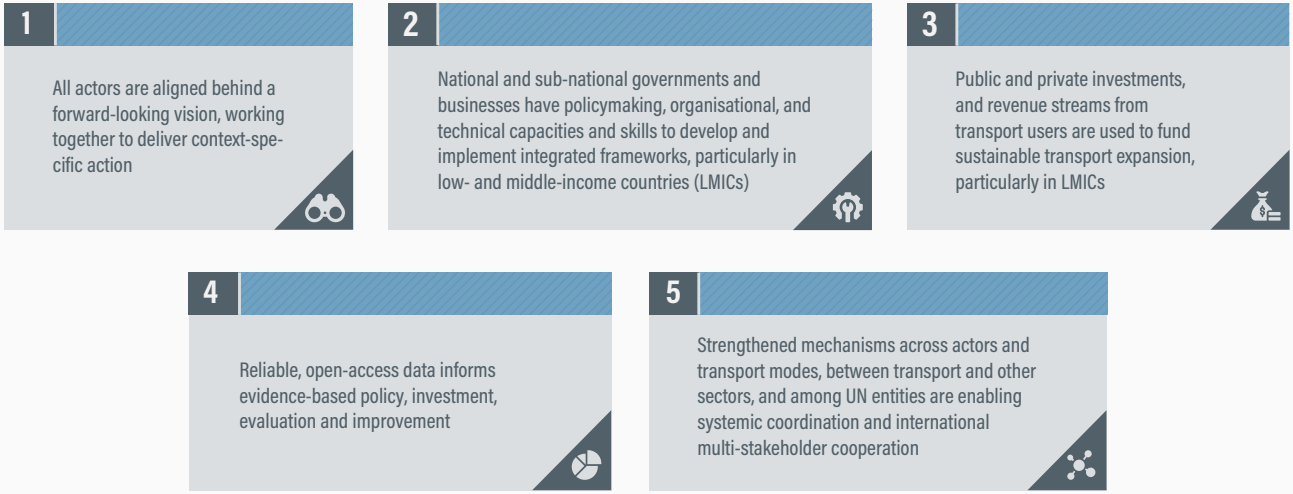
Prioritise Transport Adaptation and Resilience to Protect Communities and Economies

To reduce transport disruptions and their severe impacts on communities and economies, greater focus must be placed on adaptation to climate change and resilience in the sector

Leverage Key UNFCCC Platforms to Accelerate Transport Action

The Mitigation Work Programme and the Just Transition Work Programme must be leveraged as platforms for accelerating transport action

FIGURE 8. What can the UN Decade of Sustainable Transport achieve by 2035?



MODULE 1.2

THE RIGHT TO MOBILITY IN A SUSTAINABLE AND INCLUSIVE SOCIETY

FIGURE 1. Access to convenient public transport, 2023

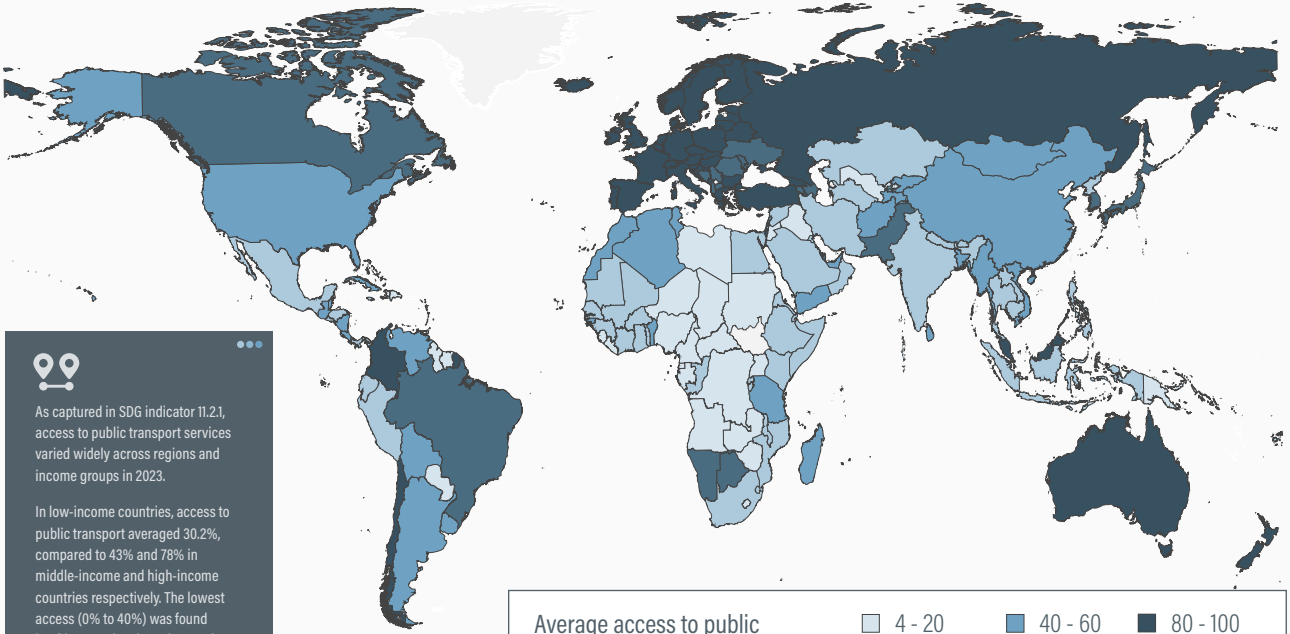
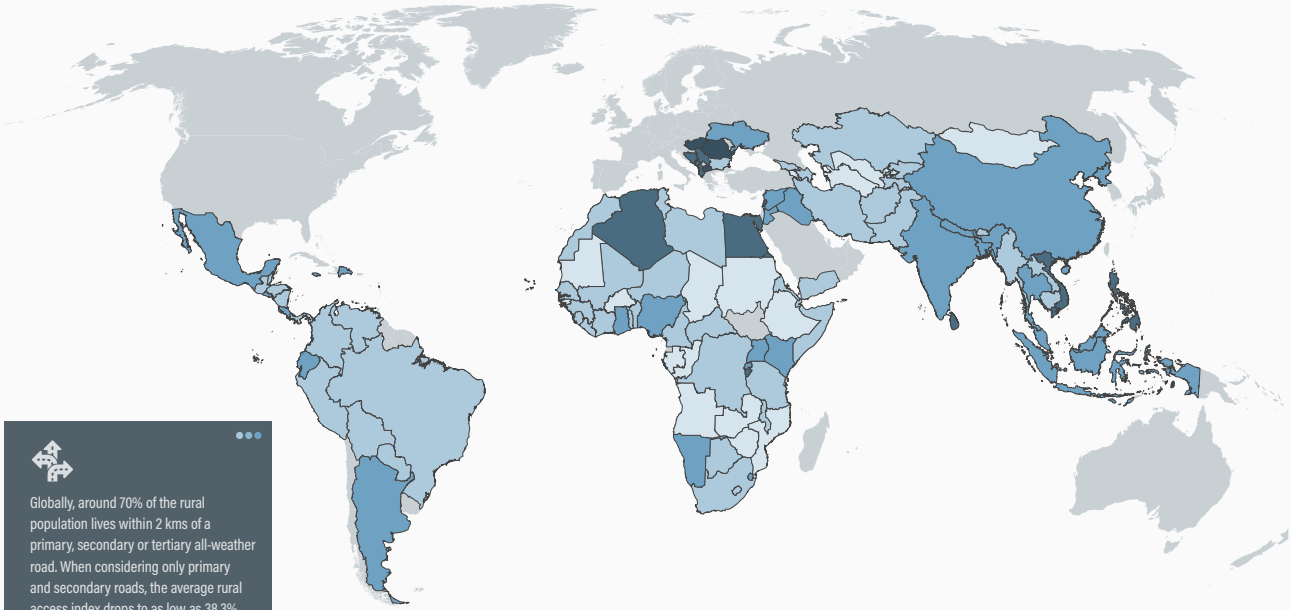
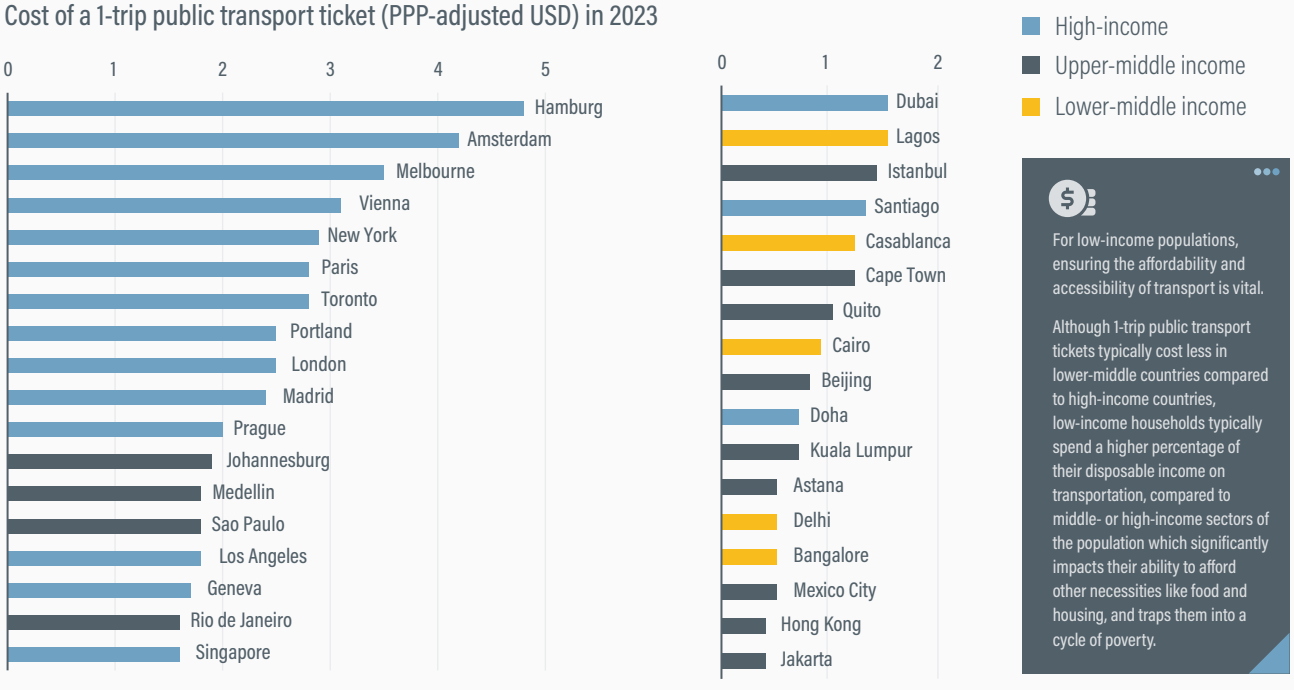


