



IGTIC

# TRANSPORT DECARBONIZATION MODULE 7

Material for group work





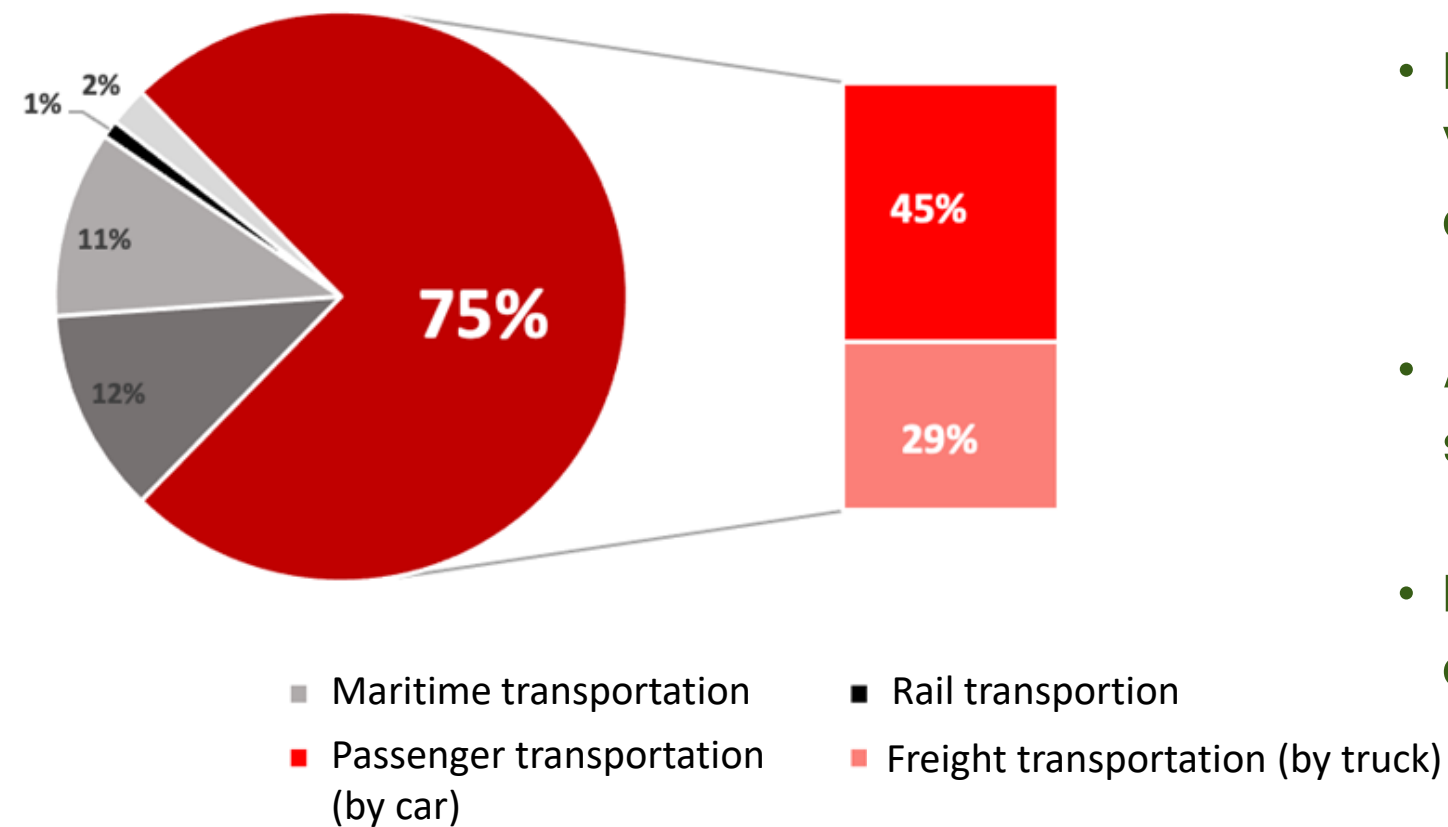
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## GOALS OF SECTORAL GROUP WORK

- Identify the main sources of greenhouse gas emissions in your sector.
- Familiarize yourself with the target indicators and quantitative measures of decarbonization in the industry.
- Learn which climate risks companies in this sector consider most significant.
- Assess the activities and technological solutions that are most common and acceptable in the short and long term for sector decarbonization.



