Transport sector leads global CO₂ emission growth

Combustion sector with the fastest CO₂ emissions growth from 2010 to 2019: 18% growth.

Accounting for 22% of global fossil CO₂ emissions in 2019.

Biggest drop in transport CO₂ in history in 2020 due to pandemic.

Strongest rebound among all sectors in 2021.

International aviation CO₂ emissions took a 45% hit in 2020, falling to pre-millennium levels.

From 2020 to 2021, international aviation CO₂ emissions increased by 15%, still remaining 37% below 2019.

Despite the drastic pandemic impacts on global trade, international shipping CO₂ emissions only fell by 2% in 2020. By 2021, they were higher than pre-pandemic levels.

Public transport, walking and cycling can yield multiplier impacts on health

Land traffic contributes 5% of the mortality from PM$_{2.5}$ globally. ➔ 32% in North America

Traffic crashes: Leading cause of death among 5-29 year-olds worldwide; 93% of them in LMICs
➔ No reduction in traffic deaths for a decade despite ambitious targets.
➔ Investment in public transport can reduce crashes by attracting private vehicle users.

Indirect costs of fossil fuel subsidies (e.g. respiratory diseases, traffic crashes) are 10 times greater than direct financial costs.

1 in 4 adults and 4 in 5 adolescents are not sufficiently active due to infrastructure that prioritises vehicles, not people.

Post-pandemic horizon: Emerging recognition of health benefits of active mobility and investments in cycle lanes and bike sharing schemes.
The Russian invasion of Ukraine spiraled major existing crises and challenges.

Significant, long-lasting climate impacts, in addition to wide-ranging humanitarian, social and economic impacts.

100 million tonnes of GHG emissions released over the first seven months:
- Reconstruction of civilian infrastructure (50%)
- Fires (24.4%)
- Fossil fuel pipeline leakages (15%)
- Warfare (9.1%)
- Movement of refugees (1.4%)

Longer-distance rerouting of flights since 2022 due to air space closures that will result in higher CO\textsubscript{2} emissions by aviation:
- Finnair: 40% longer flights from Finland to China.
- British Airways: 20% longer flights from UK to China.

Rising energy costs, higher food prices and rerouting of supply chains, building upon It pandemic impacts on maritime transport:
- Global oil production remained stable in 2022, but fuel prices and transport costs were twice as high in June 2022 as in July 2021 in many countries.
- Average fuel surcharge by container shipping lines rose nearly 50% from January to May 2022.
Freight plays an increasing role in transport CO₂ emissions

Road transport (passenger & freight) contributed more than three-quarters of transport CO₂ emissions in 2019.

Freight emissions keep growing:
→ From 40% in 2018 to 42% in 2019.
→ Projected to be 22% higher in 2050 than in 2015.
Rising demand - longer supply chains - lack of scalable solutions - air freight.

Shortening global supply chains is essential to decarbonise freight and reduce vulnerability

Approx. 70% of international trade involved global value chains in 2021.

**Supply shortages** due to 2020/22 events:
- Global Supply Chain Pressure Index at all-time high.
- Showed fragility of global supply and logistics chains and their international dependencies.

**Gap between science and policy:**
Long-term Climate Strategies submitted to UNFCCC by the top five economies do not mention supply chains shortening or freight movements reductions.

Asia continues to spearhead emissions growth

With its blooming population and economy, Asia continued to record the highest emissions growth among regions: 36% growth from 2010 to 2021.

Followed closely by Africa: 34% growth during that period.

North America, Europe and Oceania experienced emission reductions during that period.

Major needs for sustainable, low-carbon transport prevail in Small Island Development States

- **High vulnerability** to climate change impacts, despite being a small global CO₂ and transport CO₂ emitter (only 1% and 0.5% respectively).

- **High dependency on cars** due to poor planning; limited incentives for sustainable transport, and inexpensive second-hand imported vehicles.

- **High transport costs** and limited access to markets and services due to the small and dispersed nature of island communities.