FIGURE 2. Access to all-weather primary and secondary roads, 2019

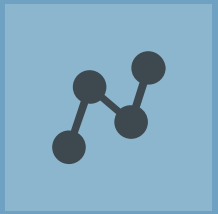


Globally, around 70% of the rural population lives within 2 kms of a primary, secondary or tertiary all-weather road. When considering only primary and secondary roads, the average rural access index drops to as low as 38.3% globally, with 69.7% for Europe, 35.4% for Latin America and the Caribbean, 40.8% for Asia, and only 31.3% for Africa.

FIGURE 3. Prices of public transport tickets, 2023



MODULE 1.3



TRANSPORTING SHARED PROSPERITY: CONNECTING ECONOMIES AND PEOPLE FOR A SUSTAINABLE PLANET

FIGURE 1. The concept of contemporary supply chains

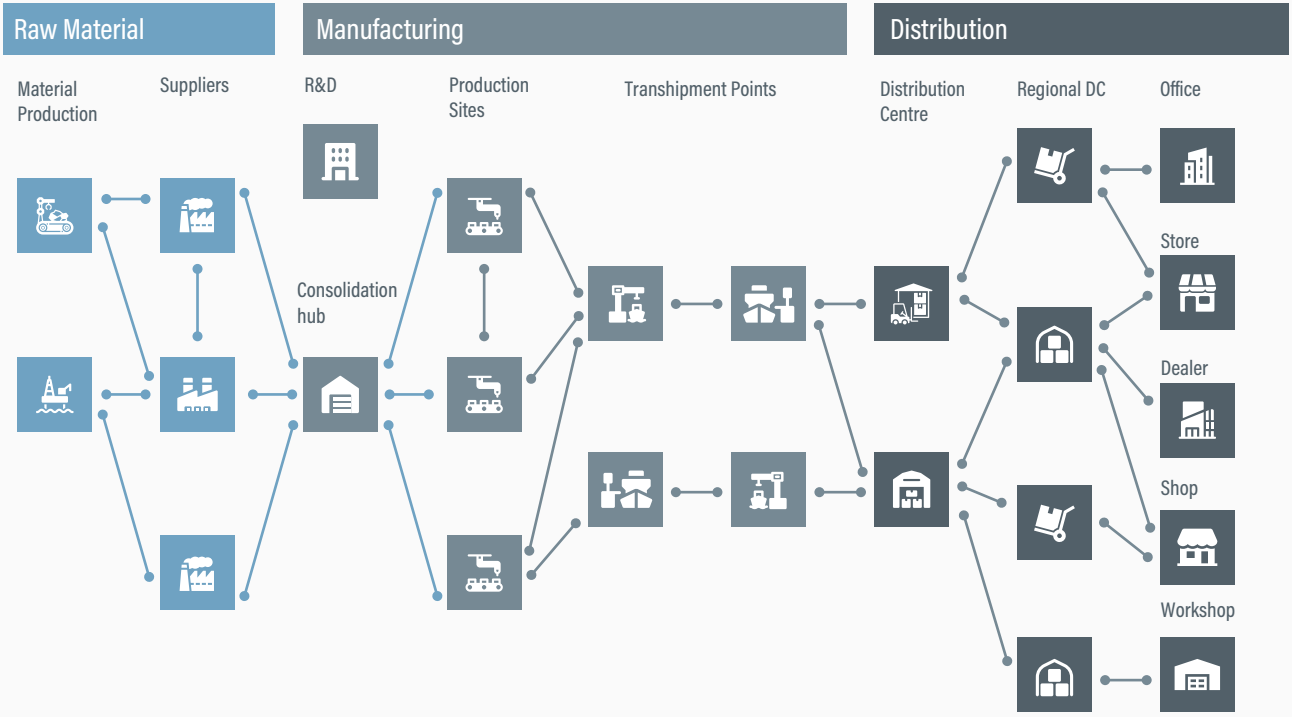
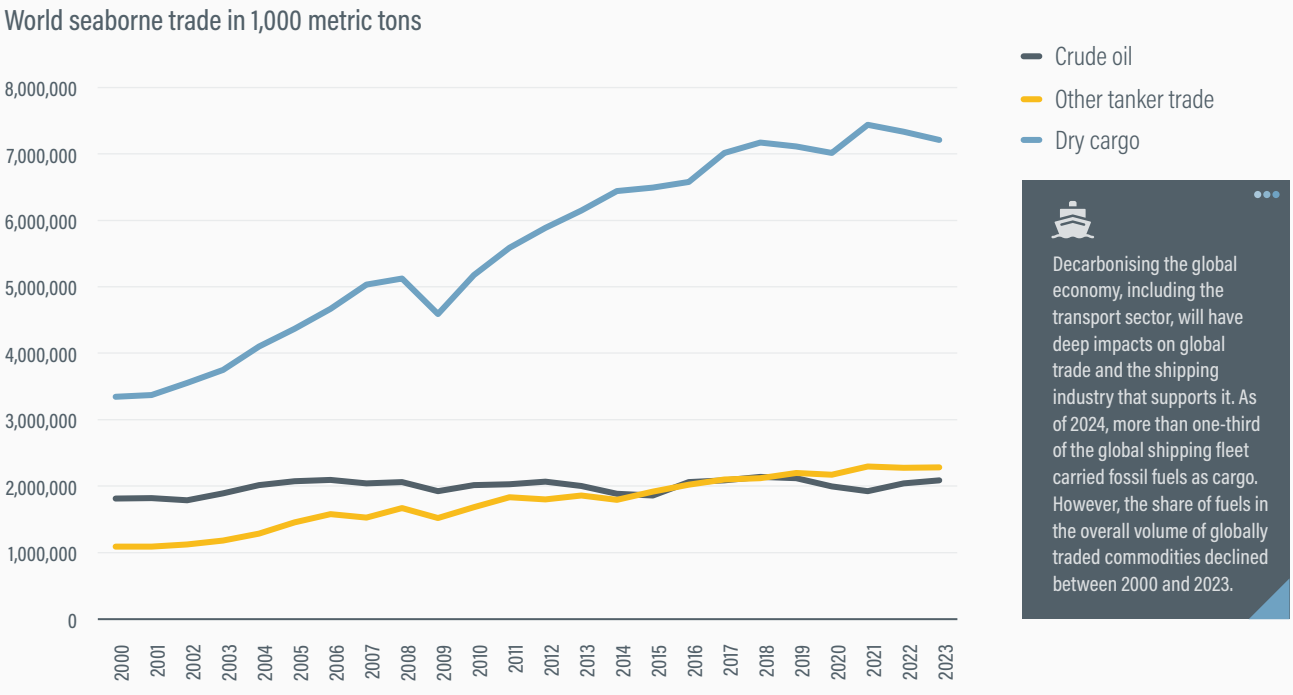


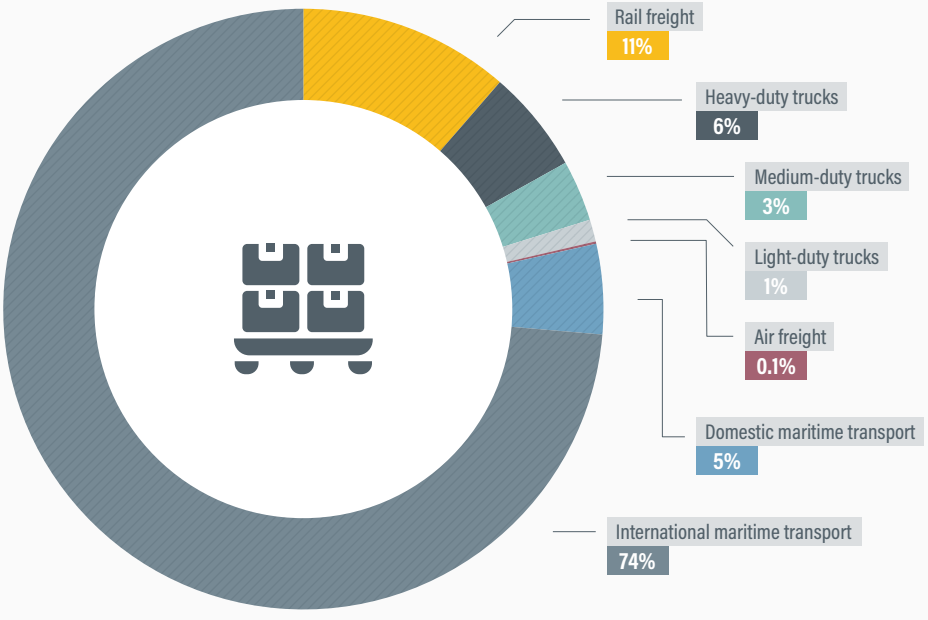
FIGURE 2. Global volumes of three types of freight carried by maritime transport, 2000-2023



Decarbonising the global economy, including the transport sector, will have deep impacts on global trade and the shipping industry that supports it. As of 2024, more than one-third of the global shipping fleet carried fossil fuels as cargo. However, the share of fuels in the overall volume of globally traded commodities declined between 2000 and 2023.