# MAIN SOURCES OF GREENHOUSE GAS EMISSIONS IN THE TRANSPORT SECTOR



- Road Transport, Passenger and Freight Transport in Vehicles with Gasoline and Diesel Engines: Fuel combustion inside engines leads to CO2 emissions.
- Air Transport: Airplanes: Aviation is also a significant source of CO2 and other greenhouse gas emissions.
- Marine Transport: Ships: Marine vessels, including cargo and passenger ships, use high-carbon fuel combustion, contributing significantly to greenhouse gas emissions.

# WHAT PROCESSES LEAD TO SCOPE 1 AND 2 GHG EMISSIONS AT YOUR COMPANY (IN YOUR VEHICLES)?

Use of personal transport: \_\_\_\_\_

Air travel: \_\_\_\_\_

Public transport: \_\_\_\_\_

Shipping: \_\_\_\_\_



# \*\*CORPORATE EMISSION REDUCTION GOALS IN THE INDUSTRY\*\*

Company	Goals
<p><b>Tesla</b></p>	<p>Goal: Promote electric vehicle technologies and accelerate the transition to sustainable energy. Indicator: Production and sales of zero-emission electric vehicles.</p>
<p><b>UPS(United Parcel Service)</b></p>	<p>Goal: Achieve 25% reduction in CO2 emissions from own trucks by 2025. Indicator: CO2 emission level per delivery and development of new energy efficient vehicles.</p>
<p><b>Maersk</b></p>	<p>Goal: Reduce CO2 emissions per transported container by 60% by 2030. Indicator: Energy consumption efficiency on each vessel, use of alternative fuels.</p>
<p><b>Airbus</b></p>	<p>Goal: Develop and implement environmentally cleaner aircraft to reduce CO2 emissions. Indicator: CO2 emissions per passenger-kilometer, engine efficiency, and use of lighter materials.</p>



# HAVE YOUR DECARBONIZATION COMPANY SET GOALS RELATED TO?

Scope 1 and 2: \_\_\_\_\_

Scope 3: \_\_\_\_\_

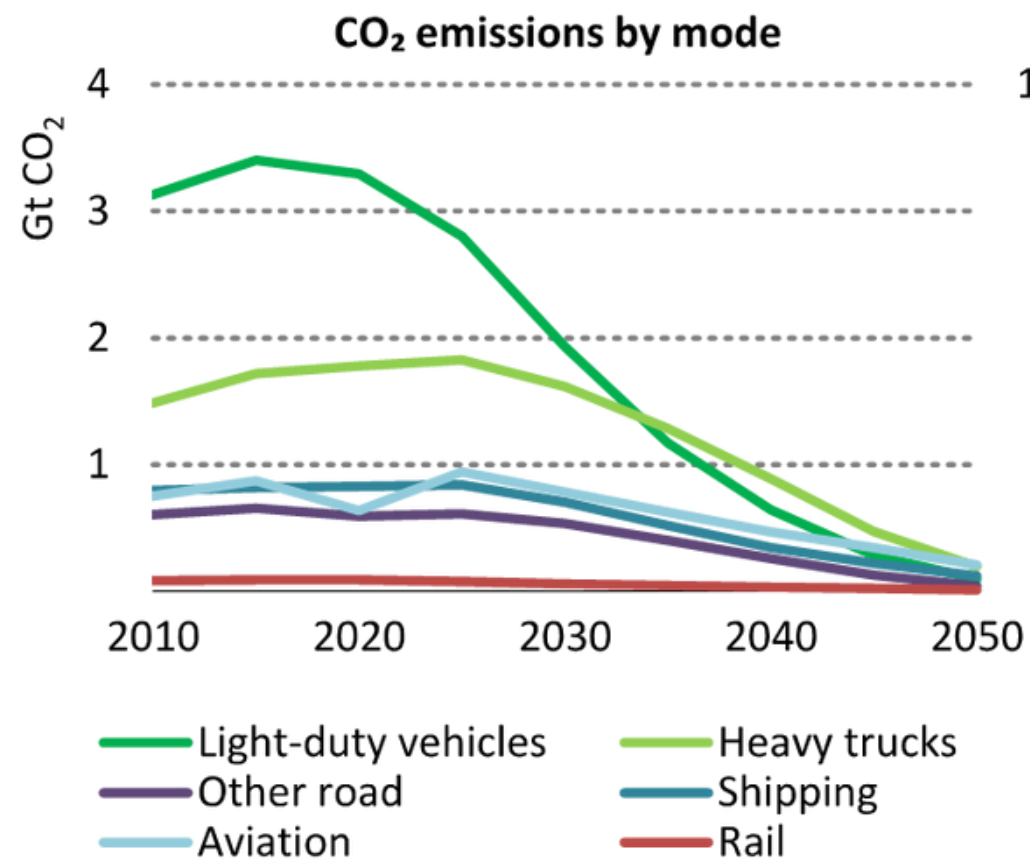
Other goals:

