International Transport Forum

Decarbonising Transport Initiative

9/10 February 2022

Decarbonising Transport in Azerbaijan

Regional Dialogue Event

Federal Ministry for Economic Affairs and Climate Action

IKI INTERNATIONAL CLIMATE INITIATIVE

Wuppertal Institut

OECD

Welcome and Introductions

- **Opening message from the International Transport Forum**
  - Ms. Elisabeth Windisch
- **Opening message from the Ministry of Digital Development and Transport Azerbaijan**
  - Mr. Vasif Amiraslanov, Head of the Transport Sector Regulation Department

- **Moderator: Turgut Mustafayev, Project consultant**

Part I – Decarbonisation Efforts at the National Level

60mins

Decarbonising Transport in Azerbaijan

- Overview of the DTEE project work and results, Elisabeth Windisch, Project Manager DTEE, ITF (20mins)
- Latest considerations and activities by the Ministry of Digital Development and Transport, Mr. Vasif Amiraslanov (20 min)
- Questions and Discussion

Decarbonising Transport in Azerbaijan

Project overview and outputs

Elisabeth Windisch

Project overview

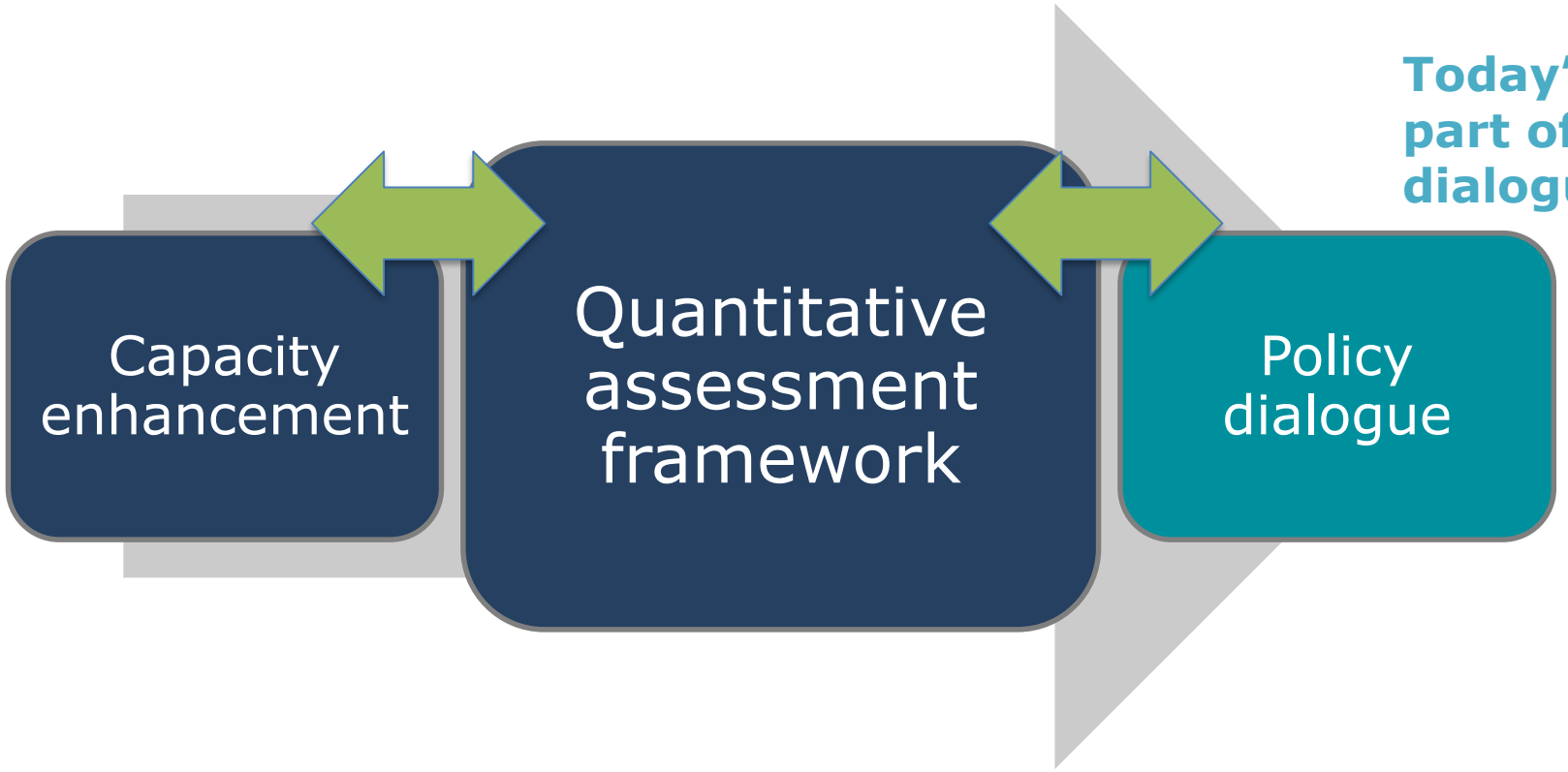
Background, aims, outputs, timeline

Background

- **Project funding**
  - International Climate Initiative ("IKI") of the German Government
- **Project partners**
  - ITF/OECD
  - Wuppertal Institute, Germany – focus on cities
- **Project countries**
  - **Azerbaijan**, Argentina, India, Morocco
- **Project timeframe**
  - 2019 – 2023 for Azerbaijan

