

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.**

Changes in CO₂ emissions by sector, 2010-2021





International aviation is still recovering from the pandemic hit, while shipping remains stable

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**.

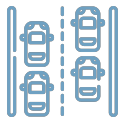
Despite the drastic pandemic impacts on global trade, **international shipping CO₂ emissions only fell by 2% in 2020**. By 2021, they were higher than pre-pandemic levels.

CO₂ emissions by international aviation and shipping in million tonnes from 2015 to 2021





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



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



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.



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 CO₂ 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 its 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

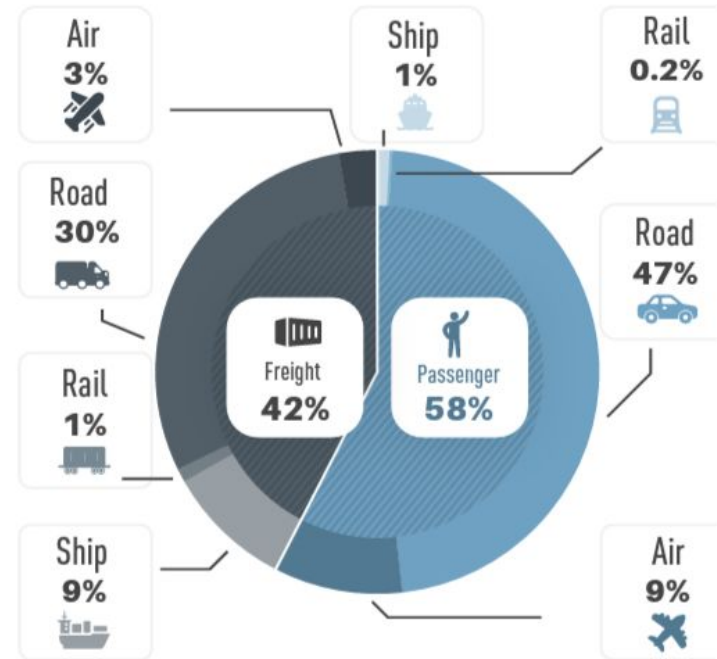
Road transport (passenger & freight) contributed more than three-quarters of transport CO₂ emissions in 2019.

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.

Transport CO₂ emissions by activity and mode, 2019





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:

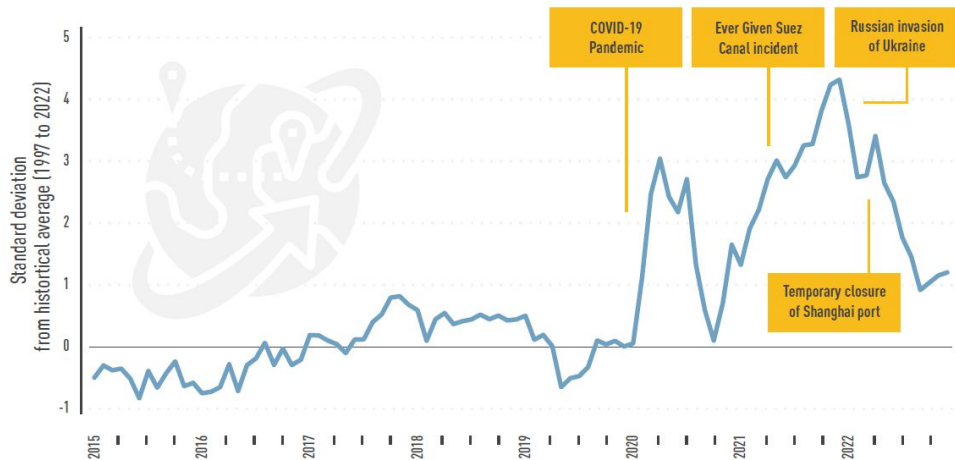
→ Global Supply Chain Pressure **Index at all-time high.**

→ 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.

Global supply chain pressure index (higher value means higher pressure), 2015 to 2022