FIGURE 3. Global freight transport by modal share, based on transport performance, 2025 estimates

Freight transport modes by freight activity in tonnes-kilometers



Maritime transport was the dominant mode of freight transport globally in 2025, accounting for 79% of total freight tonne-kilometres, followed by rail (11%) and road transport (10%). The volume of freight carried by aviation was comparably tiny but experienced the strongest growth.

FIGURE 4. Average distance for wheat flows across the African continent, 2022

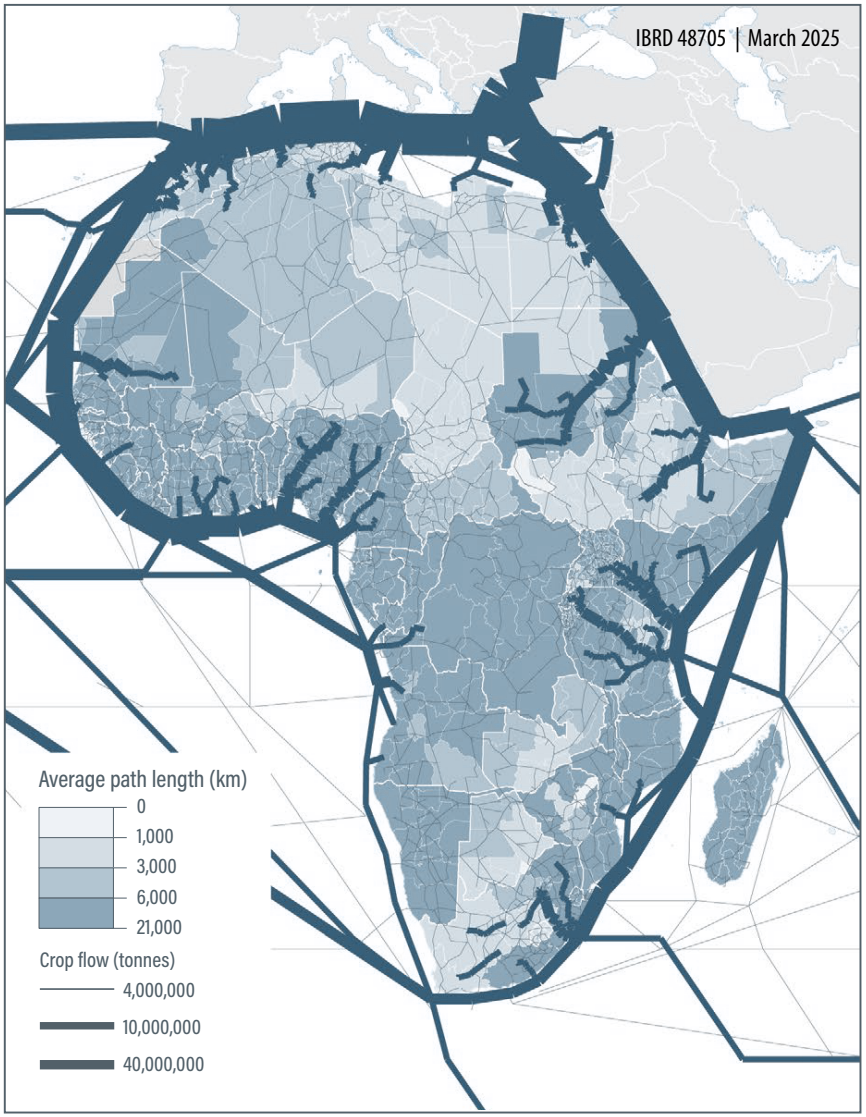
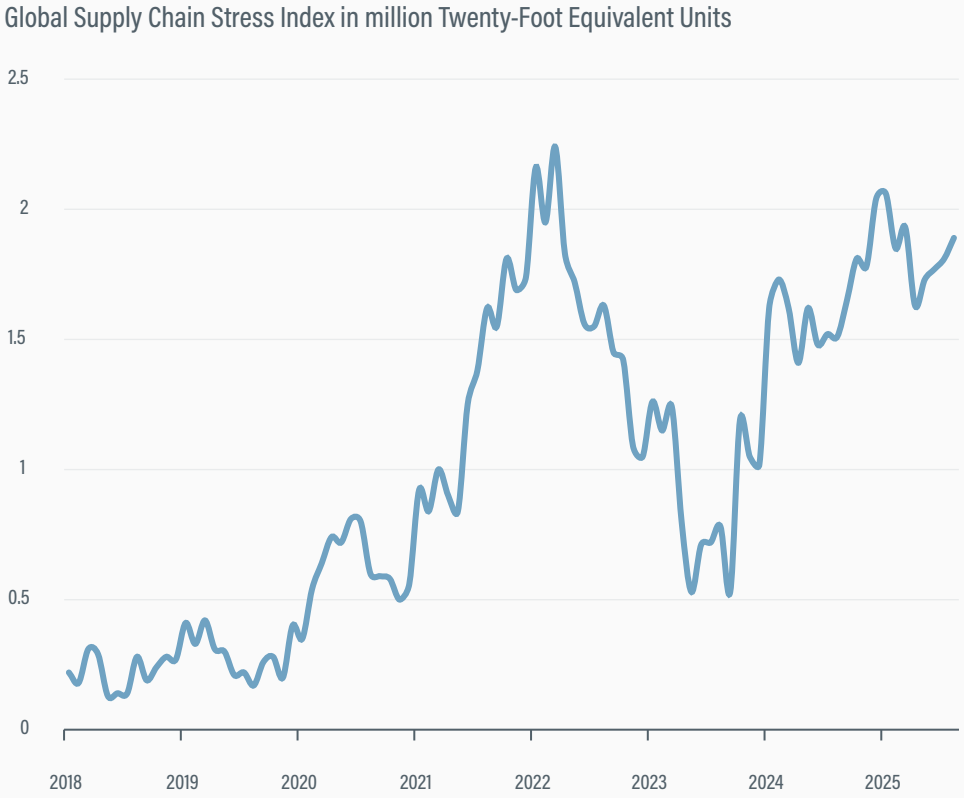


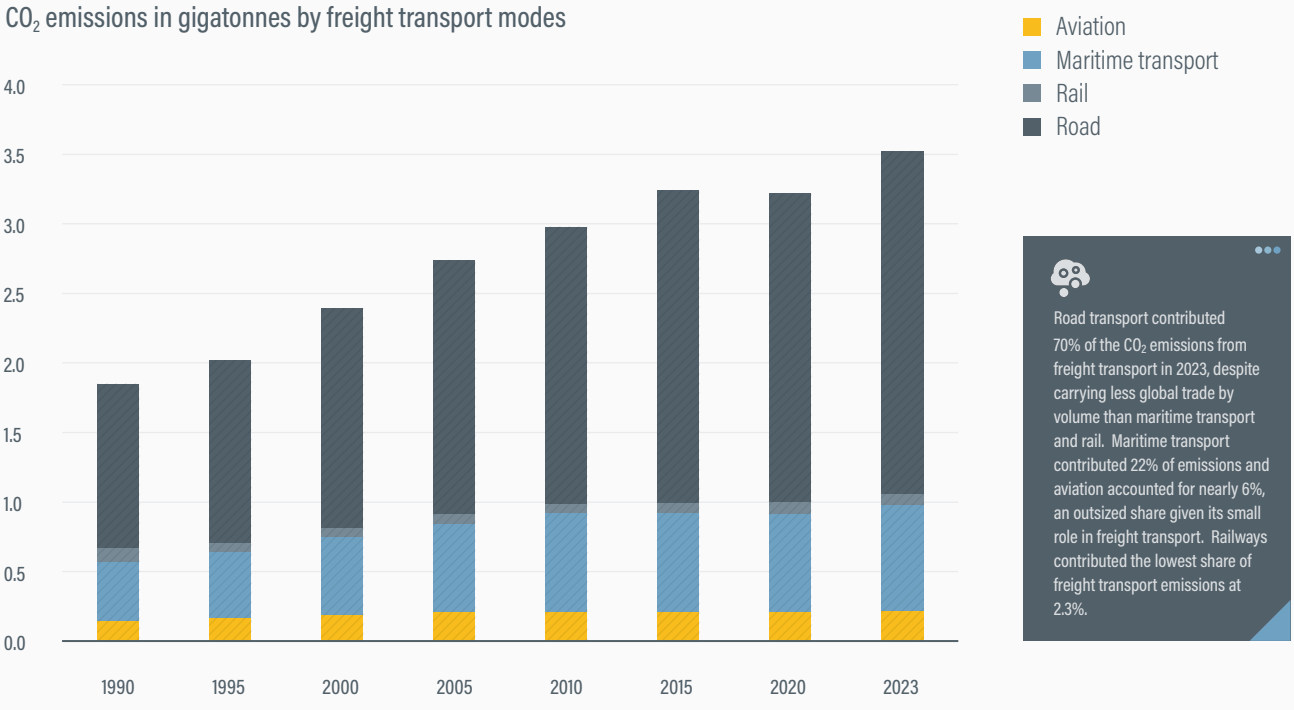
FIGURE 5. Global Supply Chain Stress Index, January 2019 to May 2025



A key indicator to assess trade volatility is the Global Supply Chain Stress Index (GSCSI), which measures the magnitude of container shipping disruptions that affect global supply chains. The GSCI hit an all-time high during the COVID-19 crisis in 2021-2022, which included a months-long closure of the Port of Shanghai (China).