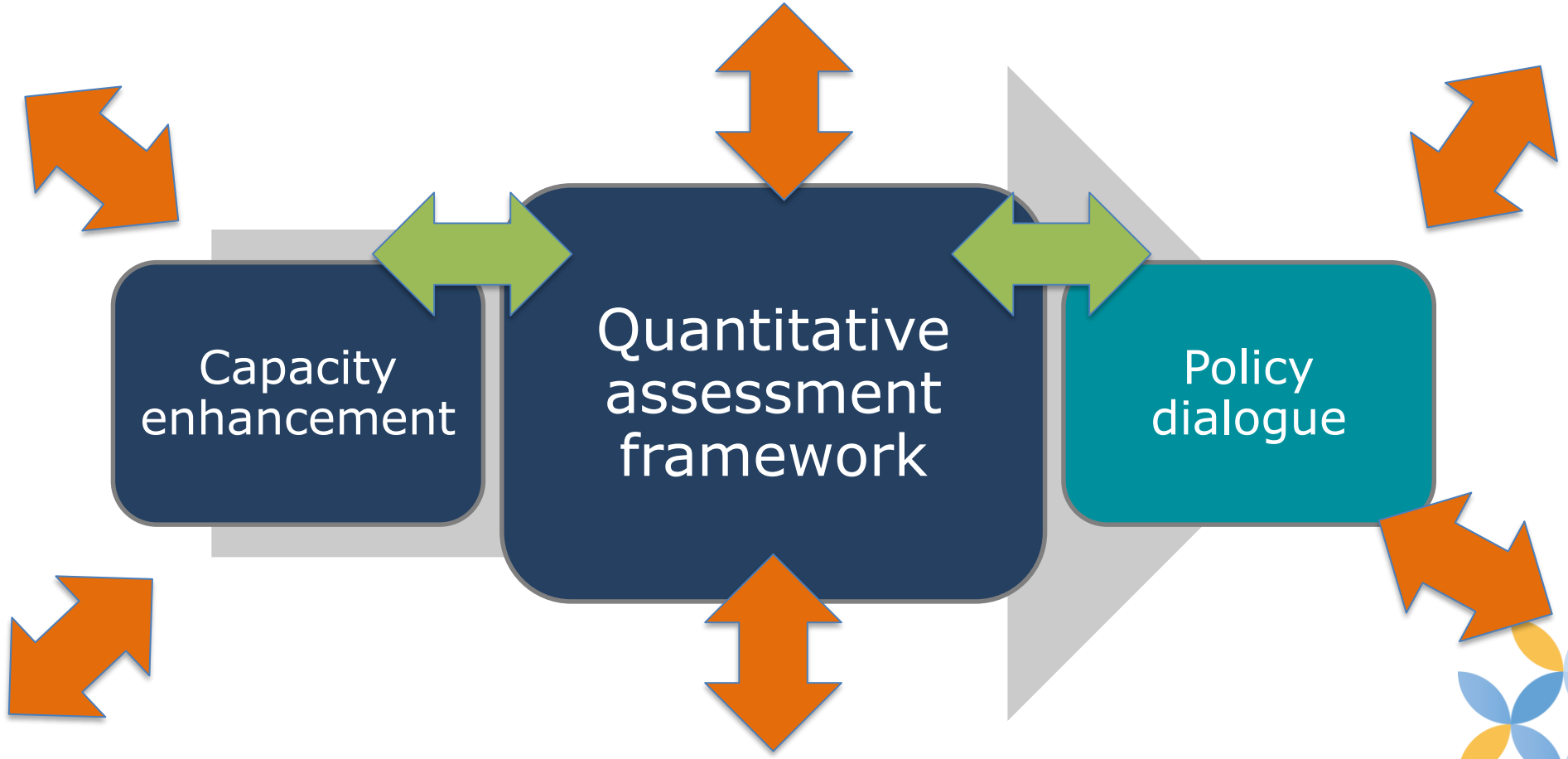
Project objective

Help countries identify effective measures and pathways to reduce transport CO_2 emissions



Project objective

… with the continuous engagement of national stakeholders



Project outputs - Azerbaijan

Quantitative Tools

3 tools to understand future transport demand and related emissions

- National passenger transport model
- Passenger transport model for Baku region
- Freight data visualization tool

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Capacity Enhancement

Learn to use tools and how/which policies may influence future transport demand

- Scenario building workshops
- Training sessions incl. material for all three tools
- Stakeholder events (see below)

Project outputs - Azerbaijan

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Capacity Enhancement

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Policy Dialogue

Bring different authorities (and countries!) together to learn from each other / understand their challenges and objectives

- Kick-off event (in Baku)
- National dialogue event (online)
- Regional dialogue event (in Baku)

Project outputs - Azerbaijan

Visit the project website for more information and to download all project outputs, e.g.

- **Project publications**
  - 'Scoping paper' (i.e. the state of Transport in Azerbaijan and related emissions)
  - Publication on Transport CO2 scenarios for Azerbaijan

- The **three Excel-based tools**, incl.
  - Methodology notes
  - User manuals

https://www.itf-oecd.org/dtee-azerbaijan

Or type words like "ITF OECD DTEE Azerbaijan" in google….

Project outputs – Azerbaijan

https://www.itf-oecd.org/dtee-azerbaijan

Please use the below links for more information on project outputs, events and tools that were developed in the context of this project.

Read: - Decarbonising Azerbaijan's Transport System: Charting the Way Forward

- Policy Scenarios for Decarbonising Azerbaijan's Transport System

Go to: - Azerbaijan launch of decarbonisation project

- Policy Scenarios for Decarbonising Azerbaijan's Transport System event

- Decarbonising Transport in Azerbaijan Regional Dialogue Event

Tools for policymaking: - Repository of modelling tools and related documentation

Decarbonising Transport in Azerbaijan - Repository

- **ITF_DTEE_AZE_NationalPassengerModel**

Filename	Description
itf_dtee_aze_nationalpassengermodel.zip	The National Passenger model for Azerbaijan (excluding the Baku urban area). This Microsoft Excel model enables testing the impact of policy measures and technology developments on passenger transport demand by mode and its related emissions.
itf_dtee_aze_nationalpassengermodel_methodologynote.pdf	Methodology Note describing the theoretical background and workings of the National Passenger model. English version.
itf_dtee_aze_nationalpassengermodel_methodologynote_aze.pdf	Methodology Note describing the theoretical background and workings of the National Passenger model. Azerbaijani version.
itf_dtee_aze_nationalpassengermodel_usermanual.pdf	User Manual illustrating the use of the National Passenger model with examples. English version.
itf_dtee_aze_nationalpassengermodel_usermanual_aze.pdf	User Manual illustrating the use of the National Passenger model with examples. Azerbaijani version.

- **ITF_DTEE_AZE_BakuModel**

Filename	Description
itf_dtee_aze_bakumobilitymodel.zip	The Baku Urban Mobility model. This Microsoft Excel modelling tool enables testing the impact of transport policy measures and technology developments on passenger mobility demand and its related emission for the Baku urban area.
itf_dtee_aze_bakumobilitymodel_methodologynote.pdf	Methodology note describing the theoretical background and workings of the Baku Urban Mobility model.
itf_dtee_aze_bakumobilitymodel_usermanual.pdf	User Manual illustrating the use of the Baku Urban Mobility model with examples. English version.
itf_dtee_aze_bakumobilitymodel_usermanual_aze.pdf	User Manual illustrating the use of the Baku Urban Mobility model with examples. Azerbaijani version.

Project activities 2019-2023 - Azerbaijan

- **Nov 2019**
  - Project kick-off in Azerbaijan: Event + stakeholder meetings in Baku (in-person)
- **2020**
  - Data & information gathering
  - First project output ["Scoping paper" to define work]
- **2021**
  - Work on the quantitative assessment/modelling tools
  - Further data gathering
- **2022**
  - Model presentation & scenario building exercises (online) [February]
  - Dialogue event (online) [March]
  - Model hand-over & training sessions [June]
- **2023**
  - **Regional dialogue event in Baku (in-person)**

Putting project outputs to use

Insights into the use and findings of the assessment tools

Outline

1. Policy scenarios for CO_2 reduction
2. Azerbaijan's transport emissions
3. Insights by transport sub-sector
4. Calls-to-action for policy makers

1. Policy scenarios for CO_2 reduction

The ITF and the Azerbaijan Ministry of Digital Development and Transport worked closely to identify and design **three distinct scenarios** to assess the CO_2 reduction potential of different policy pathways. The scenarios explore possible alternative futures, their impacts on the transport system and its externalities.

1

Baseline

No measures are implemented that will influence travel demand or CO_2 emissions during the 2020-2050 period. This scenario constitutes a "do nothing" reference against which the effectiveness of CO_2 reduction policies in the other two scenarios is tested.

2

Current policies

Azerbaijan's transport policy measures currently planned to influence travel demand or CO_2 emissions are carried out during the 2020-2050 period. If no further plans are established or measures taken to reduce transport CO_2 emissions, this scenario reflects the most likely future for Azerbaijan.

