

# Climate Resilient Transport Policy Options in Asia Pacific

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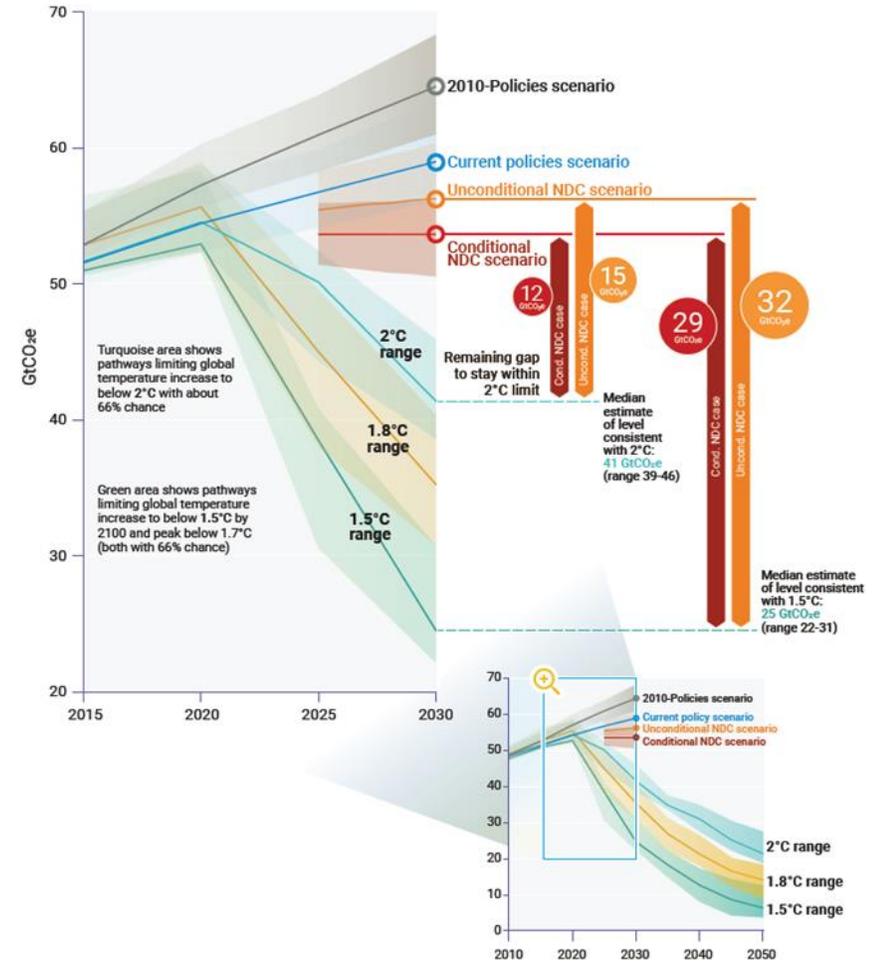
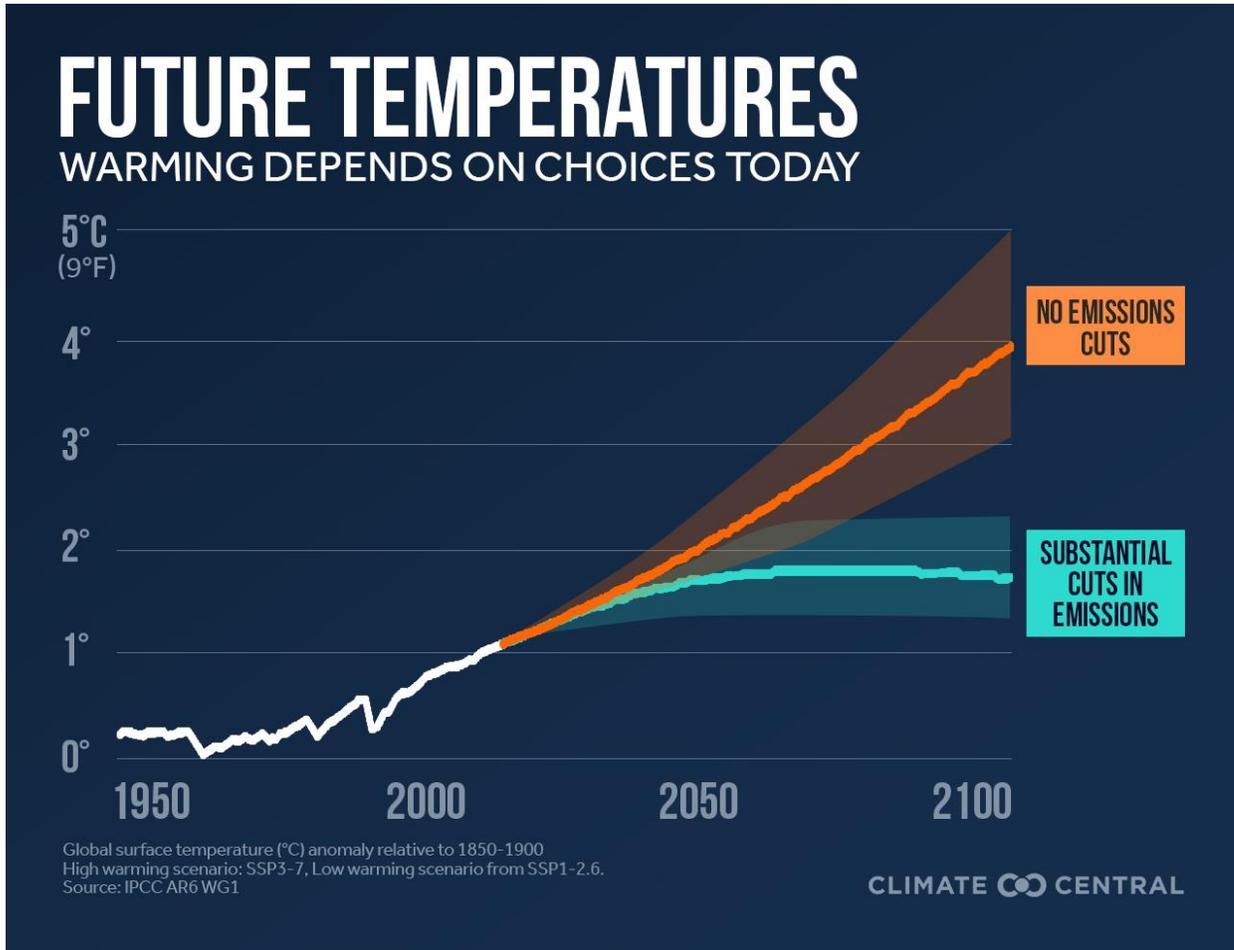
Bert Fabian, Programme Officer  
Sustainable Mobility Unit, UNEP