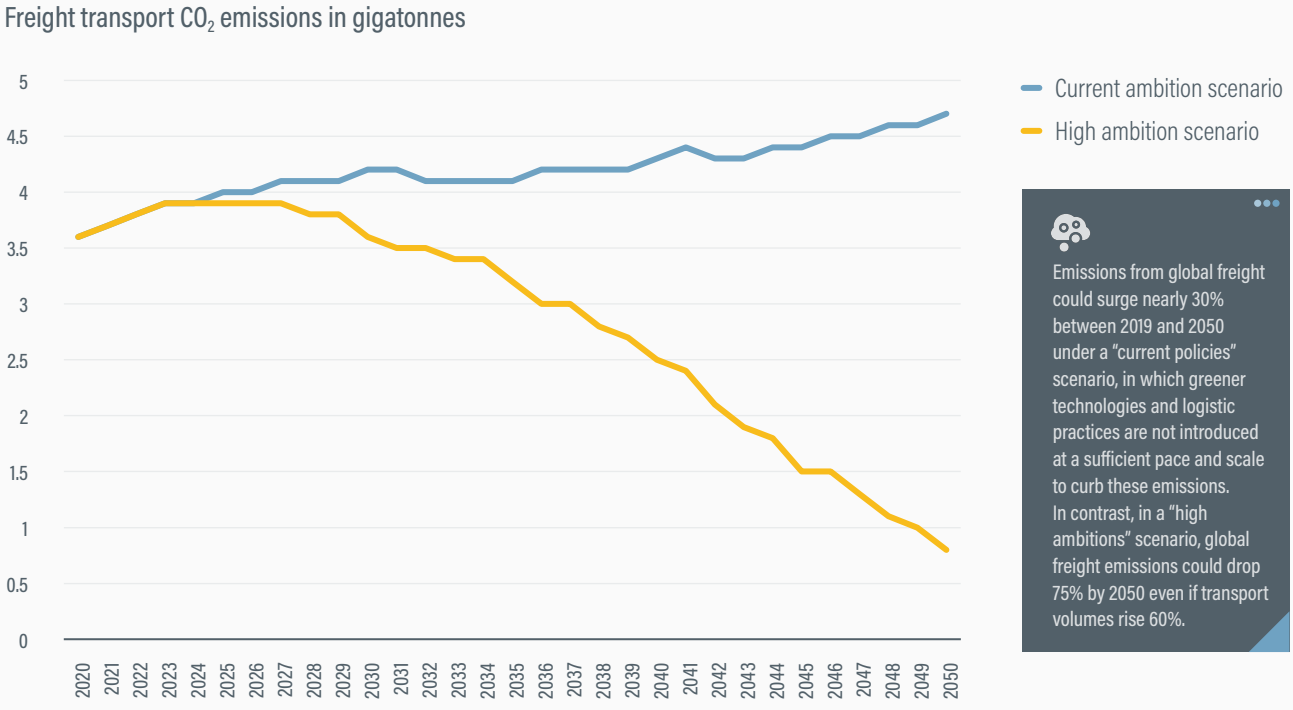
A further spike in the GSCSI in 2024 reflected both the drought in the Panama Canal and militant attacks on shipping in the Red Sea, which forced shipping lines to detour thousands of kilometres around the Cape of Good Hope in Africa.

FIGURE 6. Freight transport CO_2 by transport mode, 1990-2023



Road transport contributed 70% of the CO_2 emissions from freight transport in 2023, despite carrying less global trade by volume than maritime transport and rail. Maritime transport contributed 22% of emissions and aviation accounted for nearly 6%, an outsized share given its small role in freight transport. Railways contributed the lowest share of freight transport emissions at 2.3%.

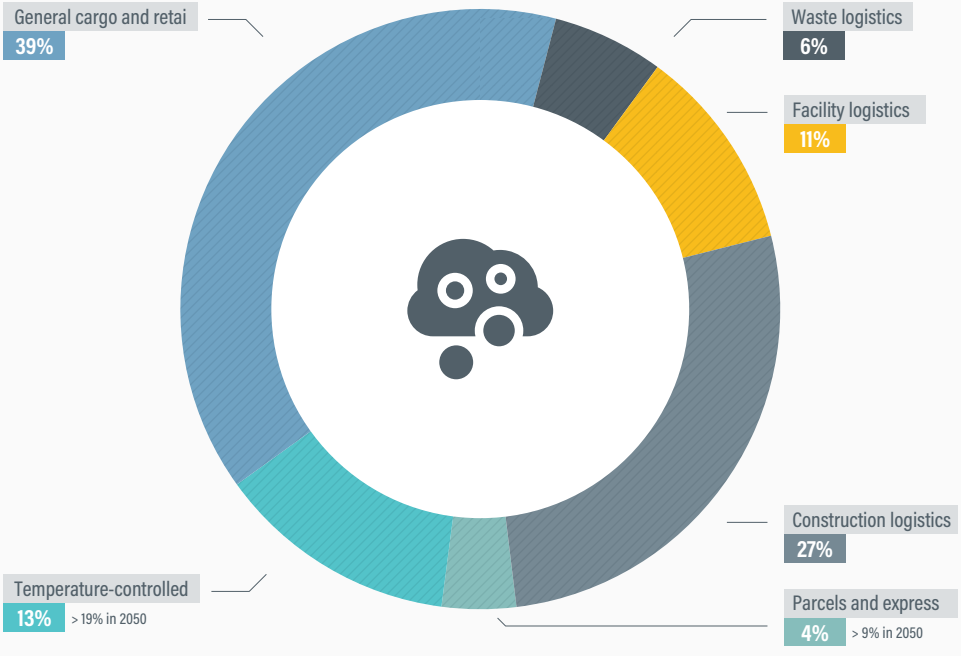
FIGURE 7. Global freight transport CO_2 emissions in two policy scenarios, 2019-2050



Emissions from global freight could surge nearly 30% between 2019 and 2050 under a "current policies" scenario, in which greener technologies and logistic practices are not introduced at a sufficient pace and scale to curb these emissions. In contrast, in a "high ambitions" scenario, global freight emissions could drop 75% by 2050 even if transport volumes rise 60%.

FIGURE 8. Urban freight transport CO_2 emissions in the Netherlands, by logistic activities, 2015

Total GHG emisions (2015): 3.6 million tonnes



Urban freight flows include business-to-consumer commodities (food, clothing, electronics, etc.), business-to-business products, construction-related transport and waste.

A study in the Netherlands found that in 2015, general cargo and retail contributed the largest share of freight CO_2 emissions (39%) in urban areas, followed by construction logistics (27%). Parcels represented a smaller but growing share. Vans used for services and facilities management accounted for a significant share of business traffic as well as emissions (11%).

FIGURE 9. Five clusters of interventions to deliver quick wins and initiate long-term transformations in freight transport and logistics