3

Climate ambition

Additional measures are introduced on top of the current policies scenario, to better align Azerbaijan's transport CO_2 emissions with reaching the Paris Climate Agreement.

2. Azerbaijan's transport emissions

Passenger and freight transport activity will grow significantly in Azerbaijan to 2050

Current policy plans **limit the growth** of annual transport CO_2 emissions **to 25%** between 2015 and 2050

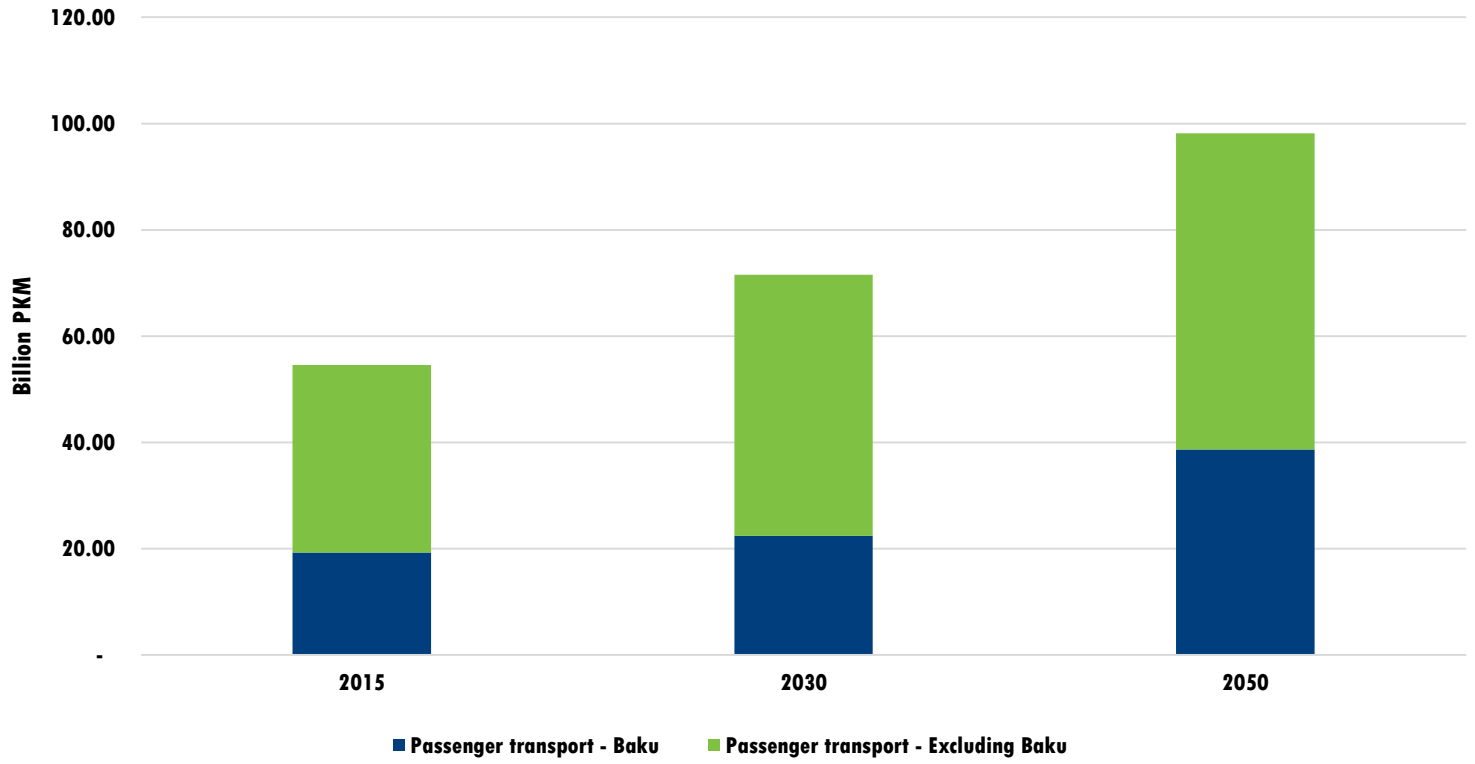
Measures proposed in the climate ambition scenario would cut annual transport CO_2 emissions to around 50% of the 2015 levels by 2050

Passenger transport activity will almost double by 2050

In the baseline scenario, passenger transport activity in Azerbaijan is set to increase by 80% by 2050.

In the current policies and climate ambition scenarios, passenger transport activity follows the same trend as in the baseline scenario. The policy measures put in place do not result in significant passenger demand reductions.

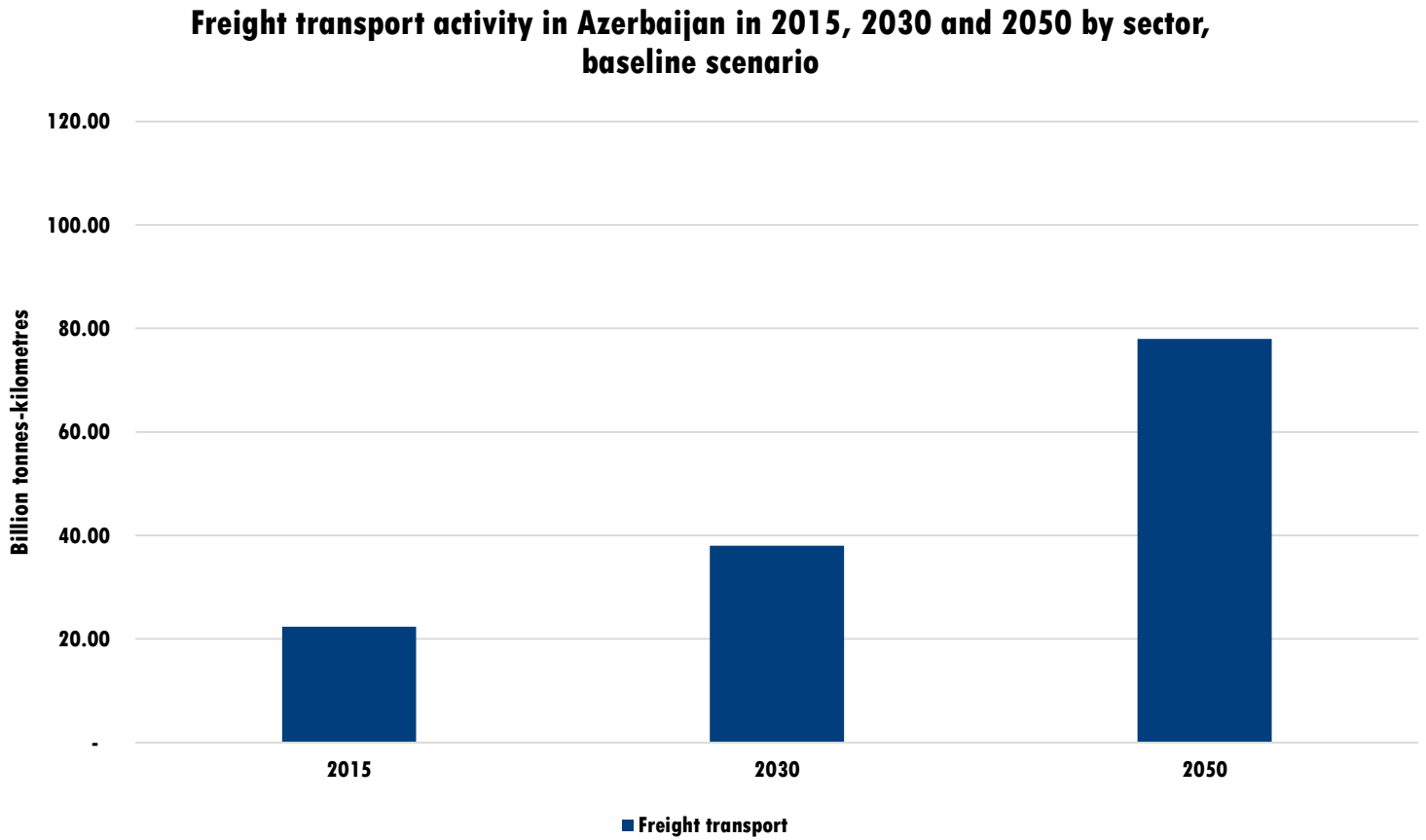
Passenger transport activity in Azerbaijan in 2015, 2030 and 2050 by sector, baseline scenario