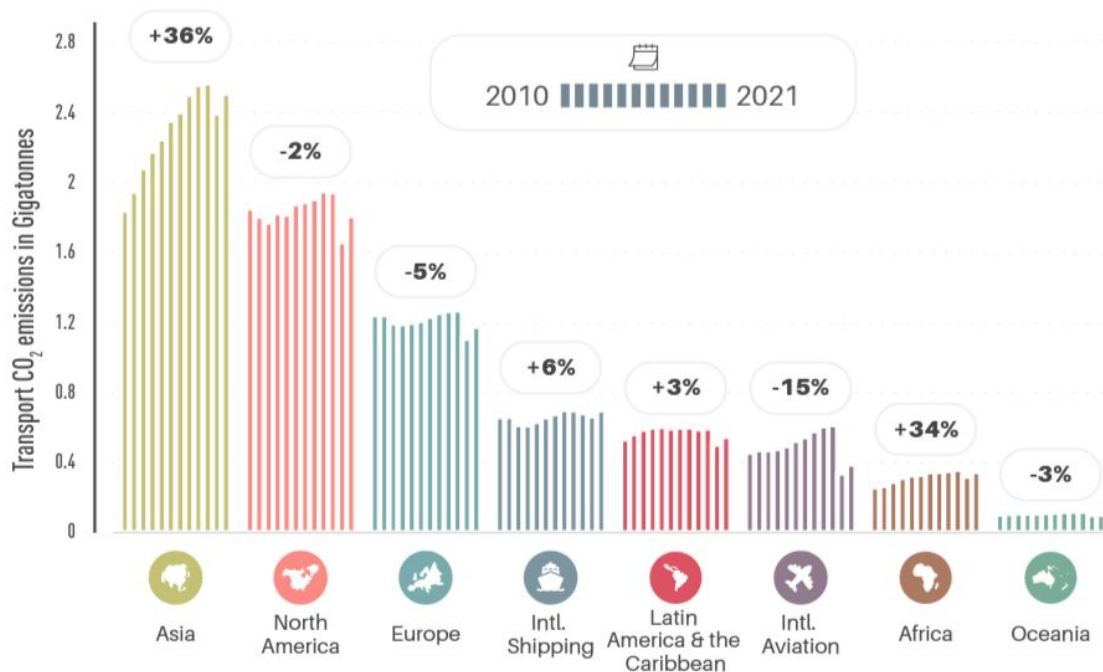
Asia continues to spearhead emissions growth

Transport CO₂ emissions, by region and for international shipping and aviation, 2010-2021

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

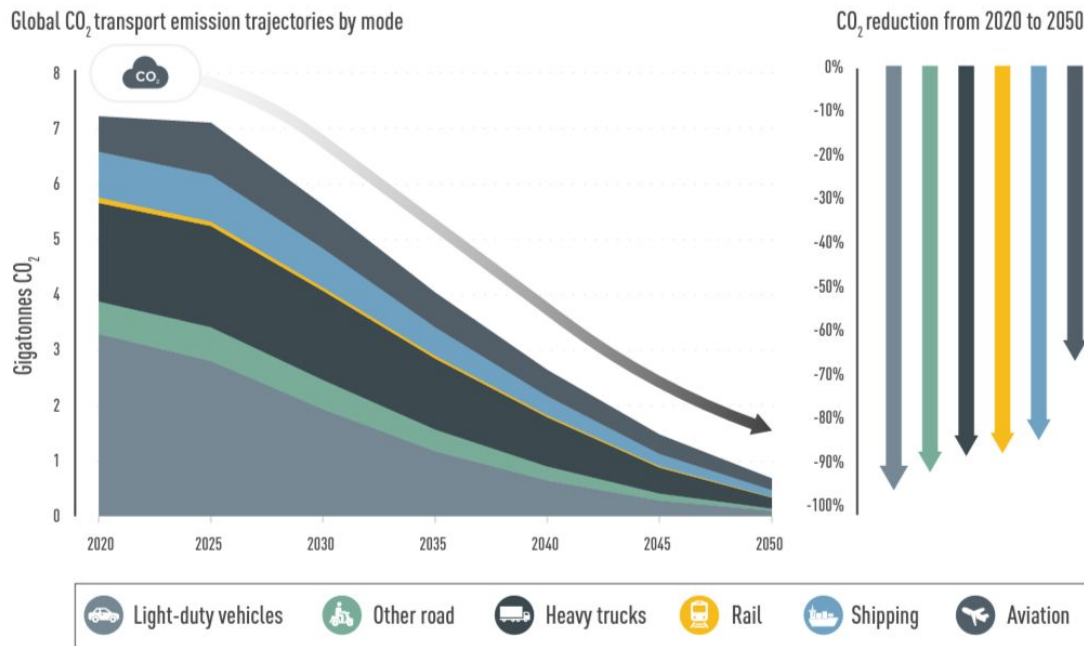
Transport pathways that limit global warming to **1.5°C with no or limited overshoot** will require a **59% reduction of CO₂ emissions from transport by 2050**, compared to 2020 levels.

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.