MODULE S1

SPOTLIGHT ON LOGISTICS FOR CLIMATE ACTION

FIGURE 1. The 9 contributions of logistics to a low-carbon society

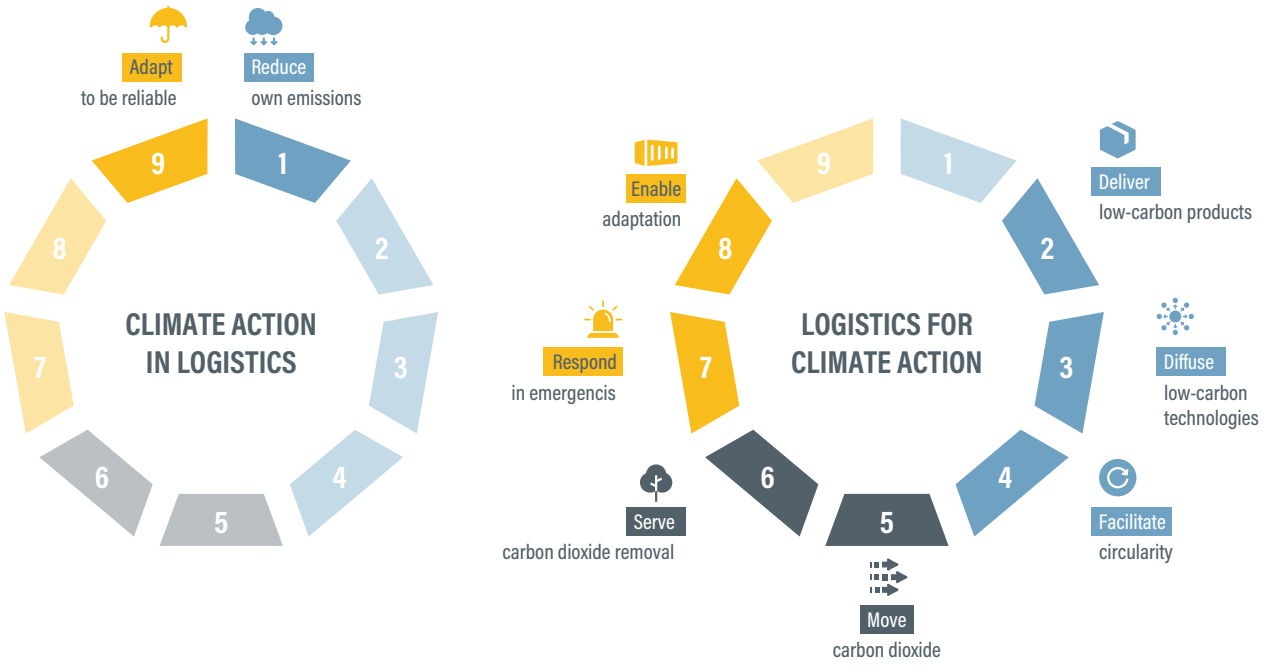
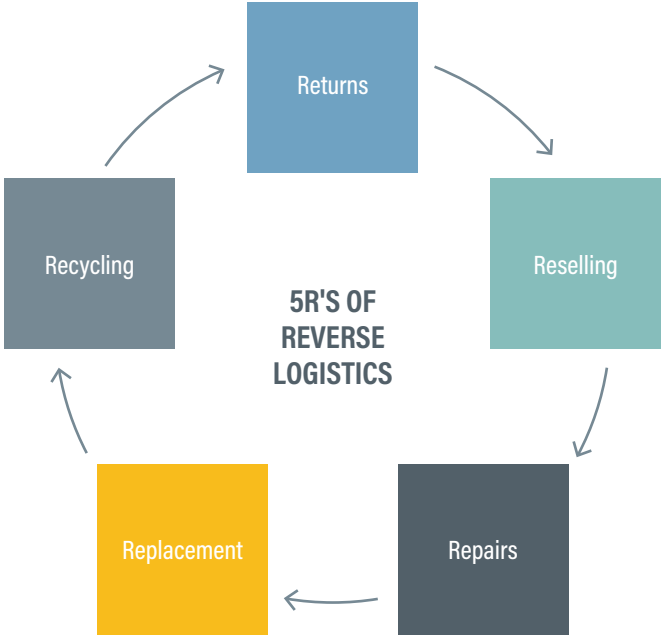


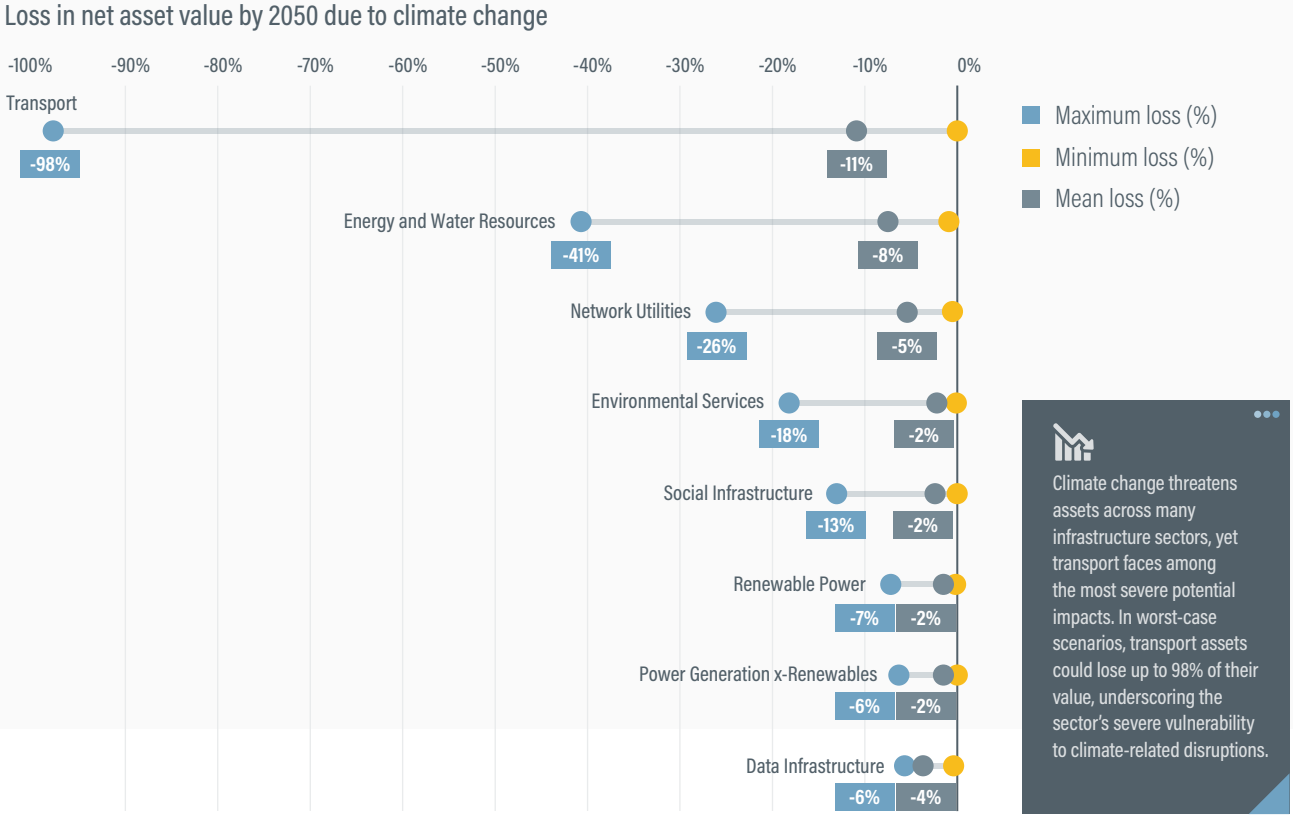
FIGURE 2. The "5R's" of reverse logistics



MODULE 1.4

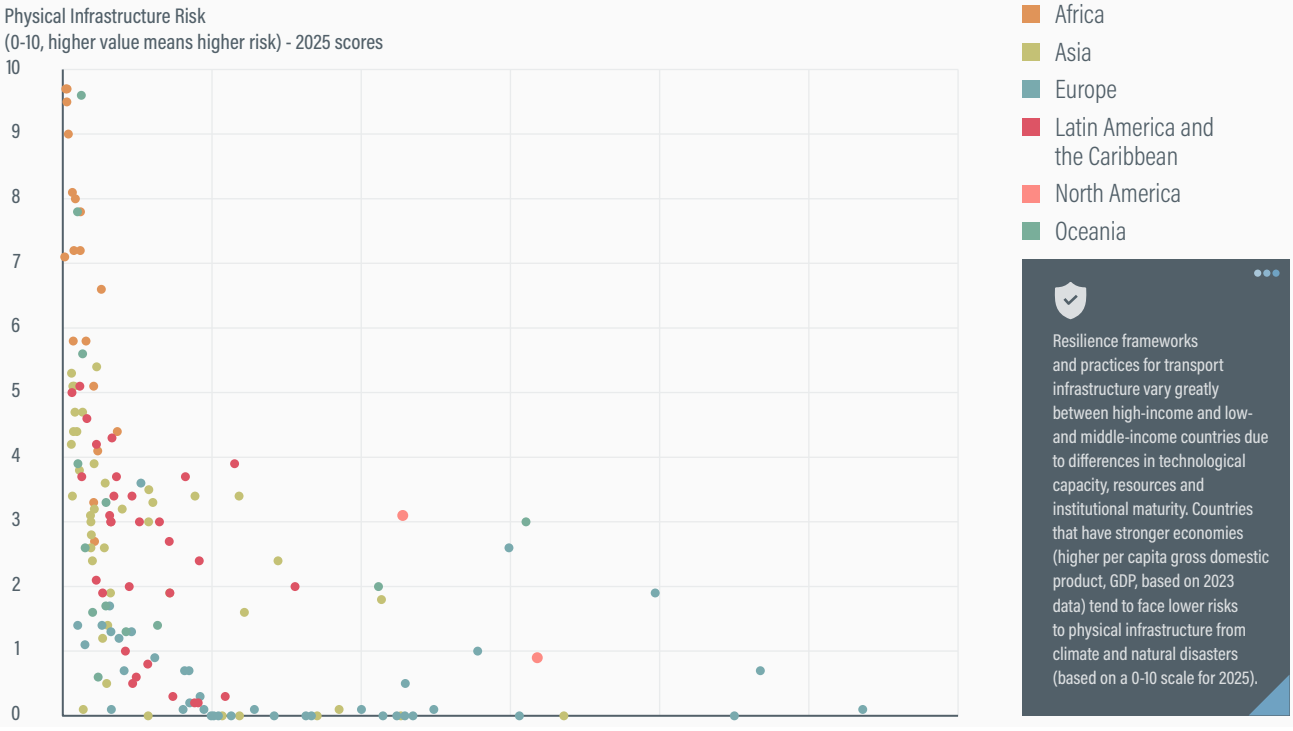
BUILDING ADAPTATION AND RESILIENCE WITHIN TRANSPORT SYSTEMS AND ACROSS COMMUNITIES AND ECONOMIES