Freight transport activity will more than triple by 2050

In the baseline scenario, freight transport activity will grow by 250% by 2050.

This growth pattern also occurs for the current policies scenario. Only measures in the climate ambition scenario will limit freight growth, to 130%, by 2050.



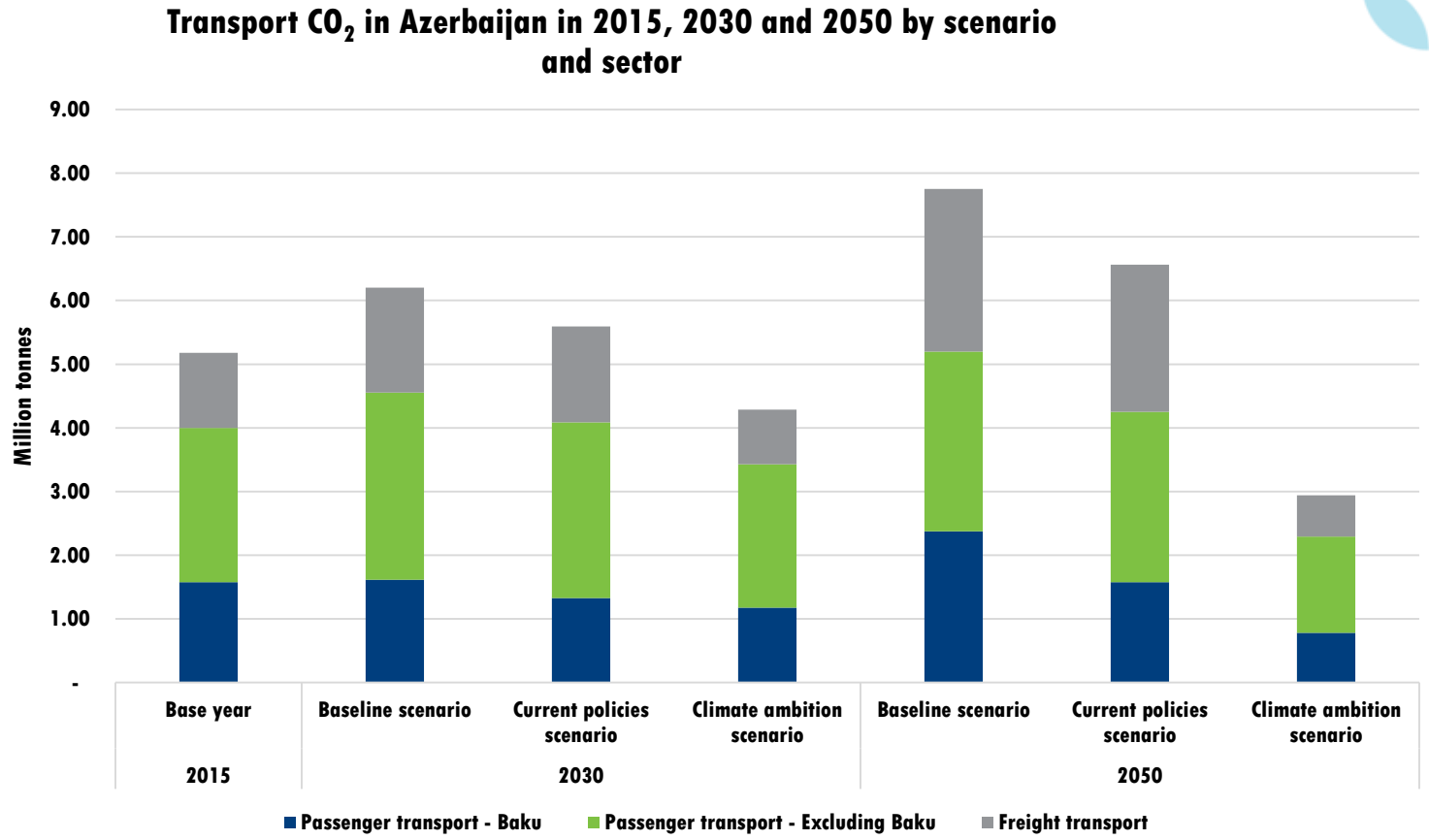
Ambitious policies can halve annual transport CO_2 emissions by 2050

Reductions in annual CO_2 emissions can only be achieved in the climate ambition scenario.

Current policies are insufficient to keep transport CO_2 emissions in check. They allow annual transport CO_2 emissions to grow by around 25% in the period from 2015-50 (see the current policies scenario).

This growth in emissions is driven by the transport demand growth in both passenger and freight transport sectors.

If no policy action were taken, Azerbaijan's annual CO_2 emissions would grow by 50% from 2015 to 2050 (see the baseline scenario).



3. Insights by transport sub-sector

Passenger transport

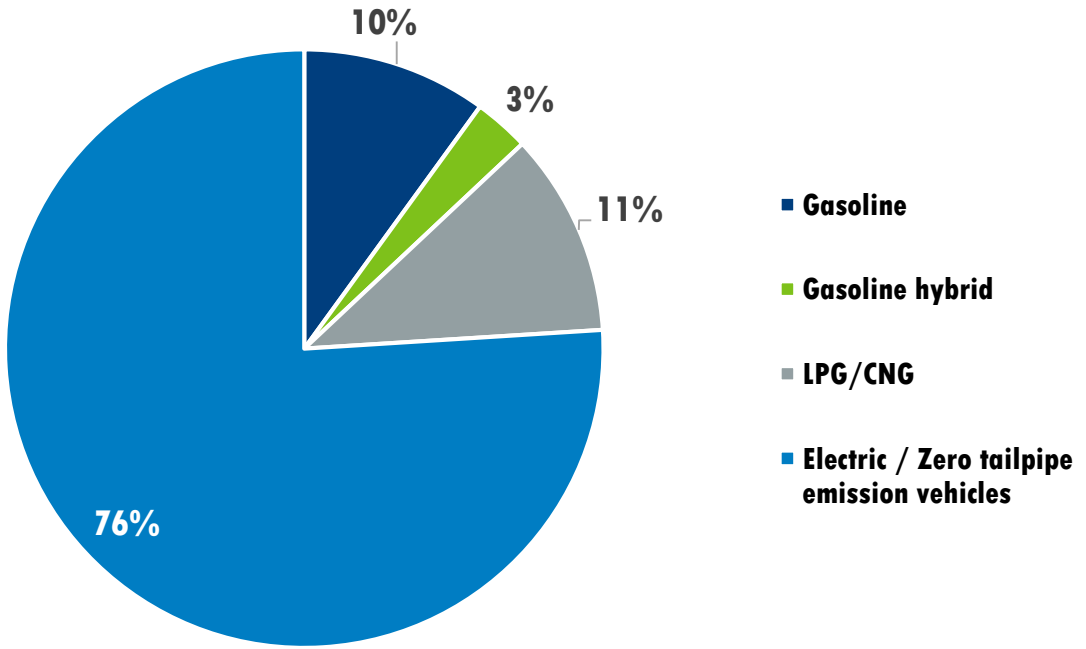
Cleaner vehicles are essential for achieving significant emission cuts