- Transition to electric transport based on renewable energy sources \_\_\_\_\_
- Using alternative forms of transportation \_\_\_\_\_
- Others: \_\_\_\_\_

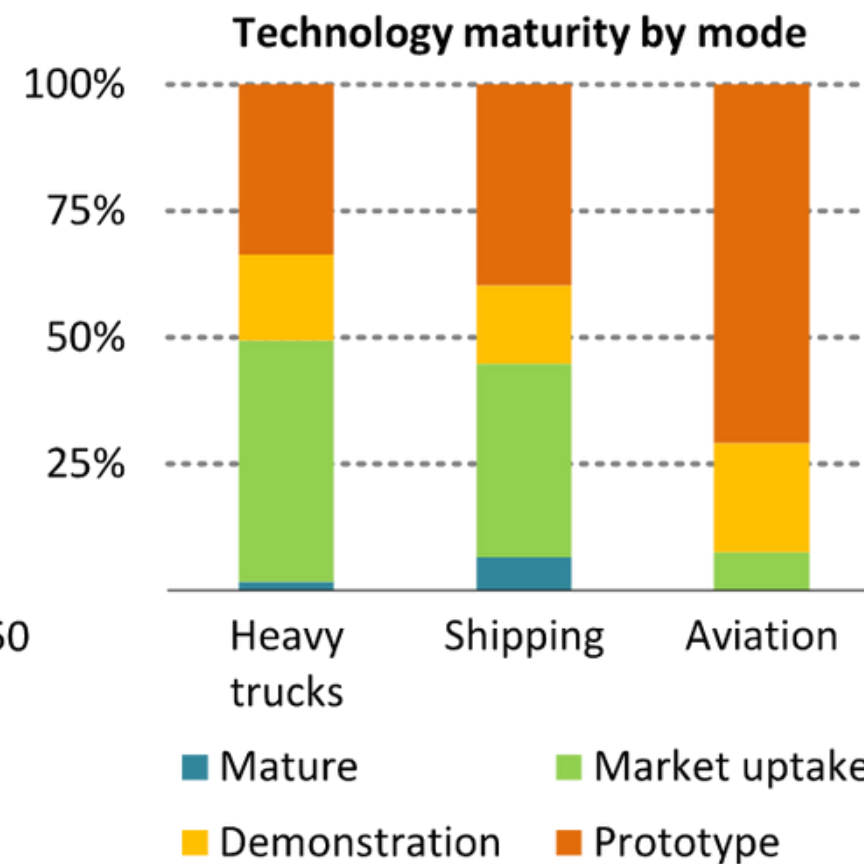


# IEA: NET ZERO ROADMAP

Required level of emissions reduction by type of transport



Level of Technological Maturity of Low-Carbon Solutions



Types of transport do not decarbonize at the same rate, as their technological maturity varies significantly.

CO<sub>2</sub> emissions from two- and three-wheeled vehicles should nearly cease by 2040, with cars, vans, and rail vehicles following by the late 2040s.

Emissions from heavy trucks, shipping, and aviation are expected to decrease by an average of 6% per year from 2020 to 2050.

# TRANSPORT DECARBONIZATION STRATEGY

Electrification of Vehicles: Electrification plays a central role in decarbonizing road transport. The nearly 90% reduction in battery costs over the past decade has led to a 40% increase in sales of electric vehicles on average over the last five years. Battery production technology is already relatively competitive from a commercial standpoint.