FIGURE 1. Average impact of physical risk on net asset value within the "current policies" scenario for 2050 for different infrastructure segments



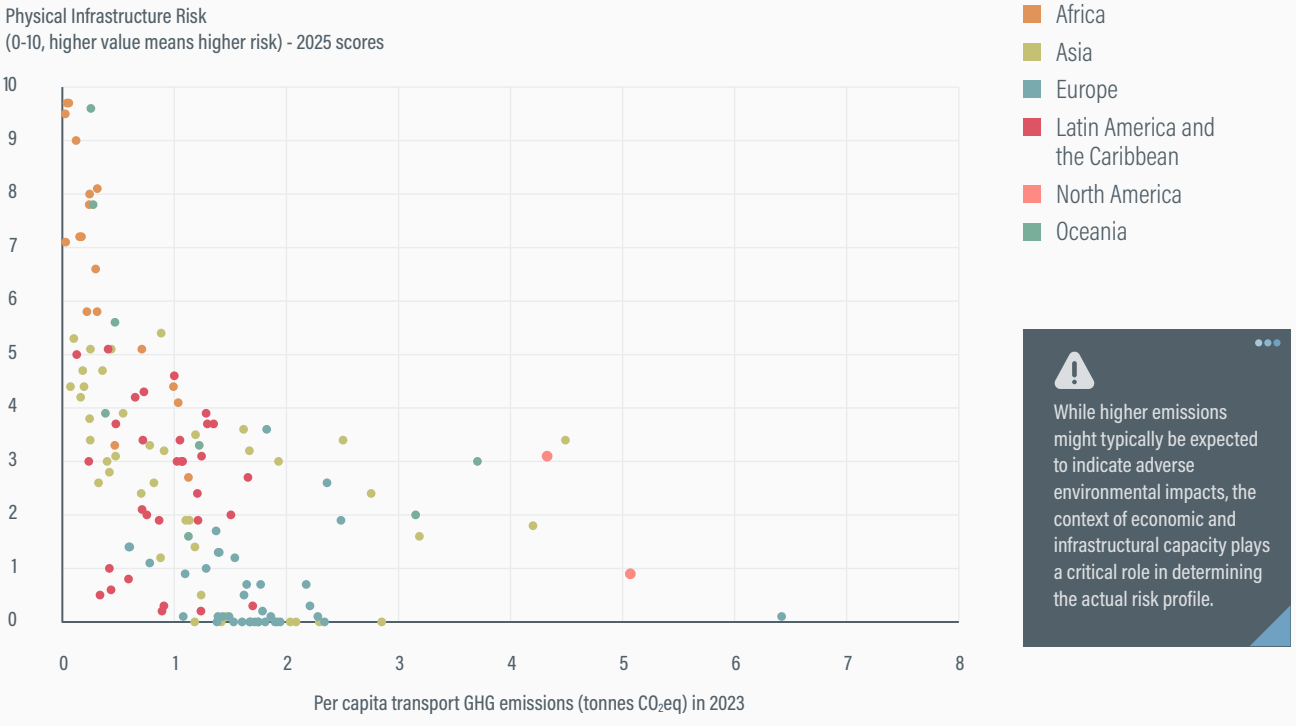
Climate change threatens assets across many infrastructure sectors, yet transport faces among the most severe potential impacts. In worst-case scenarios, transport assets could lose up to 98% of their value, underscoring the sector's severe vulnerability to climate-related disruptions.

FIGURE 2. Physical infrastructure risk (2025) compared to per capita GDP (2023)



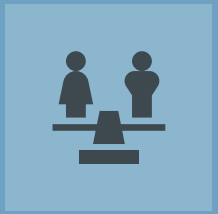
Resilience frameworks and practices for transport infrastructure vary greatly between high-income and low- and middle-income countries due to differences in technological capacity, resources and institutional maturity. Countries that have stronger economies (higher per capita gross domestic product, GDP, based on 2023 data) tend to face lower risks to physical infrastructure from climate and natural disasters (based on a 0-10 scale for 2025).

FIGURE 3. Physical infrastructure risk (2025) compared to transport greenhouse gas emissions (2023)



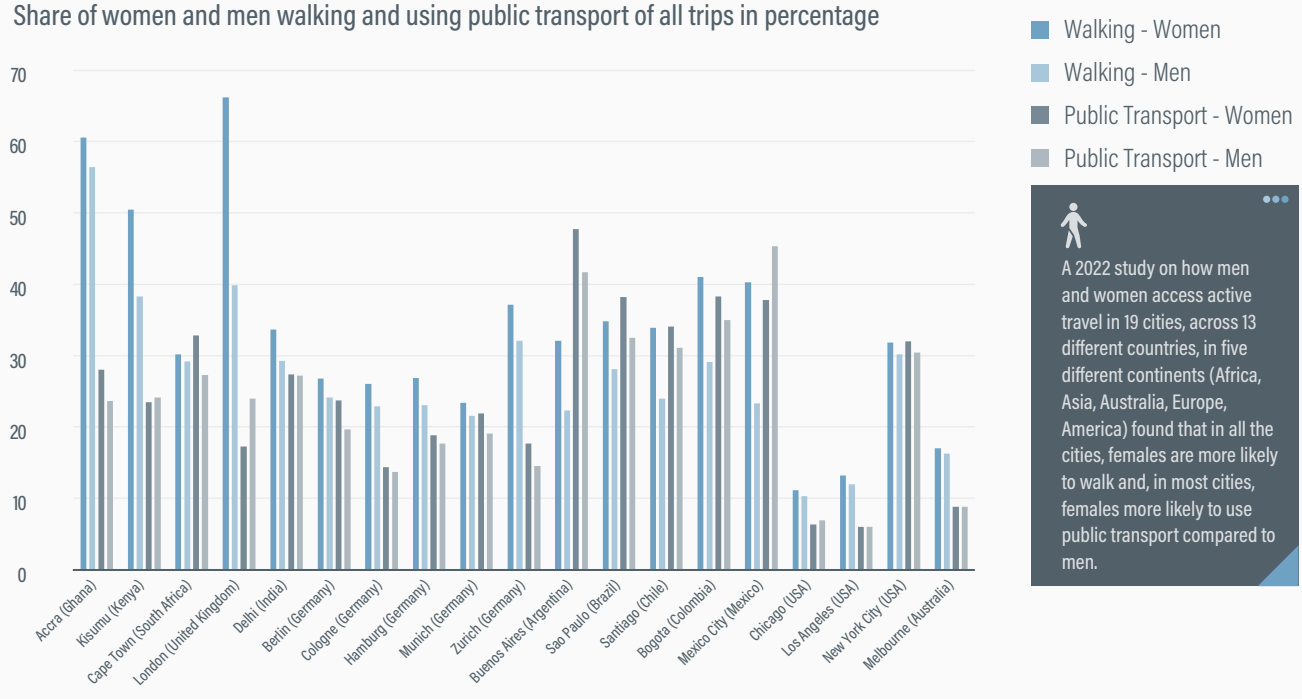
While higher emissions might typically be expected to indicate adverse environmental impacts, the context of economic and infrastructural capacity plays a critical role in determining the actual risk profile.

MODULE 1.5



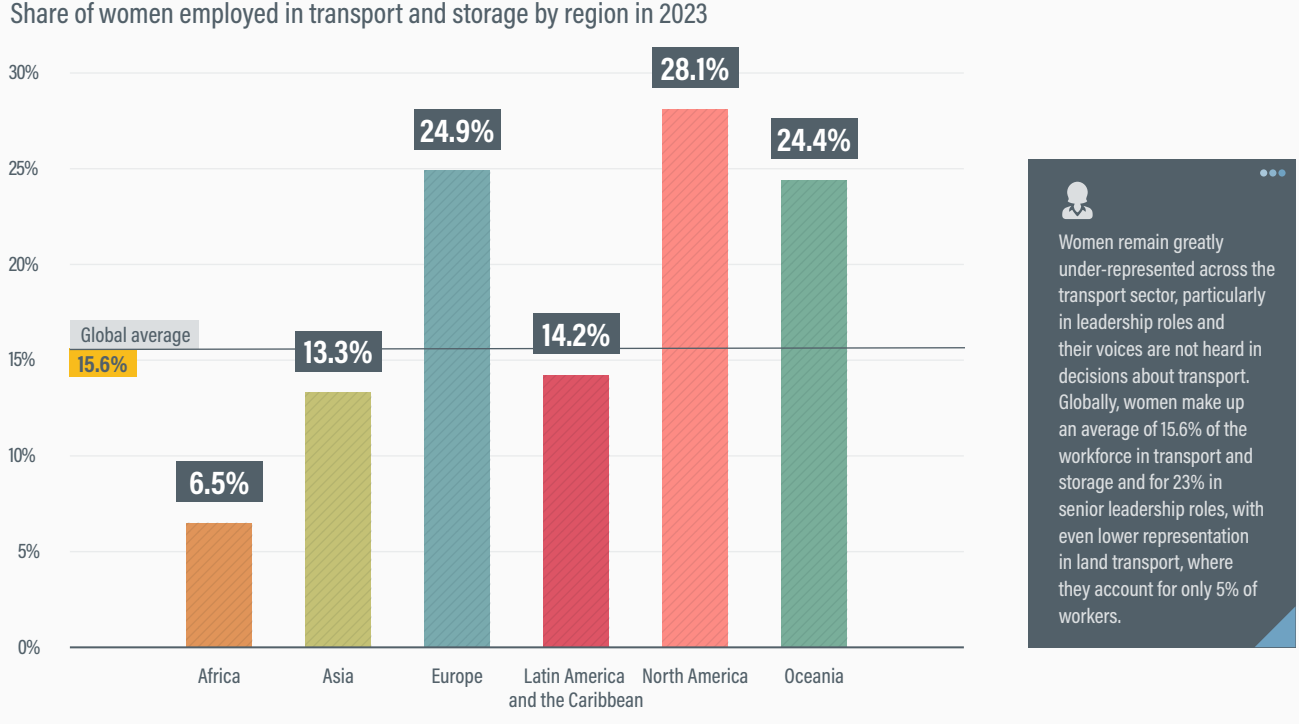
DRIVING GENDER EQUALITY: EMPOWERING WOMEN AND TRANSFORMING TRANSPORT

FIGURE 1. Share of women and men walking and using public transport in selected cities, 2022 study results



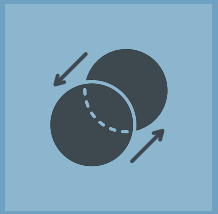
A 2022 study on how men and women access active travel in 19 cities, across 13 different countries, in five different continents (Africa, Asia, Australia, Europe, America) found that in all the cities, females are more likely to walk and, in most cities, females more likely to use public transport compared to men.