Achieving the emission cuts of the climate ambition scenario heavily relies on the uptake of cleaner vehicle technologies, especially in the inter-urban passenger transport segment.

To achieve the climate ambition scenario, the average CO_2 emissions per vehicle-kilometre must be halved for both the private and public vehicle fleets. Rail transport should be fully electrified.

Such average CO_2 emission reductions can only be achieved via the uptake of cleaner / zero-(tailpipe) emission vehicles. **Policy measures to ensure a transition to cleaner vehicles as quickly as possible are essential.**

Private vehicle sale shares needed by 2050 to achieve the climate ambition scenario in the passenger sector



ITF work on cleaner vehicles:

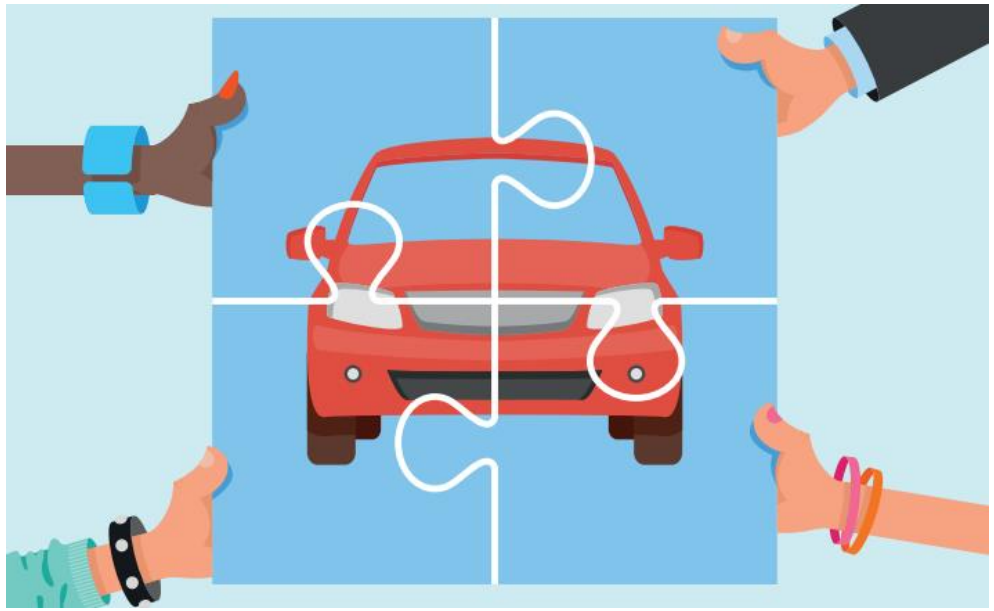
https://www.itf-oecd.org/cleaner-vehicles

Increasing the load factors of vehicles will help meet growing transport demand

Ensuring better utilisation rates per vehicle (i.e. more passengers using the same vehicle at the same time) will help to meet growing transport demand, while keeping emissions in check.

In the climate ambition scenario, the load factors of private vehicles increase by 15% in the period to 2050. To achieve such increases, policy incentives, such as high occupancy lanes (giving preferential rights to vehicles with higher occupancy rates), especially in congested areas, could be considered.

Additionally, innovative shared mobility solutions, such as shared on-demand minibus services in urban or suburban areas, could be facilitated.

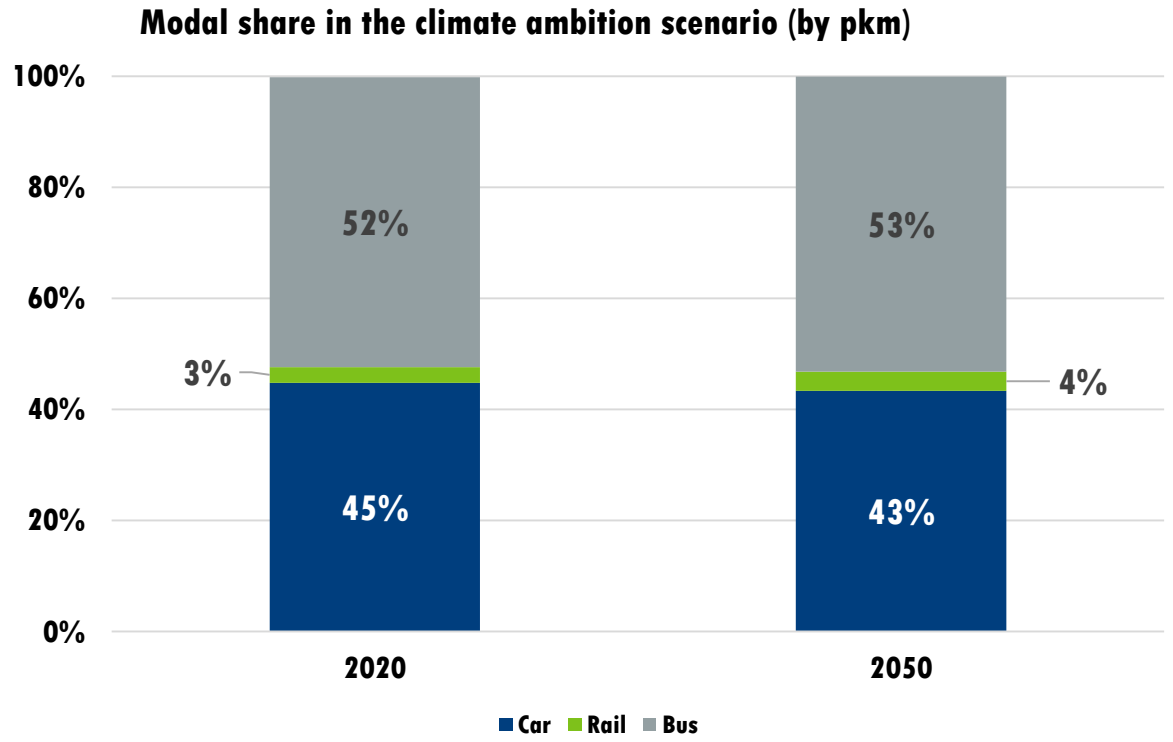


ITF work on shared mobility:
https://www.itf-oecd.org/itf-work-shared-mobility

Enhancing the network of mass transit services will increase the sustainability of the transport system

Investment in rail infrastructure and services will increase the mode share of rail. This will enhance the resilience of the transport system, further reduce CO_2 emissions and also the reliance on private vehicles.