- **High fossil fuels dependency** for electricity and transport: 22.7% of total imports in 2019.

- **Maritime and air transport** as main transport modes; though road transport is the dominant mode for fuel use.

- **Transport infrastructure** often in poor condition and subject to the “build-neglect-rebuild” paradigm.
Passenger and freight transport are increasingly vulnerable to climate-related hazards

Natural hazards cause **USD 15 billion direct damage annually to transport systems worldwide; USD 8 billion in LMICs.**

- 2022 floods in Pakistan: USD 3.3+ billion.
- EU average 1998-2010: USD 2.7 billion annually.

**27% of road and rail assets** worldwide are exposed to at least one cyclone, earthquake or flooding hazard per year.

**86% of ports** worldwide are exposed to three or more hazards per year.

Monetary impacts of transport disruptions far exceed physical damages to assets:

**USD 107 billion annual losses to businesses in LMICs**
Reductions of transport emissions are urgently required to achieve decarbonised pathways

Transport pathways that limit global warming to 1.5°C with no or limited overshoot will require a 59% reduction of CO₂ emissions from transport by 2050, compared to 2020 levels.

The IEA net-zero emission scenario will require a 90% reduction of CO₂ emissions from transport by 2050, compared to 2020 levels.

Different modes will require different decarbonisation levels. i.e. road vehicles contribute more than rail, shipping and aviation.

### Avoid measures show biggest potential towards oil independence, followed by *Shift* and *Improve* measures

As of 2020, **fossil fuels provide 95.9% of energy** for transport, renewables only 4.1%.

**IEA’s 10-point plan to cut oil use in advanced economies:** 2.9 million barrels of oil per day could be saved in the transport sector.

<table>
<thead>
<tr>
<th>Avoid measures</th>
<th>Shift measures</th>
<th>Improve measures</th>
<th>Reduced million barrels of oil per day in advanced economies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work from home up to three days a week</td>
<td>Incentivise public transport, micro-mobility, walking and cycling</td>
<td>Reduce speed limits on highways by at least 10 km/h</td>
<td>-0.4</td>
</tr>
<tr>
<td>Implement car-free Sundays in cities</td>
<td>Increase car sharing and adopt practices to reduce fuel use</td>
<td>Promote efficient driving for freight trucks and delivery of goods</td>
<td>-0.3</td>
</tr>
<tr>
<td>Alternate car access to roads in large cities</td>
<td>Use high-speed and night trains instead of planes</td>
<td>Reinforce the adoption of electric and more efficient vehicles</td>
<td>-0.2</td>
</tr>
<tr>
<td>Reduce business air travel</td>
<td></td>
<td></td>
<td>-0.1</td>
</tr>
</tbody>
</table>

Source: SLOCAT analysis based on IEA (2022), A 10-Point Plan to Cut Oil Use, https://www.iea.org/reports/a-10-point-plan-to-cut-oil-use

More about *Avoid-Shift-Improve* at www.slocat.net/asi
National climate strategies are not ambitious enough to meet Paris Agreement target and SDGs

Nationally Determined Contributions* under the Paris Agreement:
- With pledged targets, transport GHG emissions will still increase 11% by 2030.
- Only 16% NDCs feature transport GHG targets (compared to 8% in first-generation NDCs of 2015/16).
- Transport adaptation and freight are still neglected.

Voluntary National Reviews of the SDGs:
- 86% of 2022 VNRs had transport references, slightly down from previous years.
- 21% of 2022 VNRs included transport targets; the majority were short- to medium-term, very few long-term for 2050.
- Most 2022 VNRs mainly described adverse impacts of ongoing crises instead of presenting concrete measures, and systemic transformations..

Transport targets, by type, in second-generation NDCs

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

* Submitted as of 23 September 2022
Sub-national governments are fundamental to turning ambition into on-the-ground action

Cities exhibit a wide range of urban transport profiles, with **modal shares varying greatly across locations.**

- London, Madrid and Paris were found to be top cities for transport availability, in a study of 25 major cities worldwide.