FIGURE 2. Share of women employed in transport and storage, 2023



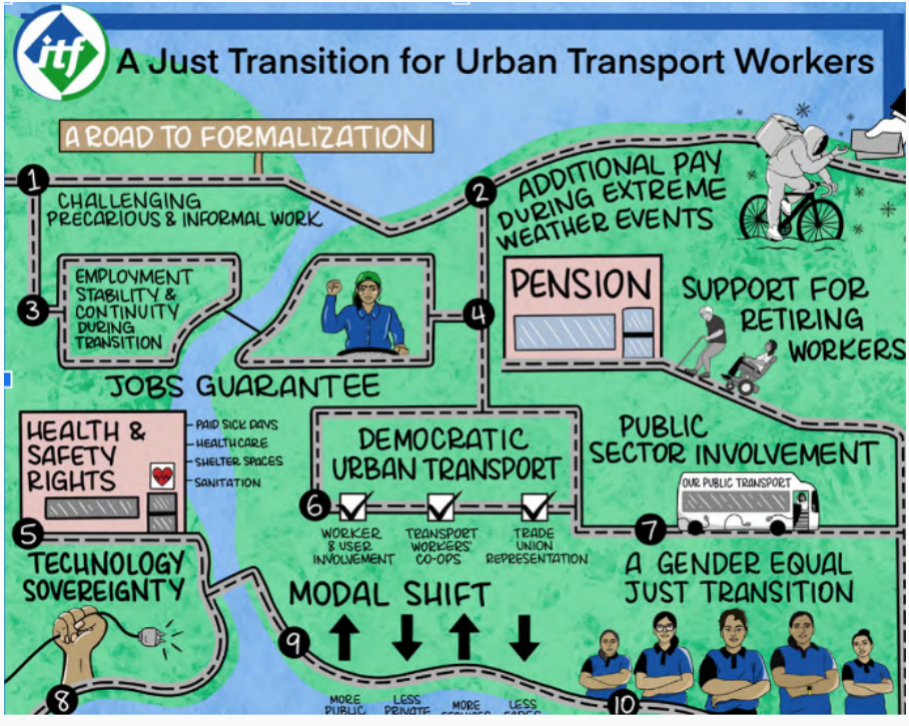
Women remain greatly under-represented across the transport sector, particularly in leadership roles and their voices are not heard in decisions about transport. Globally, women make up an average of 15.6% of the workforce in transport and storage and for 23% in senior leadership roles, with even lower representation in land transport, where they account for only 5% of workers.

MODULE 1.6



A JUST TRANSITION IN TRANSPORT: A DOUBLE CHALLENGE

FIGURE 1. Just transition for urban transport



Joint action on mitigation and adaptation is critical for urban transport (and all transport modes).
Art credit Elizabeth Niarhos @lizar_tistr for ITF.

MODULE 1.7

DRIVING HEALTH FORWARD: THE CRITICAL LINK BETWEEN TRANSPORT AND WELLBEING

FIGURE 1. The links between the benefits (3 A's) and harms (9 C's) of road transport by travel mode: car use, cycling and walking