The measures proposed in the climate ambition scenario (including new rail infrastructure and enhancements to the frequency and speed of rail services) result in a mode share increase of 9 percentage points compared to the current policies scenario.



3. Insights by transport sub-sector

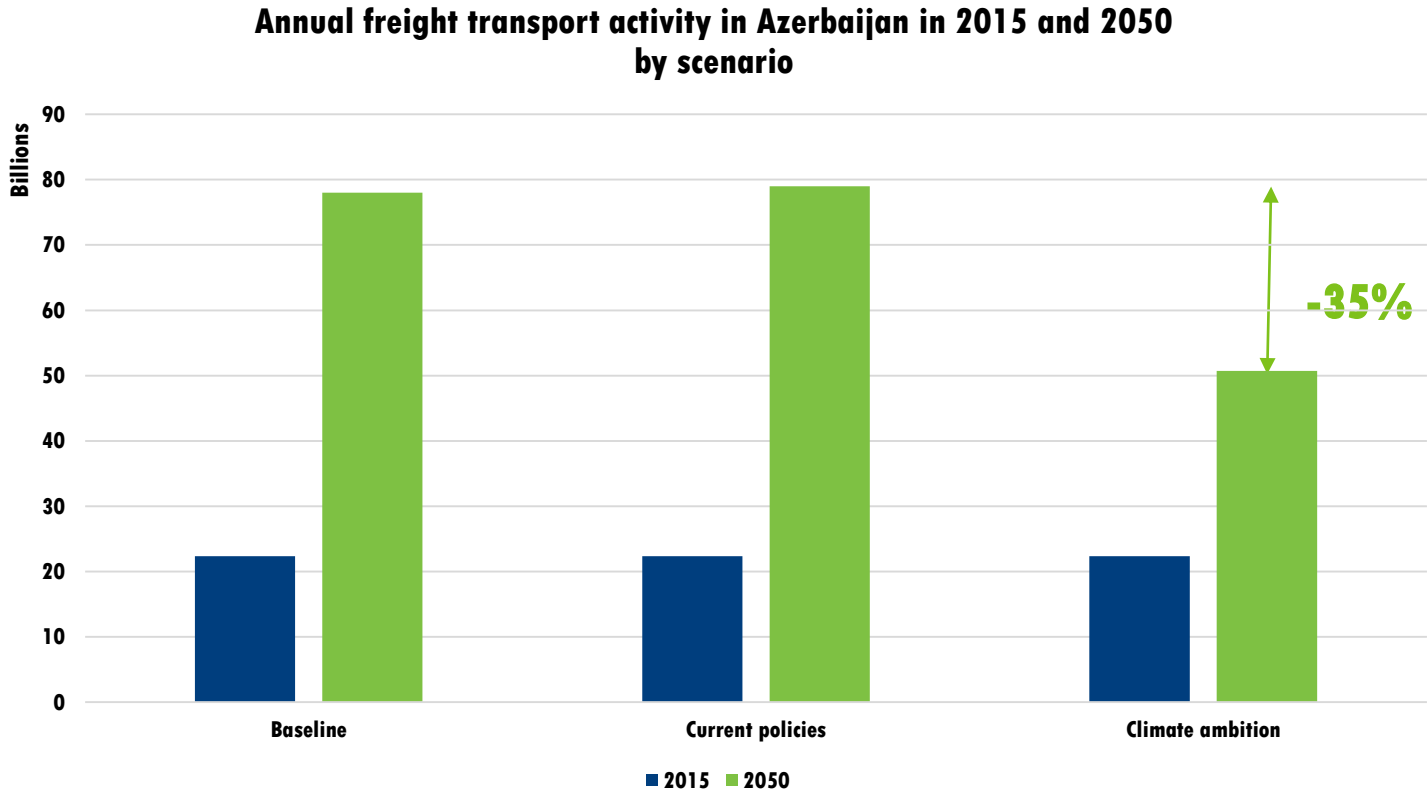
iii National freight transport

Freight transport activity may reduce significantly due to decarbonisation efforts

Decarbonisation of the energy sector, as per the climate ambition scenario, **could have a significant impact on the trade of coal, oil and related products**, therefore significantly reducing the freight transport demand.

New technologies, such as 3D printing, could also lower the international trade volume.

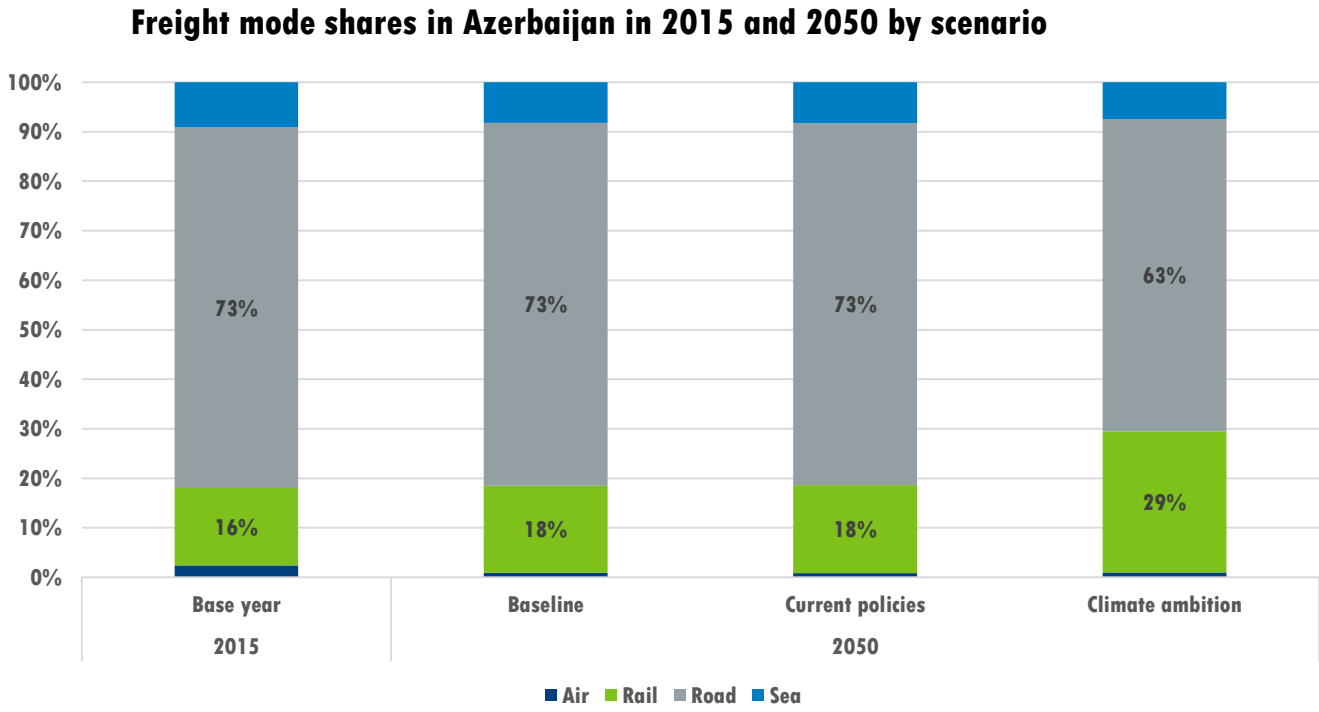
If this were to happen, the reduced freight transport activity will inevitably result in further CO_2 emissions reductions.