Global transport CO₂ emission trajectories by mode, 2020 to 2050

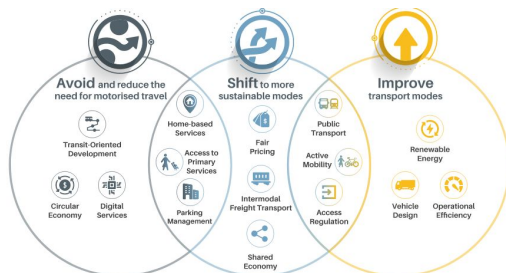




Avoid measures show biggest potential towards oil independence, followed by *Shift* and *Improve* measures

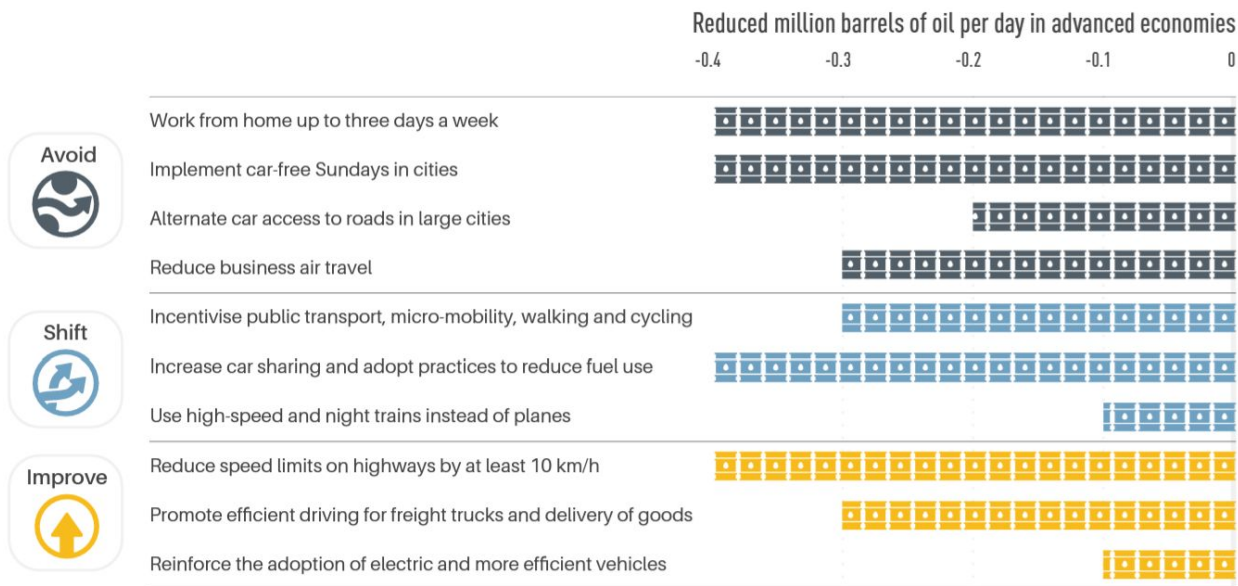
As of 2020, fossil fuels provide **95.9% of energy** for transport, renewables only 4.1%.

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.



*The A 9 1 diagramme presents a non exhaustive list of measures for illustrative purposes only.

Actions to reduce oil dependency in transport, through Avoid-Shift-Improve measures



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

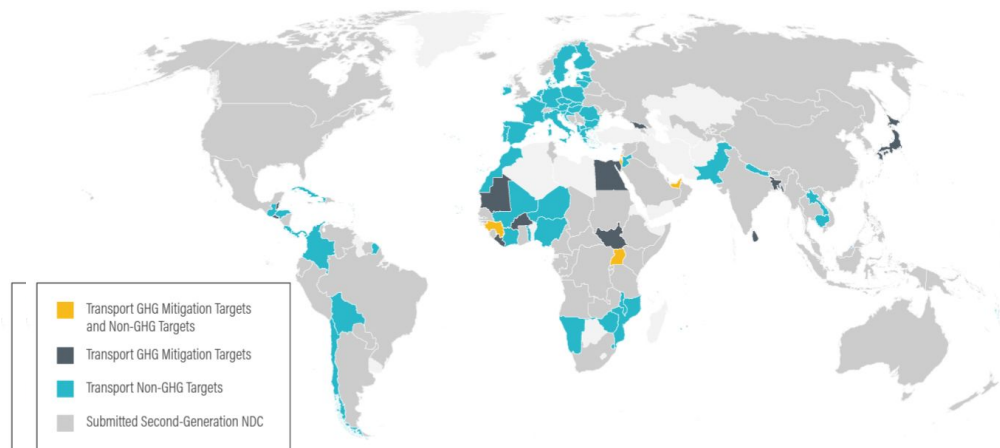
Nationally Determined Contributions* under the Paris Agreement:

- 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



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



Explore the Report
www.tcc-gsr.com

Follow us



[#TransportClimateStatus](https://twitter.com/TransportClimateStatus)

Contact us

tcc-gsr@slocatpartnership.org