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High-Level Intergovernmental 14th Regional Environmentally Sustainable Transport Forum in Asia  
18-20 October 2021

# More actions needed to reduce GHG emissions

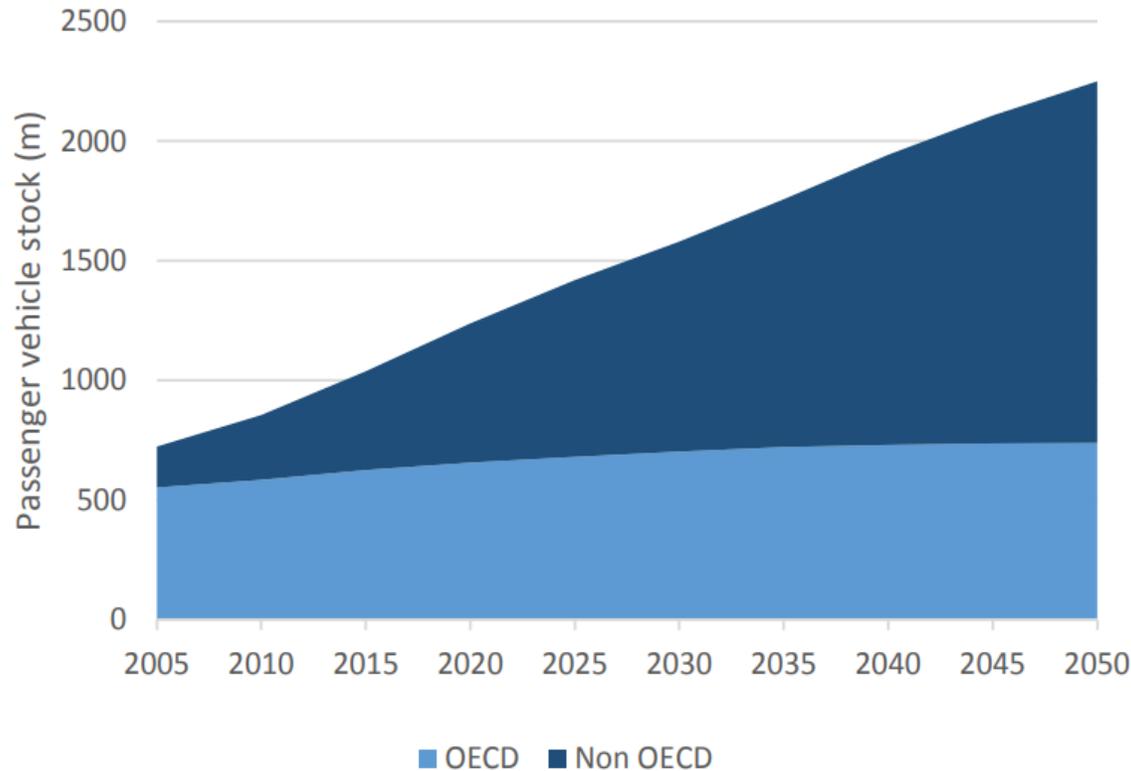
IPCC AR6 and UNEP Emissions Gap Report



# Rising CO<sub>2</sub> emissions from transport

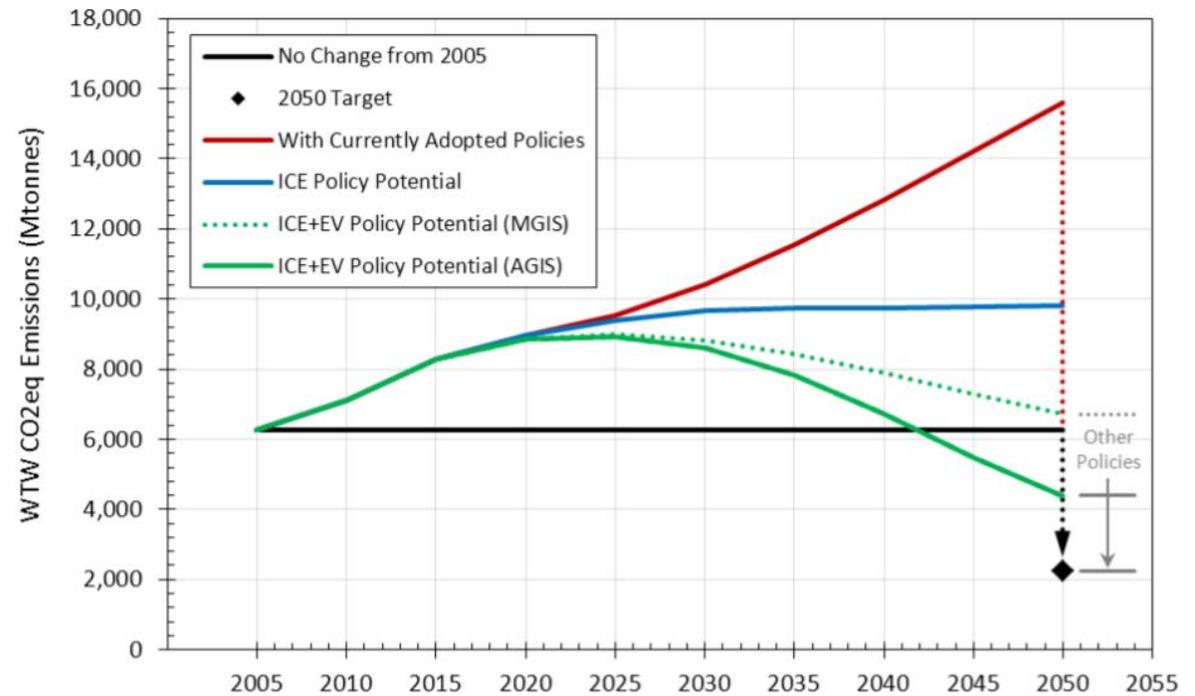
Especially in low- and middle-income countries