Mode shift policies are required to incentivise the use of cleaner modes

Pricing policies, such as distance-based charges and carbon pricing can internalise the environmental cost of high-emitting modes and reduce their demand.

Significant investments are necessary to improve railway infrastructure and the rail network's operational efficiency to improve its attractiveness for shippers.

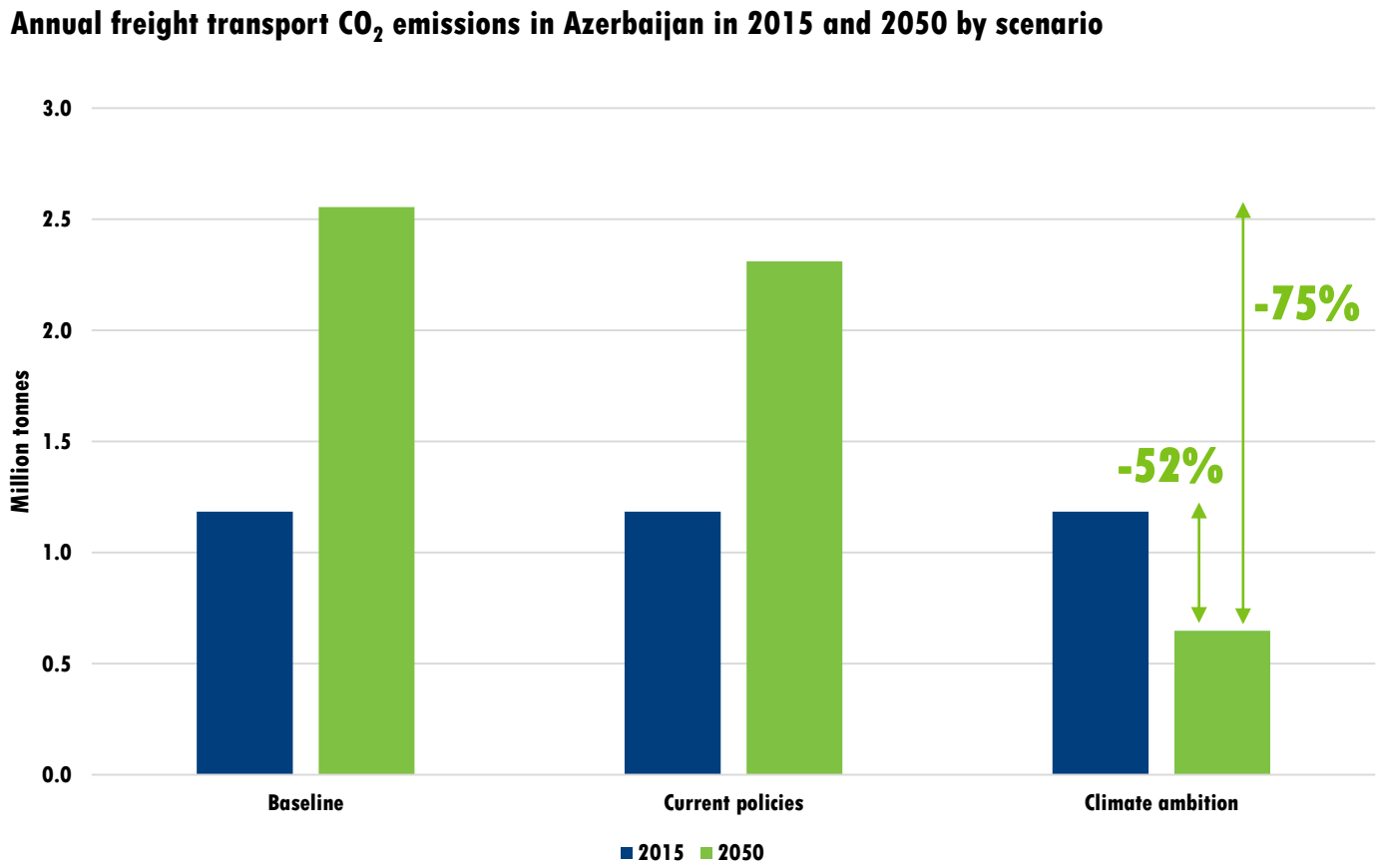


The adoption of cleaner vehicles is essential also for freight transport

As for the other transport sectors, the uptake of cleaner vehicles is essential to further reduce CO_2 emissions from freight transport.

Policy measures to support their uptake need to include, among others,

- investments in low carbon fuel/energy infrastructure supply and distribution networks
- pricing instruments that incentivise the uptake of clean vehicles, and
- legal provisions that limit used vehicle imports to those that meet increasingly stringent environmental standards.



4. Calls-to-action for policy makers

Support the uptake of a cleaner vehicle fleet across all transport sectors and increase stringent environmental/CO_2 standards for vehicle imports

Invest in rail and other mass-transport to densify the network and increase service quality to enhance the sustainability of the transport system overall

Support active and shared mobility, especially in urban areas; prioritising mixed-use developments will boost such modes of travel and reduce private and motorised vehicle demand

Thank you for your attention

Elisabeth Windisch, Elisabeth.windisch@itf-oecd.org

Scenario definitions
Passenger transport (excluding Baku)

Current policies scenario

Measures	Assumptions
Bus service improvements	Upgrades to urban and interurban lines; happening in 2025
Eco driving	Initiatives taken up in 2025, e.g. driver trainings
New rail line	Extension of the Baku-Ganza high-speed electric train from Ganja to the Georgian border
Update existing rail line	High-speed electric train services between Baku and Naftalan
New motorway developments	Resulting in travel time reductions… • by 5% for trips going through Ganja-Gazakh Economic region • by 15% between Baku and Russian border • by 5% within Khachmaz economic region • by 5% within Shamakhy economic region
Alternative fuel vehicles	Private vehicle sales, by 2050 to be: •10% fully electric vehicles •40% hybrid vehicles
	Bus vehicle stock, by 2050 to be: •13% fully electric •13% CNG/LPG

Scenario definitions
Passenger transport (excluding Baku)

Climate ambition scenario

Measures (in addition to current policies)	Assumptions
Car sharing / load factor increases	Urban trips: +15% from 2030; Intercity trips: +10% from 2030
Fuel price increases	+5% - +10% in each five-year interval from 2025 to 2050
Further new rail lines	New connection between Baku and Karabakh and Eastern Zengezur regions
Further rail improvements	Speed improvements for: •Baku<->Balaken and Baku <-> Sumgait from 2030 •Baku <-> Ganza from 2040
	Frequency improvements from 2030 for: •Baku <->Balaken •Baku<->Ganza •Baku<->Yalama •Baku<->Shirvan •Baku<->Sumgait
Alternative fuel vehicles	Private vehicle sales, by 2050 to be: •87% fully electric vehicles (battery electric or hydrogen) (in line with Sustainable development scenario SDS scenario of the International Energy Agency (IEA) – see slide 12)

