

Freight Transport and Logistics in National Climate Strategies

Freight transport and logistics connect goods, markets and consumers, driving socio-economic development. They play a key role in accelerating the transition to a low-carbon economy, creating green jobs, scaling up low-carbon technologies and enabling low-carbon value chains. However, the way goods are moved today results in significant negative climate and sustainability impacts. With freight transport demand expected to more than double by 2050, without a paradigm shift, the negative impacts from freight transport will continue to rise. The resilience of freight transport and logistics is crucial. The negative impacts of transport disruptions on a country's connectivity and development are even greater than the huge financial losses in transport assets.



Check out how freight transport and logistics are addressed in the Nationally Determined Contributions (NDCs) and Long-Term Strategies (LTS) submitted by countries in the framework of the Paris Agreement. When referring to second-generation NDCs, we cover both so-called Updated NDCs and Second-generation NDCs. This analysis is based on NDCs and LTS as of 1 March 2024.

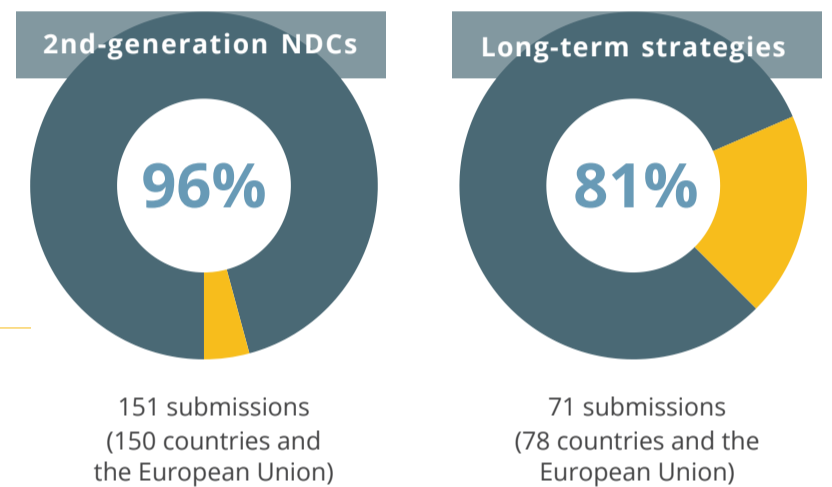
Knowledge base: [GIZ-SLOCAT NDC Transport Tracker](#)



In 2019, freight transport accounted for **42% of global transport CO₂ emissions**. Urban transport related to the movement of goods is increasing. On a global scale, the demand for transporting goods is **forecast to double between 2019 and 2050**.

**The cycle of second-generation NDCs is completed and countries are preparing third-generation NDCs due for submission by 2025. Yet just half of countries which are part of the UNFCCC submitted LTS.*

Share of global transport CO₂ emissions covered by:



Too few NDCs include freight transport targets

Targets for the reduction of transport greenhouse gas (GHG) emissions feature prominently across NDCs. However, too few NDCs include specific targets for freight transport. In order to achieve a reduction in overall transport emissions, action in freight transport will be vital.

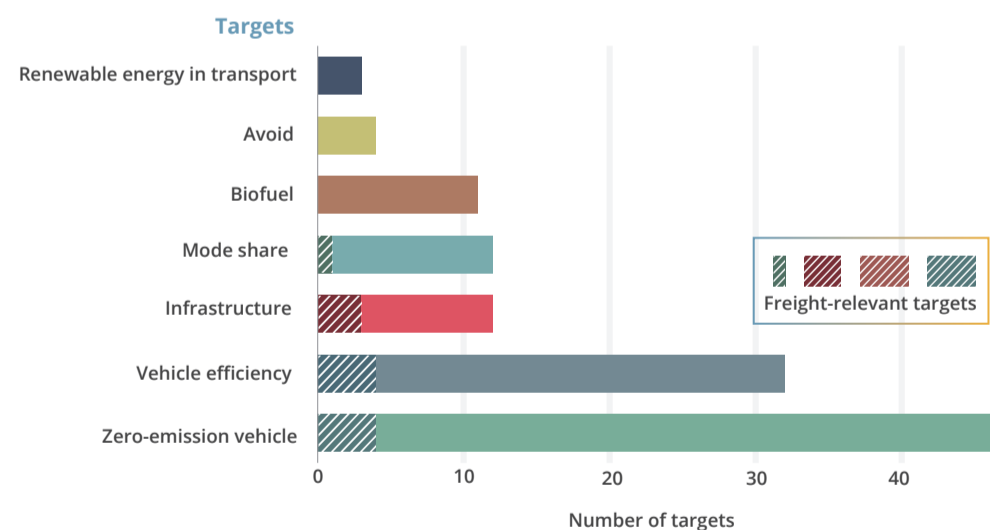
Specific GHG targets for freight transport include:

- Belize**: Avoid 117 kilotons CO₂e per year from transport until 2030 through efficiency improvements of 15% per tonne-kilometre.
- Dominica**: Reduce maritime shipping emissions by 100% until 2030.
- Fiji**: Reduce domestic maritime shipping emissions by 40% below business-as-usual by 2030.
- European Union**: Reduce maritime shipping emissions by 62% below 2005 levels by 2030.
- Samoa**: Limit maritime shipping emissions to 3.0 Gg CO₂e by 2030.

Non-GHG transport targets can support a shift towards sustainable, low-carbon transport. Among the total of 120 non-GHG transport targets in the NDCs, only **12 targets in 11 second-generation NDCs are associated with freight transport and logistics**. Across LTS, there are nearly twice as many freight transport and logistics targets (18 out of a total of 105) than in second-generation NDCs.

Freight transport and logistics targets in second-generation NDCs relate to **mode share targets (1 out of 12 targets), infrastructure targets (3), vehicle efficiency targets (4) and zero-emission vehicle targets (4)**. In LTS, 9 out of 18 targets are associated with zero-emission vehicles.

Non-GHG transport targets in second-generation NDCs



Examples of non-GHG transport targets in second-generation NDCs:

- Mode share targets**: **Albania**: Shift 30% of long-distance road freight to rail and waterways by 2030 and 50% by 2050.
- Zero emission targets**: **Chile**: Hydrogen to satisfy 71% of freight transport energy demand by 2050.
- Infrastructure targets**: **Guinea**: Construct 650 km of railway by 2025 to replace road freight transport.
- Vehicle efficiency targets**: **Zimbabwe**: Fuel economy for heavy-duty vehicles to improve by 2.5% per year from 2025 to 2030.



NDCs overlook freight transport modes, such as trucks, rail and inland navigation

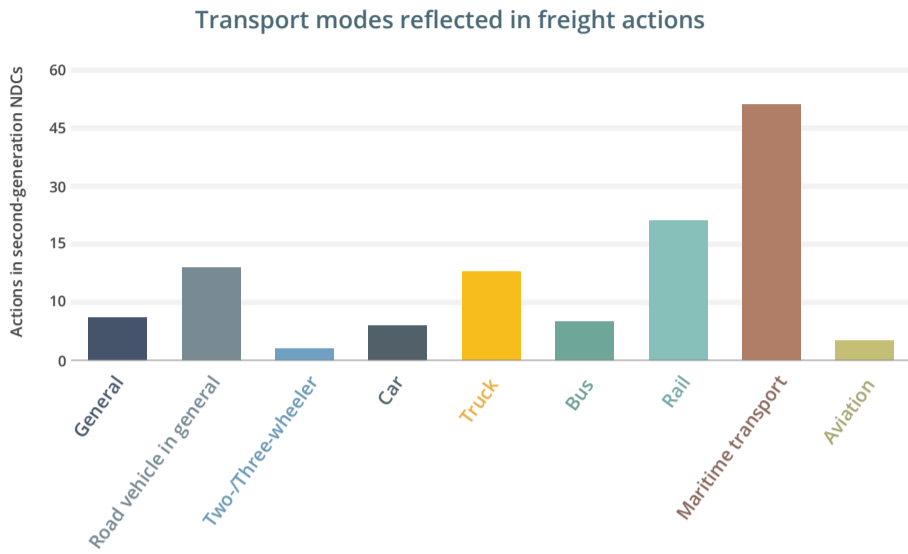
Road transport is the main source of emissions but **few NDC actions refer to trucks or road freight transport in general**. When they do, actions focus on road vehicle efficiency standards, electrification or a shift to rail.

Maritime freight transport actions are the most predominant. The NDCs of **Azerbaijan, Cabo Verde, China, Equatorial Guinea, Monaco, Nauru, Sri Lanka** and **Türkiye** look at maritime port infrastructure improvements.

Despite the significant climate impact of aviation, only 4 countries (**Egypt, Equatorial Guinea, Jordan** and **Oman**) address this topic, either by biofuel blending mandates or airport efficiency improvements.