More sub-national governments are declaring **commitments to net zero GHG emissions** and/or unveiling sustainable development plans.

**Urban transport** accounted for around **40% of global transport emissions** in 2020.

- Across most cities, urban transport contributes between 20% and 60% of total CO₂ emissions.
- In the absence of interventions, motorised mobility in cities could surge 94% between 2015 and 2050.

**Urban freight** contributed **25% of transport emissions** and **30-50% of other transport-related pollutants** in 2015.

The **pandemic presented both threats and opportunities** for sustainable transport and mobility in cities.

An estimated **65% of SDGs will not be achieved unless sub-national governments are fully and equitably involved in implementation.** Localising the implementation of the **SDGs** is crucial to raise awareness and accelerate engagement and commitment via a bottom-up approach.
Emerging climate leadership from businesses, though greater ambition and deeper commitment are needed.

- Approx. 100 companies contributed 71% of global GHG emissions from 1998 to 2015.
- Emerging innovations in hard-to-decarbonise sub-sectors: Zero emission trucks, ships and planes; low-carbon fuels; batteries technology.
- Gap remains between ambition and climate transition planning - Lack of action and funding. Many transport companies under-perform on social aspects of climate and sustainability.
- Involvement of wide range of businesses needed: Original transport manufacturers, public & freight transport service providers, companies that use transport.

4 A's of Climate Leadership by the We Mean Business Coalition

- **Ambition**: Commit to net zero and set science-based targets in line with Paris Agreement goals and a just transition.
- **Action**: Take concrete action across the business value chain and involve employees, suppliers, and customers.
- **Advocacy**: Speak up to secure wider change through ambitious government policy and aligned trade associations.
- **Accountability**: Disclose emissions, progress against targets and plans, risk management, policy engagement, and governance.

Over the years, the transport dimension of UNFCCC processes has grown in intensity and impact, thanks to the increasing mobilisation and engagement of the global transport community in these processes.

Positive opportunities have emerged in the ways that countries address transport in NDCs. However, while the growth in transport emissions will slow, overall emissions will not be reduced in absolute terms, due to the shortfall in NDC ambitions.

International multi-stakeholder initiatives stemming from annual UN climate summits demonstrate the increased attention to transport over the years.

- **Global Stocktake on Paris Agreement implementation**: temperature check” of progress on a five-year cycle.
  
  SLOCAT submissions to the First Global Stocktake: Input to TD 1.1 | Interventions at Technical Dialogue 1.1 | Input to TD 1.3 | National Urban Mobility Policies and Investment Programmes in support of Climate Commitments in Latin America and the Caribbean | Voces de América Latina y el Caribe sobre Acción Climática en el Transporte

- **Independent Global Stocktake (iGST)**: A coalition of civil society analysts and advocates aiming to provide technical capacity and expertise to the UNFCCC global stocktake.

- **Mitigation Work Programme (MWP)**: Operationalised between 2023-2026
  
  SLOCAT input to the First MWP Global Dialogue at SB56 in June 2023
Check out other key insights at www.tcc-gsr.com/key-insights

Module 1
Transport Pathways to Reach Global Climate and Sustainability Goals

Module 2
Regional Trends in Transport Demand and Emissions, and Policy Developments

Module 3
Climate and Sustainability Responses in Transport Sub-Sectors and Modes

Module 4
Transport and Energy

Module 5
Enabling Climate and Sustainability Action in Transport: Finance, Capacity and Institutional Support
5 Modules

- Transport Pathways to Reach Global Climate and Sustainability Goals
- Regional Trends
- Responses in Transport Sub-Sectors and Modes
- Transport and Energy
- Finance, Capacity and Institutional Support
12 Transport Areas

- Integrated transport planning
- Walking
- Cycling
- Public Transport
- Informal Transport
- App-Driven Shared Transport
- Rail
- Road Transport
- Aviation
- Shipping
- Transport Energy Sources
- Vehicle Technologies

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