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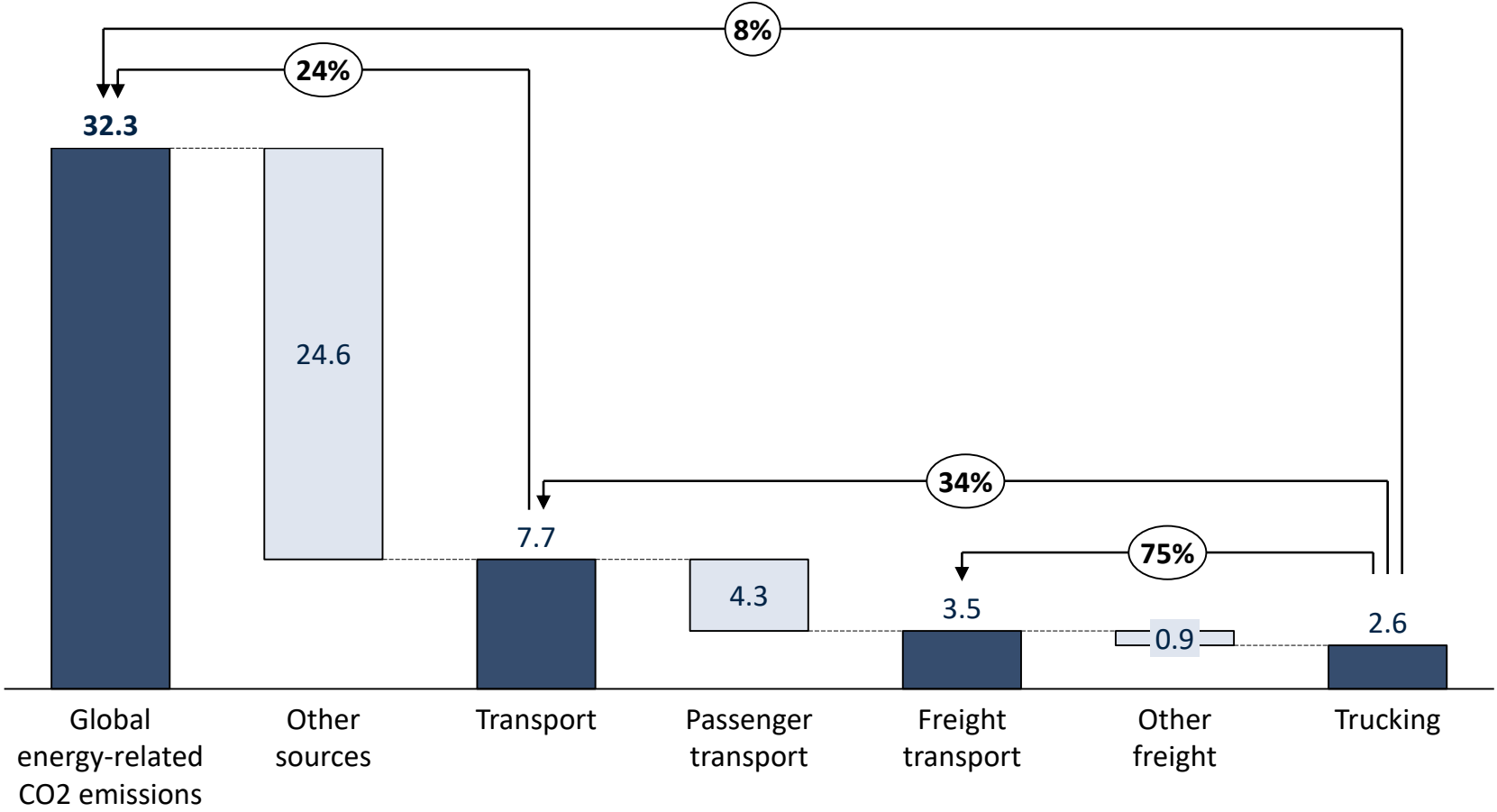
# The climate and operational resilience transition of the trucking sector