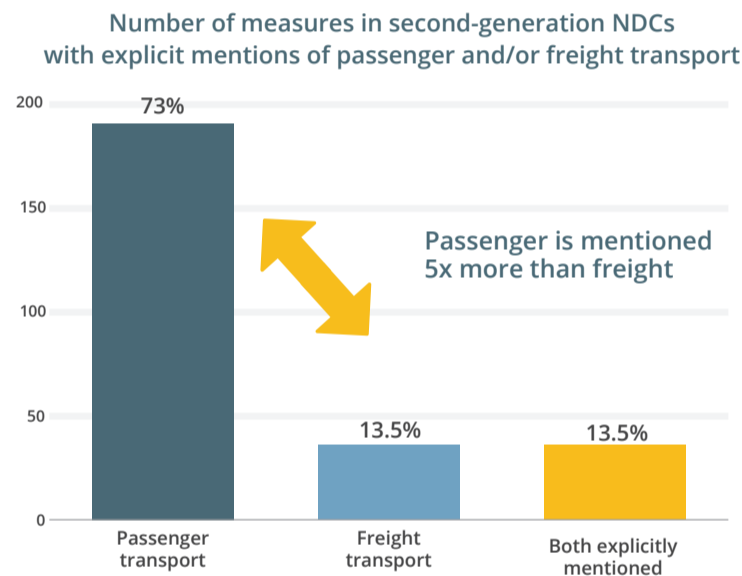
China intends to shift goods transport to rail and waterways, establish energy-efficiency standards for vessels and heavy-duty vehicles, and upgrade ports with shore-side power connections.

Most frequent words in freight mitigation actions in NDCs and LTS



Freight transport and logistics are not sufficiently addressed in the NDCs' and LTS' mitigation measures

Second-generation NDCs **focus more on passenger than freight transport (split of 5:1)**, a decline compared to the first generation of NDCs (4:1). Yet, it is not possible to attribute to either passenger or freight transport two thirds of the transport actions that are featured across NDCs and LTS.



133 freight mitigation actions can be identified across NDCs and 240 across LTS. Countries are prioritising passenger transport decarbonisation in a 2035 horizon, while postponing freight transport decarbonisation to a 2050 horizon.



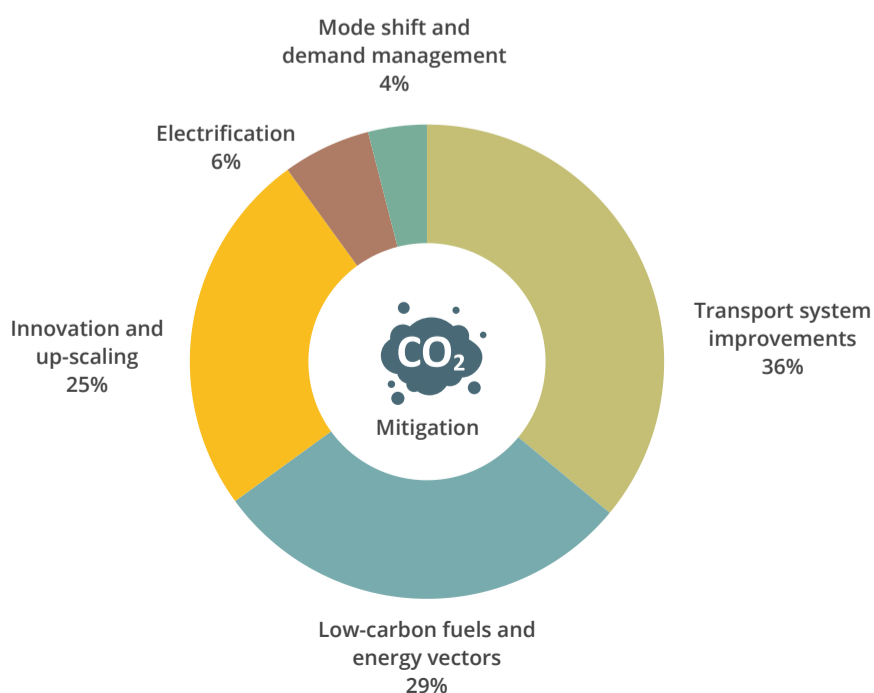
Sri Lanka's Updated NDC covers a wide range of mitigation and adaptation actions to decarbonise road, rail, maritime and inland waterway transport:

Road freight: Shifting freight from road to rail and water transport.

Rail: Integrate rail infrastructure with inland container depots, electrify the network and build more railways.