## Passenger car fleet projection – majority of growth from non-OECD countries



Source: IEA 2019

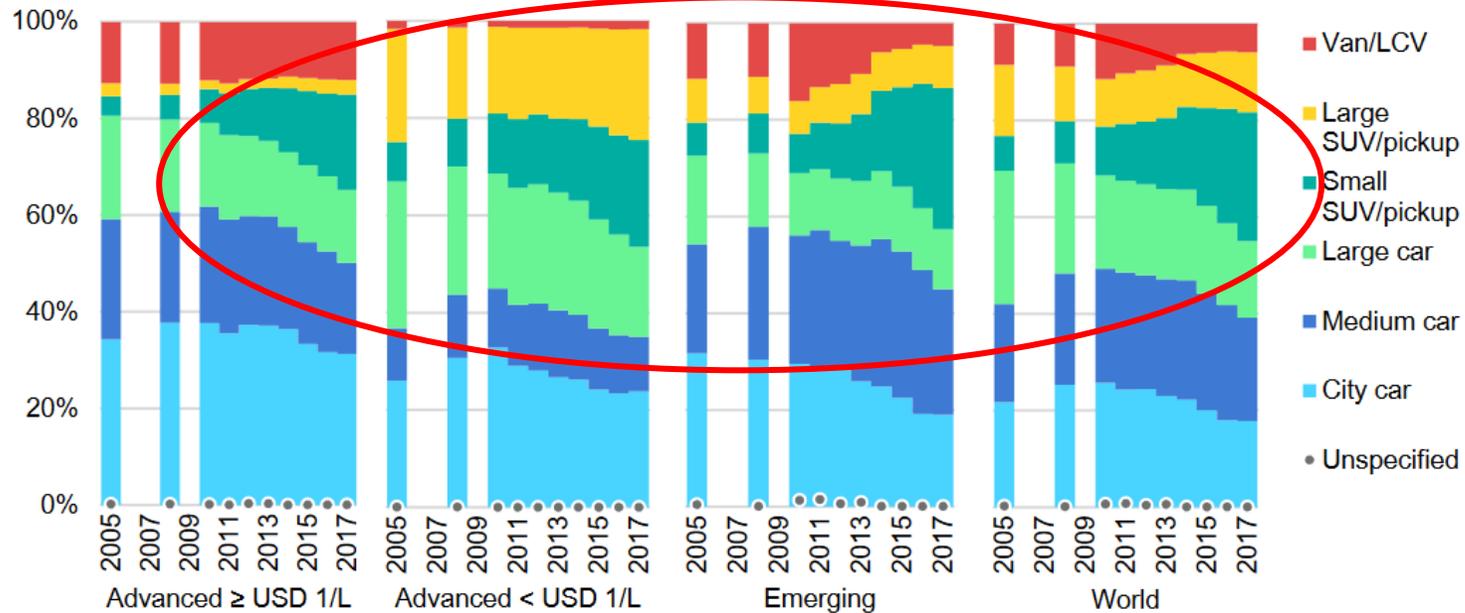
To reach 90% decarbonization – target all options – avoid, shift, improve – and all countries



Source: Prospects for fuel efficiency, electrification, and fleet decarbonization, Global Fuel Economy Initiative, 2019

# Unsustainable transport systems prevail

Light-duty vehicle market share by size segment, 2005-2017



IEA 2020. All rights reserved.

Notes: LDV = light-duty vehicle; LCV = light commercial vehicle; pickup = pickup truck. Advanced < USD 1/L = advanced economies with gasoline prices below USD 1 per litre; Advanced > USD 1/L = advanced economies with gasoline prices above USD 1 per litre. Unspecified is the share of vehicles where there are no data on the size segment; the values are not included in the denominator to calculate market shares.

Source: IEA analysis based on IHS Markit (2018).

- Preference for individual transport and over reliance on road transport – cars becoming bigger and more powerful – leading to more emissions, worse traffic crash outcomes, and more vehicle jams
- In urban transport, priority should be for public transport (rail, buses, para-transit including motorcycle taxis and 3-wheelers), walking and cycling as the backbone, including electrification linked with renewables