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**Trucking accounts for 8% of global energy-related CO<sub>2</sub> emissions, more than a third of all transportation emissions, and a full 75% of freight transport emissions; trucking is therefore an essential component of transport decarbonization efforts**

**Global Energy-related CO<sub>2</sub> Emissions: 2015**

Gigatons of CO<sub>2</sub>

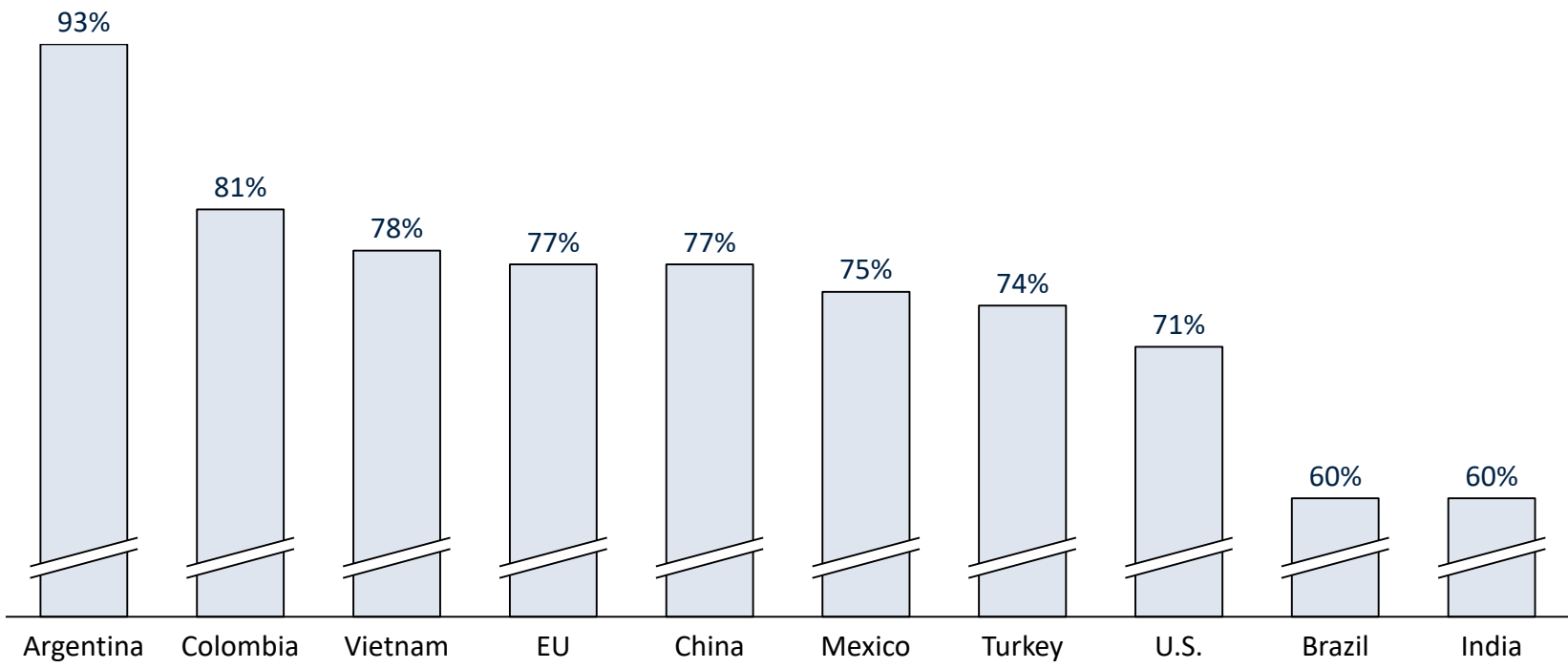


Source: International Energy Agency (2017), *CO<sub>2</sub> Emissions from Fuel Combustion – Highlights*; International Energy Agency (2017), *The Future of Trucks: Implications for Energy and the Environment*; World Bank analysis and estimates.

# Trucking accounts for the majority of national freight tonnage in most countries; this dominance is unlikely to change for the foreseeable future

## Trucking Sector Tonnage Market Share in Selected Countries: 2018<sup>1</sup>

Truck tonnage in percent of all tons transported



<sup>1</sup> Data for the EU, India, Brazil, and Turkey are expressed in ton-km. This makes the reported trucking sector shares even more dominant, as average lengths of haul of truck-based shipments tend to be shorter than those of other modes.