Maritime transport: Promote sea transport and energy efficiency, and fuel quality improvements to coastal shipping.

Mitigation actions in second-generation NDCs



The most popular freight transport actions in second-generation NDCs relate to **transport system improvements (36%), low-carbon fuels and energy (29%), and innovation and up-scaling (25%)**.

It is in contrast to the general situation across NDCs where transport mode shift and demand management are most prominent.



Trade in the NDCs

UN Trade and Development assessed trade in NDCs from 60 developing countries, as of 30 September 2023. 680 trade-focused actions were identified. Renewable energy and energy efficiency (281 actions) and green value chains (231 actions) were the two most popular categories. This analysis underscores the importance of international standards and shared regulations (naming Euro 6 vehicle and fuel standards as an example).

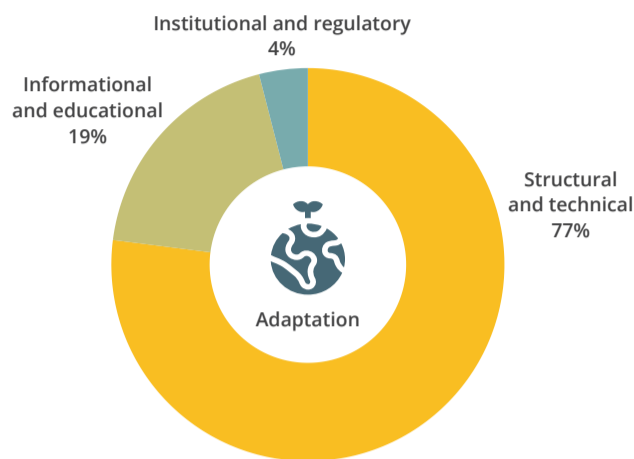
[Read the assessment by UN Trade and Development.](#)



The adaptation to climate change and the resilience of freight transport are almost ignored in NDCs

14 second-generation NDCs out of 151 (9%) contain freight transport adaptation actions, mostly focusing on structural and technical adaption (which covers transport system adaptation, maintenance, risk assessment, resilient transport technologies). 8 out of these 14 countries are very vulnerable to the negative impacts of climate change, according to the ND-GAIN index.

Adaptation actions in second-generation NDCs



NDCs recognise the need to **climate-proof ports**, especially islands, such as **Dominica, Maldives, Micronesia, Nauru** and **Seychelles** and also other countries (**Argentina, Cameroon, Moldova** and **Vietnam**).

Examples of adaptation in second-generation NDCs:

- Cameroon: Build climate-resilient airport, ports and rail infrastructure.
- Dominica: Reduce economic losses due to disasters by ensuring that critical trade infrastructure operates again within 3 months and ports and airports to function within one week by 2030.
- Micronesia: Upgrade vessels for inter-state transportation and emergency response operations, including improved delivery of essential supplies and services.
- Moldova: Carry out research for materials and technologies to increase resistance of airports, roads, railways and ports to climate hazards.



While transport electrification is increasingly featured, references to freight transport are scarce

59% (90) of second-generation NDCs and 90% (64) of LTS contain actions on electrification. But only **5% (8) of NDCs explicitly mention freight transport electrification**.

NDCs actions on mitigation relevant to freight



Comparing selected categories of NDC mitigation actions relevant for freight and logistics, there is little attention to electrification. **Bhutan, Cabo Verde, Chile, Dominica, Jordan, Oman, Pakistan** and **Suriname** are countries looking at electric trucks.

The situation is better in LTS, as 16 countries and the **EU's LTS** consider freight electrification.

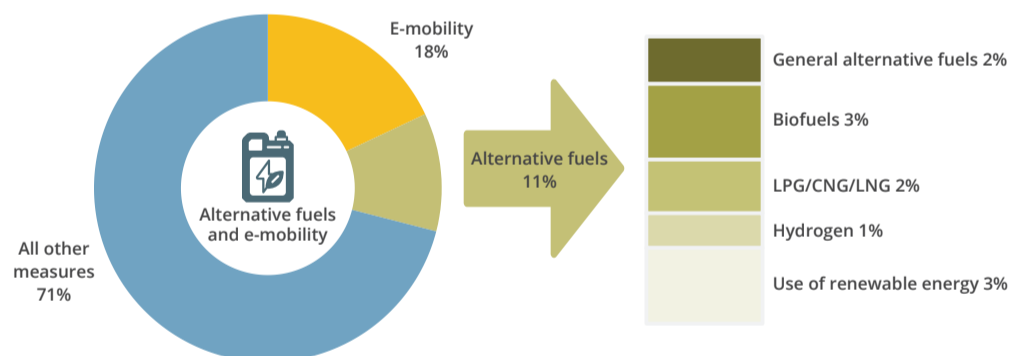
Nevertheless, this is an improvement compared to first-generation NDCs where no actions on truck electrification were featured at all.