Scenario definitions
Freight transport

Current policies scenario

Measures	Assumptions
Ship energy efficiency	Aligned with IMO targets based on MARPOL amendments to ensure a: •40% reduction of average CO_2 intensity by 2030 for all ship types •70% reduction of average CO_2 intensity by 2030 for all ship types
Railway infrastructure enhancement	Straight-line connections and average operational speed at 140 km/h are used as proxies
Highway infrastructure enhancement	Straight-line connections, four lanes, and an average operational speed of 80 km/h to be used as proxies
ITS Management System and traffic jam prevention	Increase the average speed for road freight transport from 45km/h to 56km/h due to the ITS management system and congestion reduction measures implemented
Stimulus package for clean vehicles	Penetration of electric Heavy, medium and light freight trucks (HFT, MFT, and LFT) are assumed to undertake: •1% for HFT, 1.5% for MFT and 2% for LFT of the freight vehicle activities, respectively by 2030 •4% for HFT, 5.5% for MFT and 11.5% for LFT of the freight vehicle activities, respectively by 2050
Eco-driving	Eco-driving to further reduce the average fuel consumption of the truck fleet by 8.5%.

Scenario definitions
Freight transport

Climate ambition scenario (I)

Measures	Assumptions
Distance charges	Charges introduced in 2030 growing to EUR 2.5 cents per tonne-kilometre by 2050
Port fees	Port fees to grow an additional 20% by 2050 decreasing the carbon intensity of shipping by 10%
Carbon pricing	Carbon pricing will vary across regions: USD 300 per tonne of CO_2 in 2050.
Rail and inland waterway improvements	The penalty for mode transfers at intermodal terminals is decreased and alternative specific constant of rail and inland waterways increases. The rate of change to grow from 0.8% in 2020 to 20% in 2050.
Energy transition for long-haul heavy-duty road freight vehicles	14% of heavy truck tkms are on these systems by 2050. Costs begin higher than conventional fuels but by 2050 become lower. Differences in uptakes and costs by region
Asset sharing and the Physical Internet	4% increase in average loads of road freight by 2020 growing to 10% by 2050
Slow steaming and speed reduction for maritime and trucks	Decrease in the speed of road and maritime transport by 1% in 2020, growing to a 20% decrease by 2050
Fuel economy standards for internal combustion engine (ICE) vehicles and fuel	Carbon intensity per tkm of ICE trucks to reduce by less than 1% in 2020 up to 10% by 2050
Low emission fuel incentives (including electric vehicles) and investment in distribution/supply infrastructure	Increase in low-emission fuel vehicle share to 1.3% by 2025, growing to 10% by 2050
Heavy capacity vehicles (HCV)	5% of non-urban road freight transport activity (tkm) to be done with high capacity vehicles by 2050

Scenario definitions
Freight transport

Climate ambition scenario (II)

Measures	Assumptions
Autonomous vehicles (AVs) and platooning	Up to 15% uptake on non-urban freight by 2050. Uptake on urban freight is lower, at 6%. Decrease of 14% on carbon intensity and 45% on costs.
Electric/alternative fuel vehicle penetration	Follows the IEA SDS Scenario.
Intelligent Transport Systems (ITS) and eco-driving	Reductions of 5% in carbon intensity in 2020, decreasing to 0.1% in 2050.
3D printing	International trade to reduce 10% by 2050. Values differ by commodities; electronic and manufactured goods have higher falls.
Decarbonisation of energy	Yearly decrease of 3.35% for coal and 2.1% for oil. By 2050 coal trade to reduce by 65% and oil close to 50%, compared to 2020 estimates.
E-commerce	Additional demand increase by 15% for urban freight and 6% for non-urban freight by 2050

Break

Part I – Decarbonisation Efforts at the National Level

Decarbonising Transport in the region – Policy initiatives and challenges

45mins

- Measures taken in **Uzbekistan** to decarbonize the motor transport sector, Mr Nodir Khudayberdiev, Ministry of Transport, Uzbekistan (15 min)
- Decarbonizing Transport in **Mongolia** - Professor Bazarragchaa Ichinnorov, Doctor (Ph.D), Mongolian University of Science and Technology, Mongolia (15min)
- **Regional considerations**, Mr Nazim Mammadov, UNDP (15min)

30mins Discussion

Lunch

Part II – Decarbonisation Efforts at the Local/City Level

Insights into the DTEE Project outputs

30mins

- DTEE project work at the city level, Alvin Meija, former Wuppertal Institute (15 min)
- DTEE/ITF Model results for Baku – Mallory Trouvé, ITF, (15 min)

Part II – Decarbonisation Efforts at the Local/City Level

Experiences from city authorities in Azerbaijan and beyond (I)

50mins

- Experience from the **Baku** Transport Authority - Mr Huseyn Abdullayev, Deputy Director of the Traffic Management Department, **Azerbaijan** (20 min)
- Accelerating Investments in Low Emission Vehicles in the city of **Tashkent** - Mr Nodir Khudayberdiev, Project Manager of the UNDP/GEF project, Ministry of Transport, **Uzbekistan** (15 min)
- Decarbonization of Public City Transport in **Ulaanbaatar** - Prof. Gotov Dugerjav, Dr.Sc., Mongolian University of Science and Technology (MUST), **Mongolia** (15min)

Break

Part II – Decarbonisation Efforts at the Local/City Level

Experiences from city authorities in Azerbaijan and beyond (II)

45mins

- **Planning and coordinating transport for metropolitan region**s – an experience from DULT, Karnataka, **India** – Ms Syliva Prakash, Senior Transport Planner (15 min)
- **Implementing Bus Rapid Transit system – results and plans:** A case of Hubbali-Dharwad BRTS, **India** – Mr Ravindra Dhaded, Senior Transport Planner (15 min)
- **Asian Transport Outlook: Accessing Urban Transport Data** - Asian Transport Outlook Experiences – Sudhir Gota, Consultant, **Asian Development Bank** (15 min)

45mins

- **Discussion**

Part III – Decarbonisation Commitments at the international level

60mins

- **International experiences with the NDC process**, Dr Marzena Chodor, UNDP Express Roster of Experts, UNDP NDC Revision Quality Assessment Programme (20min)
- **The UNFCCC/NDC process & progress, COP27 and what it means for transport**, Elisabeth Windisch, ITF (20min)
- Q&A (20min)

Break

Part III – Decarbonisation Commitments at the international level

70mins

- The NDC process in Azerbaijan – history, progress, and further planning, Mr. Yashar Karimov Ministry of Environment, **Azerbaijan**
- Mobility and Climate Change scenarios in **Argentina**, Gustavo Rinaldi, Ministry of Transport, Argentina (15min)
- Decarbonising Transport in Asia – The experience from the Asian Development Bank – Alexandra Pamela Chiang, Senior Transport Expert, **Asian Development Bank** (15 min)
- Q&A (20min)

Lunch

Part IV – Get to know the ITF and our Tools

TBD

- Get to know the ITF incl. Q&A (30mins) – Elisabeth Windisch (ITF)
- Get to know the tools developed under the DTEE project for Azerbaijan – Mallory Trouvé (ITF)