Source: American Trucking Associations (ATA); Eurostat; National Bureau of Statistics of China; NITI Aayog and Rocky Mountain Institute (2018), Goods on the Move: Efficiency & Sustainability in Indian Logistics; ILOS consulting; General Statistics Office of Vietnam; Turkish Statistical Institute; Ministries of Transport of Mexico, Colombia, and Argentina; World Bank analysis and research.

# Reducing the carbon footprint of truck-based logistics will entail a combination of efficiency gains through at least the medium term (2020-2030+) and, eventually, a transition towards decarbonization over the long-term (likely 2030+ at scale)

## Efficiency gains

- **Minimize carbon footprint of existing, ICE-based trucking operations**, largely through existing technologies and operating approaches, by inter alia:
  - Mandating/adopting carbon emission standards and reduction targets
  - Promoting multimodalism, such as rail intermodal transport
  - Retrofitting trucks with aerodynamic add-ons that reduce drag, low-rolling resistance tires, and auxiliary power units (APUs, whether diesel- or electric-powered) to reduce idling emissions
  - Optimizing routing through GPS and other on-board devices, especially when connected to centralized Transport Management Systems (TMS) in the case of large fleets
  - Driver training to increase fuel efficiency, (e.g., by maintaining a certain cruising speed or avoiding sudden changes in acceleration)
  - Promoting intermediation in trucking markets (i.e., development of truck brokerage and other freight matching services) to reduce empty miles driven

## Decarbonization

- **Transition away from the ICE and towards adoption of zero-emission powertrains**, most promisingly battery electric trucks and hydrogen fuel cell trucks
- Adoption still in infancy – largely confined to proof-of-concept pilots in the case of heavy duty trucks, with some early operational applications in medium-duty vehicles
- Adoption at scale likely to play out over at least the next 10 years

# Different actors in the trucking industry will play different roles in this transition

NOT EXHAUSTIVE

## Shippers

- Strengthen capacity and processes to measure own logistics costs and design supply chains and plan individual shipments accordingly—this is likely to result in higher demand for higher-quality trucking (and other) services
- Track carbon footprint and engage in self-regulation programs with industry partners (e.g., U.S. Smartway)
- Explore multimodalism, including with the help of intermediaries/3PLs

## Carriers and logistics service providers

- Maximize profitability by reducing fuel consumption
- Adopt new(er) equipment to increase fuel efficiency, reduce maintenance expenses, and reduce the cost of driver acquisition and retention
- Expand service offering into intermediation (truck brokerage), intermodal services, and dedicated services (private fleet replacement)
- Engage public sector agencies on industry efficiency improvements

## Government/ public interest organizations

- Adopt binding carbon emission targets and introduce mandatory industry standards for truck engines and tail pipe emissions
- Develop incentive programs for fleet renewal, technology adoption, and use of multimodal transport
- Provide support for basic R&D and development of new powertrain technology

## **COVID-19 has tested the operational resilience of global trucking markets—this further makes the case to promote multimodalism, such as through rail intermodal, which is highly complementary to long-haul trucking**

- During the pandemic, truck drivers have either performed as essential front line workers (e.g., for the transportation of essential food and medical supplies), thus highly exposed to the virus, or (temporarily or permanently) lost their jobs as transportation demand for non-essential products plummeted amid lockdown measures
- To the extent that front line conditions will further increase the pre-pandemic global shortage of truck drivers, greater use of multimodalism, particularly rail intermodal (the transportation of containers and truck trailers where the linhaul portion of the journey is done by rail and the rest by truck) in long-haul markets, may increase operational resilience as rail services require fewer people to move the same amount of freight
- The above is particularly relevant for continental markets like China, India, the EU, the U.S., and in Latin America primarily Mexico and Brazil
- In addition, efforts must be made such that bulk commodities either transition from trucks to rail freight or, for those flows already captured by rail, that they are kept as rail flows



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