A strong push to renewable energy in transport is needed in order to support decarbonisation

In addition, **actions related to alternative low-carbon energy sources are not sufficiently linked to freight transport across NDCs and LTS**. The decarbonisation of freight transport will be impossible without an uptake of renewable energy.

Alternative fuels and e-mobility in second-generation NDCs

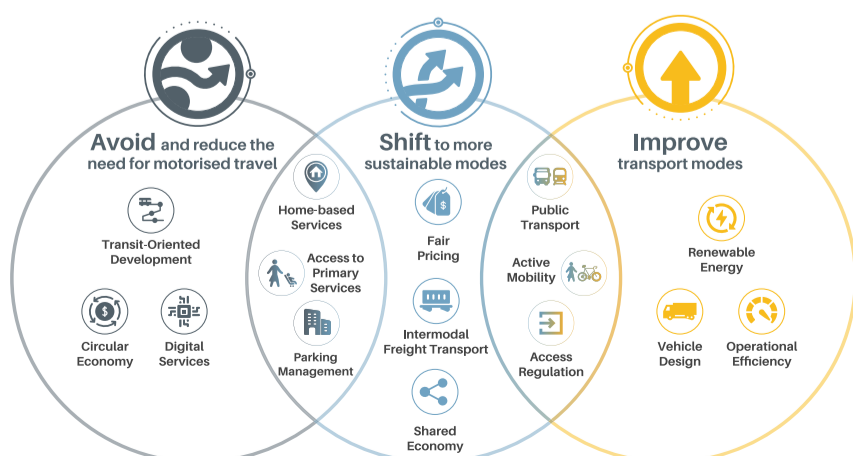


Freight mitigation actions refer to hydrogen and the direct use of renewable energy in transport. For example, **Chile's Updated NDC** refers to the use of **hydrogen sourced from renewable energy sources for cargo transport**.



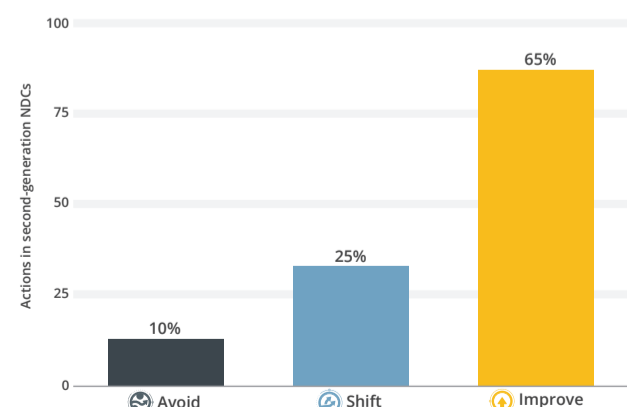
Missing: A balanced approach on sustainable, low-carbon freight transport and logistics

Applying **Avoid-Shift-Improve** measures through integrated, inter-modal and balanced approaches is critical to unleashing the full benefits of sustainable, low-carbon transport.



*The A-S-I diagramme presents a non-exhaustive list of measures for illustrative purposes only.

Freight mitigation actions by Avoid-Shift-Improve



Freight transport actions featured in NDCs are imbalanced across the Avoid-Shift-Improve framework. The **majority of freight transport actions in NDCs relate to 'Improve' approaches** (65% of freight transport mitigation actions).



The Long-Term Strategy of United Arab Emirates released in 2024 includes freight transport mitigation actions across 'Shift' and 'Improve' approaches:

Shift of freight to rail: The rail network will be expanded to increase rail connectivity.