Other activities:

- Low-carbon fuel transition
- Biofuels
- Hydrogen fuel
- Promotion of public and rail transportation
- Active and non-motorized transport





# AMAZON: DECARBONIZATION STRATEGY

Amazon has signed an agreement with Infinium, a company specializing in renewable fuel technologies, to begin powering its fleet with low-carbon electro fuels starting in 2023. Initially, Infinium will supply enough electro fuel, an alternative to fossil fuels, created using carbon waste and renewable energy sources, to start powering Amazon's trucks instead of diesel fuel, covering approximately 5 million miles per year.





82 million litres of diesel fuel in 2021 resulted in 2.214 million metric tons of CO<sub>2</sub>-equivalent emissions.

- Fortescue is developing the world's first Infinity Train with zero emissions. This electric train, equipped with regenerative battery technology, will use gravitational energy to fully charge its battery electric systems without requiring additional charging on the return journey for recharging.
- The Infinity Train not only accelerates Fortescue's aim to achieve carbon neutrality by 2030 but also reduces operational costs, enhances technical service efficiency, and increases productivity opportunities.
- This technology promises to reduce emissions in the challenging heavy industrial sector, with significant potential for global commercialization.
- Research and development costs for the Infinity Train are expected to amount to \$50 million over the next two years.

# COMPARISON OF ACTIONS

Summary of the action	Electrification of transport	Switching to alternative fuels	Promotion of public transport	Switching to alternative modes of transport
Emission reduction potential in %	-100% (with full use of renewable energy sources)	-100%	-30%	-100%
Technological readiness (from 1 to 3)	3	2	3	2
Investments	Average	Low	Average	High

# EVALUATE THE TECHNICAL AND ECONOMIC FEASIBILITY OF IMPLEMENTING DECARBONIZATION ACTIONS AT YOUR ORGANIZATION

Actions	Technologically possible	Economically justified
Electrification of transport		
Switching to alternative fuels		
Promotion of public transport		
Switching to alternative modes of transport		



# WHAT MEASURES HAVE ALREADY BEEN IMPLEMENTED AT YOUR ENTERPRISE?

Use of electric transport: \_\_\_\_\_

Use of alternative fuels: \_\_\_\_\_

Use of public transportation: \_\_\_\_\_

Switching to alternative modes of transport: \_\_\_\_\_

# **\*\*ASSESSMENT OF CLIMATE RISKS\*\***

## **\*\*RISKS ASSOCIATED WITH THE GLOBAL TRANSITION TO LOW CARBON DEVELOPMENT\*\***

- Credit Risk Associated with ESG (Environmental, Social, and Governance): Risk of facing higher interest rates and difficulties in accessing financing due to strict ESG compliance requirements.
- Regulatory Risk: Risk of potential changes in national climate-related legislation, including greenhouse gas taxation, carbon footprint reduction targets, and potential litigation for non-compliance with regulatory requirements.
- Market risk: Risk exposure to carbon taxation in importing countries of production.
- Customer Risk: Risk of losing customers due to failure to meet their decarbonization targets as a supplier.



## **\*\*ASSESSMENT OF CLIMATE RISKS\*\***



Risks related to the negative impact of climate change on operations:

- Operational risk due to changes in the amount of precipitation
- Operational risk due to extreme temperatures
- Operational risk due to extreme weather conditions
- Operational risk due to water scarcity

**ASSESS THE IMPACT THAT THE RISK MAY HAVE ON YOUR ENTERPRISE AND  
THE PROBABILITY THAT THE RISK WILL MATERIALISE**

Risk	Impact	Probability
Credit risk: Access to capital		
Regulatory risk: Stricter legislation		
Market risk: Taxation of imports		
Customer risk: Loss of markets		
Operational Risk: Changes in precipitation levels		
Operational Risk: Extreme temperatures		
Operational Risk: Extreme weather conditions		
Operational risk: Water scarcity		



## "RESULTS OF GROUP WORK"

- What are the main sources of GHG emissions in your industry?
- What goals do your companies set for themselves?
- Which decarbonization measures do you consider most realistic?
- Which measures have already been implemented?
- What are the main climate risks for your company?