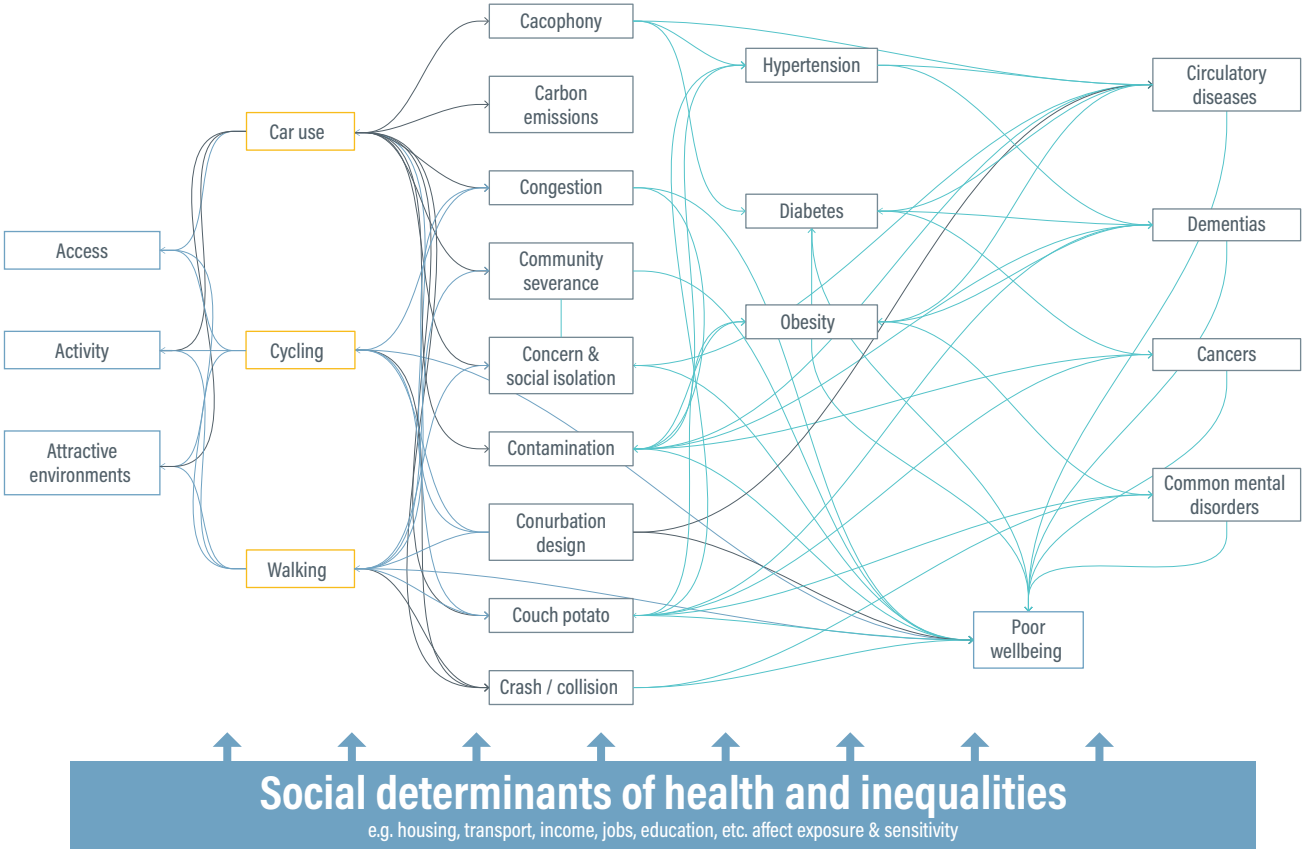


FIGURE 2. Health benefits of walking and cycling

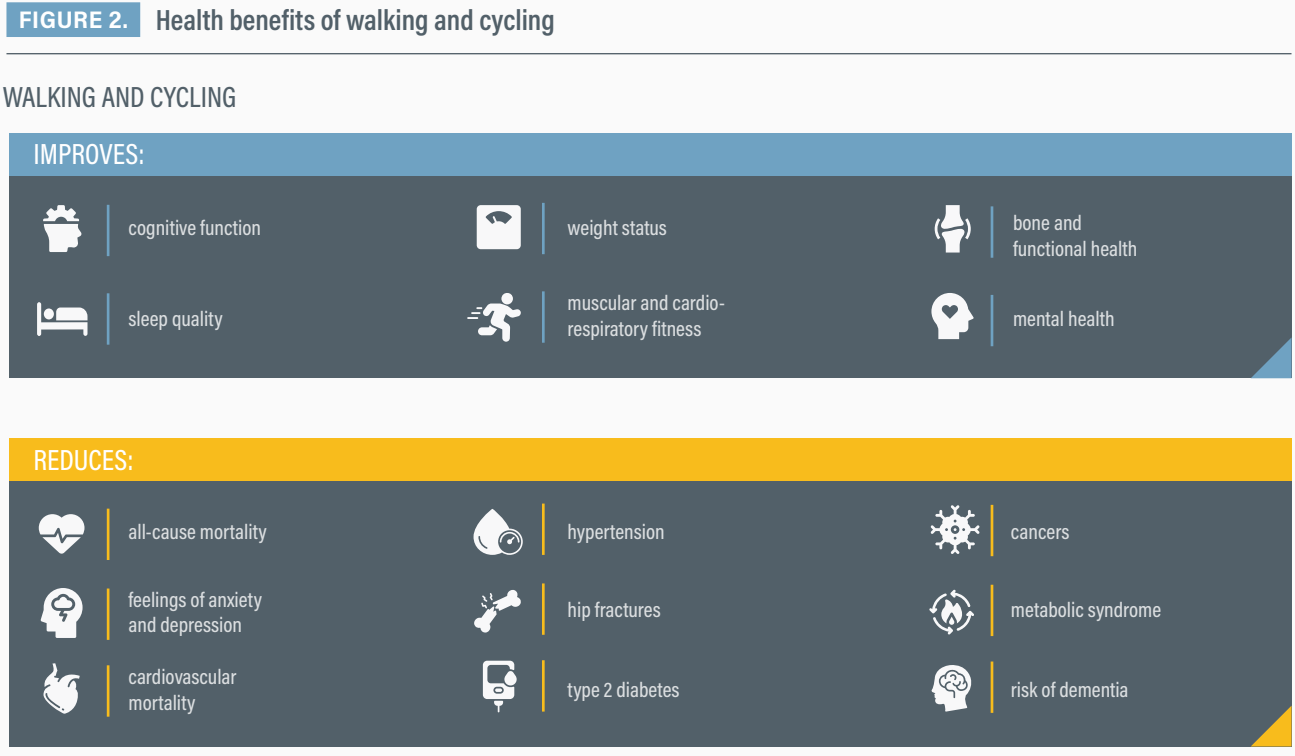
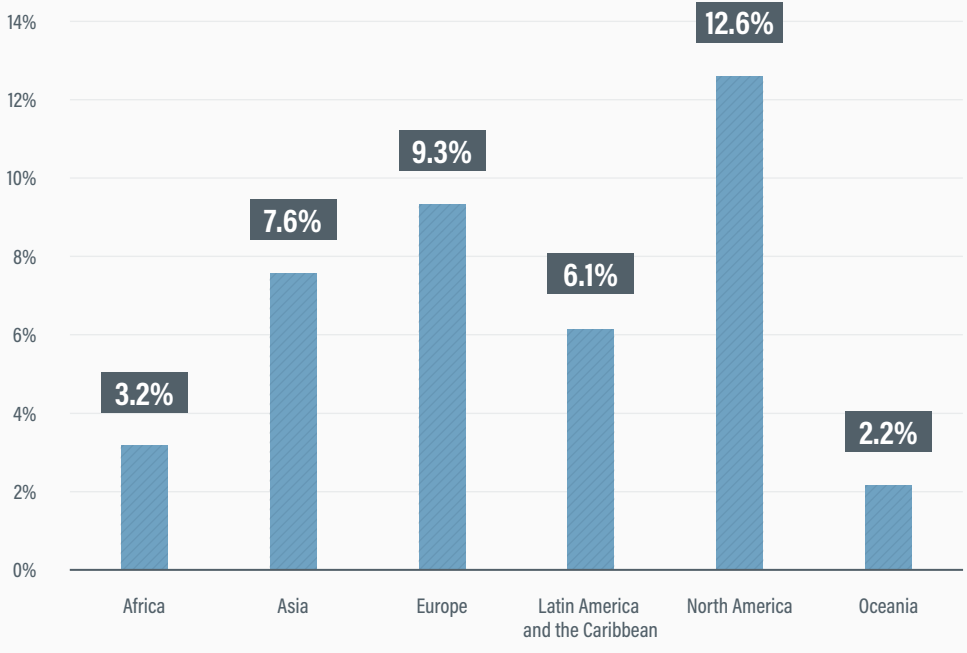


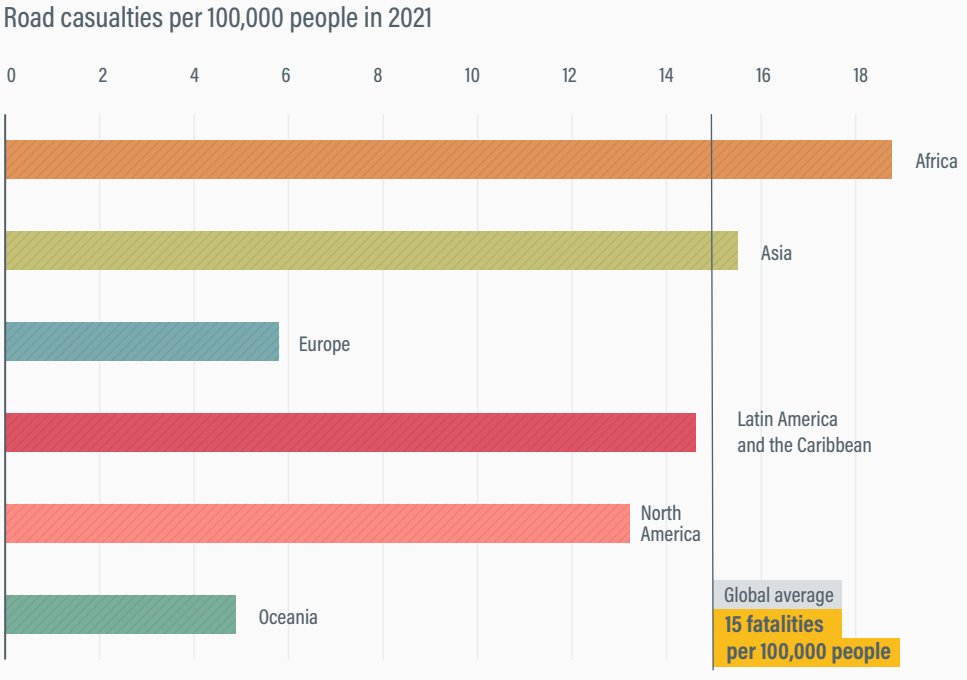
FIGURE 3. Contribution of transport to air pollution in 2019

Average contribution of transport to air pollution per region, 2019



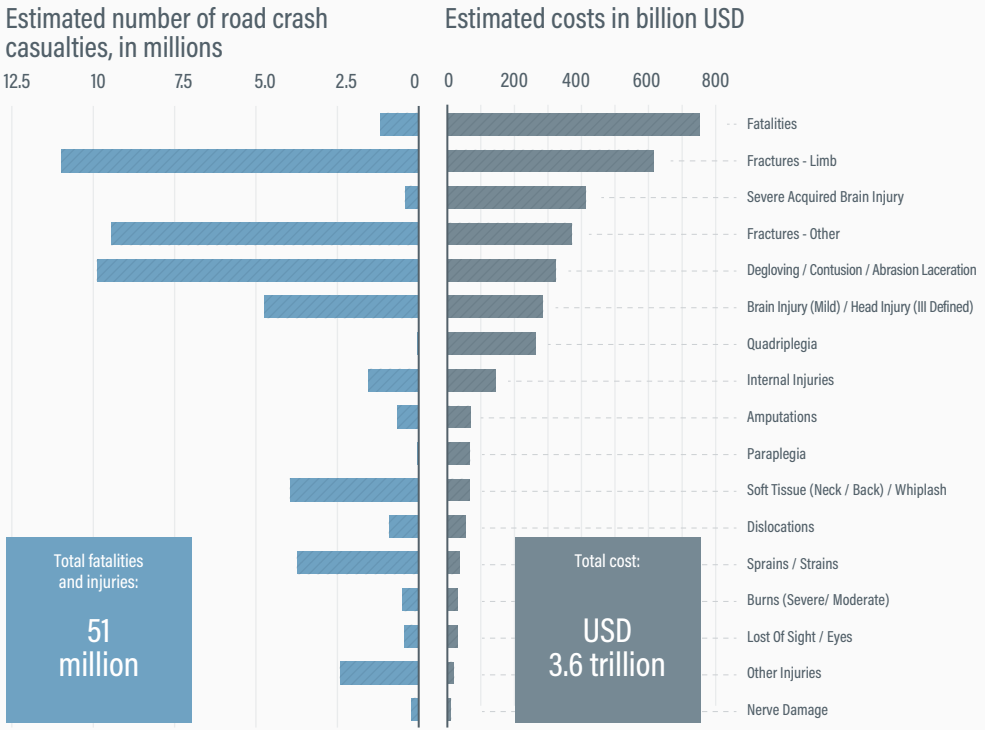
2019 estimates show that transport is responsible for 6% of air pollution, making it responsible for half million of air pollution-related premature deaths. However, the extent of this contribution varies significantly amongst regions, ranging from 12.6% in North America, to only 2% in Oceania.

FIGURE 4. Road traffic casualties per 100,000 people, by region, 2021



Road traffic crashes killed 1.19 million people in 2021, with significant disparities by region. The highest per capita road fatalities were recorded in Africa with 18.8 fatalities per 100,000 people, above the global average of 15 deaths per 100,000 people.

FIGURE 5. The human impact of road traffic injuries



As of 2021, the total cost of death and injury on the world's roads was an estimated USD 3.6 trillion a year, or the equivalent of 3.7% of global GDP.

In low- and middle-income countries, the cost of road crashes approached 5% of GDP. In these countries and in rural areas worldwide, the consequences of a road crash are often exacerbated by the paucity of roadside or other emergency care, including a lack of emergency services and vehicles to transport injured people.