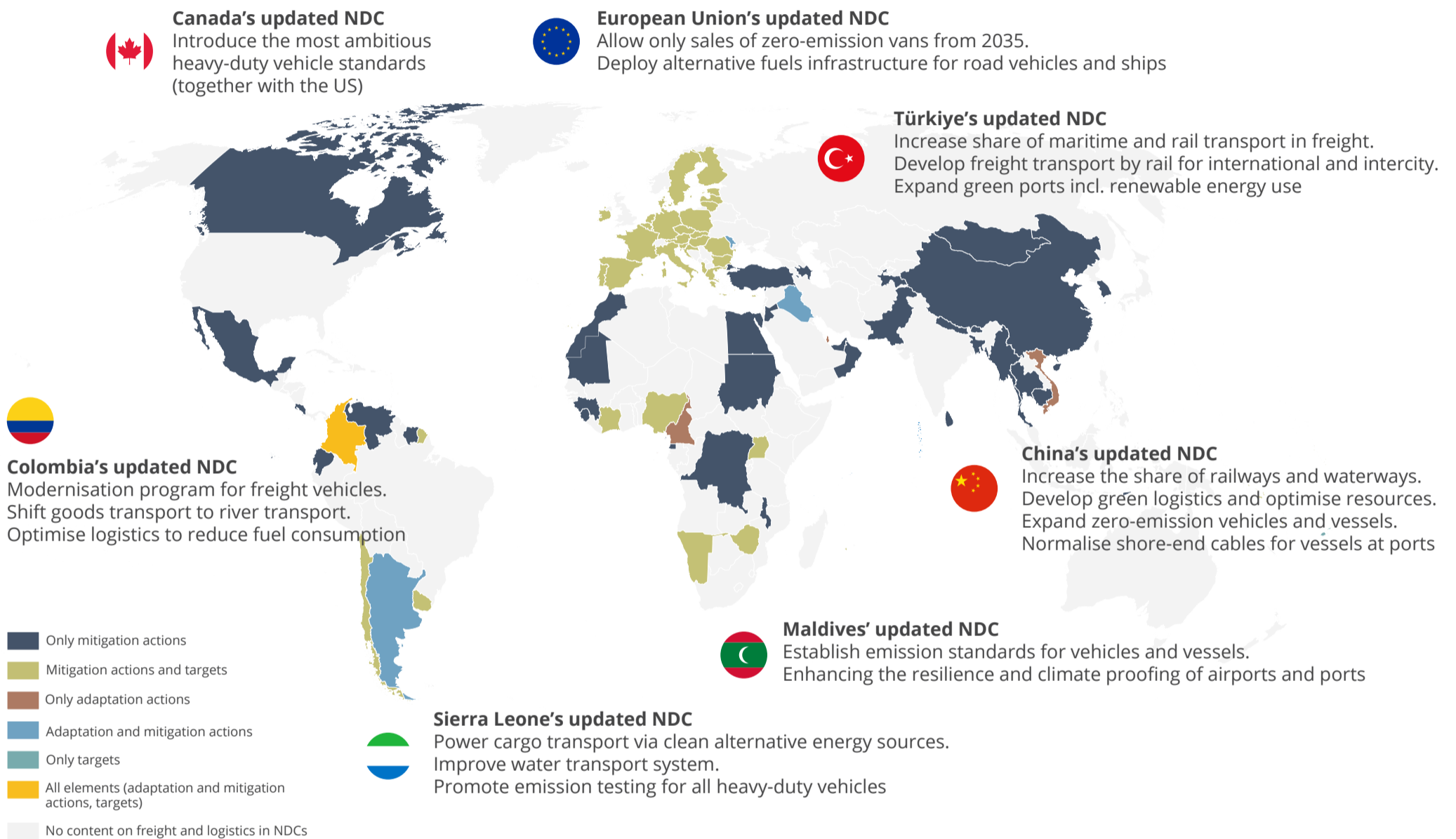
Decarbonisation of heavy-duty trucks: Promotion of electricity and hydrogen-powered trucks through financial incentives and priority infrastructure.

Decarbonisation of freight rail: Diesel trains will be replaced by hydrogen-powered trains.

Digitalisation and monitoring, prediction and reduction of transport GHG emissions and costs.

These freight actions aim to deliver 27% of the reductions of transport GHG emissions by 2050.

42% of NDCs (64) feature content related to freight transport and logistics, covering countries in all regions:



From challenges to opportunities:

Recommendations for scaling up sustainable, low-carbon freight transport and logistics

To scale up climate ambition and action on freight transport and logistics, third-generation NDCs and new LTS should include:

- 1 A transport-related GHG mitigation target in addition to the common economy-wide emissions mitigation target
- 2 Feature balanced, integrated and intermodal actions for freight transport across the Avoid-Shift-Improve framework
- 3 Actions across all freight modes: road transport, urban freight, railways, inland waterways, domestic and international aviation and maritime transport, as well as necessary intermodal ports and terminal infrastructure
- 4 Actions to enhance the adaptation to climate change and the resilience of freight transport infrastructure