# High disaster and climate risks in Asia

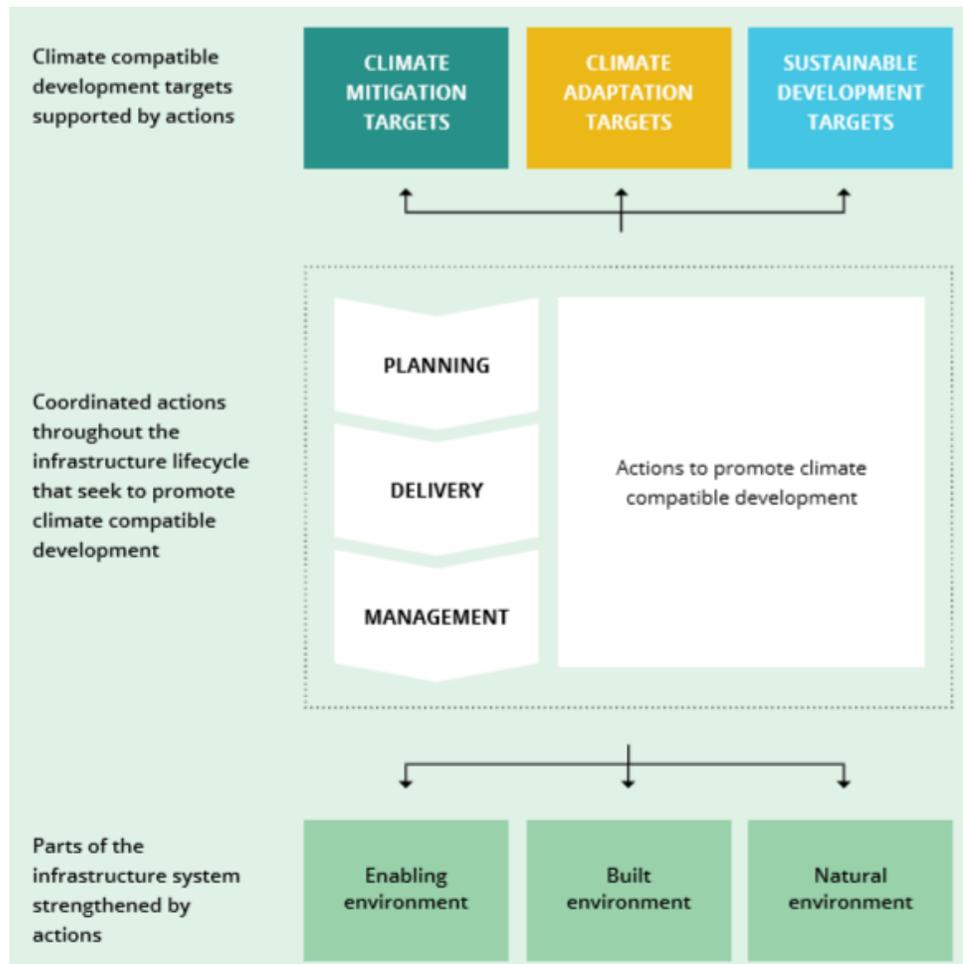
	River flood	Urban flood	Coastal flood	Earth quake	Land slide	Tsunami	Volcano	Cylcone	Water scarcity	Extreme heat	Wild fire
Afghanistan	High	High	Medium	High	High	Medium	High	High	High	High	High
Bangladesh	High	High	High	Medium	High	High	High	High	High	High	High
Bhutan	High	High	Medium	High	High	Medium	High	High	High	High	High
India	High	High	High	High	High	High	High	High	High	High	High
Maldives	Medium	Medium	High	Medium	High	Medium	Medium	Medium	Medium	Medium	High
Nepal	High	High	Medium	High	High	Medium	High	High	High	High	High
Pakistan	High	High	High	High	High	High	High	High	High	High	High
Sri Lanka	High	High	High	High	High	High	High	High	High	High	High
Brunei	High	High	High	High	High	High	High	High	High	High	High
Cambodia	High	High	High	High	High	High	High	High	High	High	High
East Timor	High	High	High	High	High	High	High	High	High	High	High
Indonesia	High	High	High	High	High	High	High	High	High	High	High
Laos	High	High	Medium	High	High	Medium	High	High	High	High	High
Malaysia	High	High	High	High	High	High	High	High	High	High	High
Myanmar	High	High	High	High	High	High	High	High	High	High	High
Philippines	High	High	High	High	High	High	High	High	High	High	High
Singapore	High	High	High	High	High	High	High	High	High	High	High
Thailand	High	High	High	High	High	High	High	High	High	High	High
Vietnam	High	High	High	High	High	High	High	High	High	High	High
China	High	High	High	High	High	High	High	High	High	High	High
Japan	High	High	High	High	High	High	High	High	High	High	High
Mongolia	High	High	Medium	High	High	Medium	High	High	High	High	High
North Korea	High	High	High	High	High	High	High	High	High	High	High
South Korea	High	High	High	High	High	High	High	High	High	High	High

- Almost all countries in Asia are at high risk of flooding, landslides, wildfires and as extreme heat
- Increased incidence and intensity of hazards (and pandemics) disrupt/damage transport networks, including vital connections to economic, educational, health, or other opportunities or services

Source: Thinkhazard - Global Facility for Disaster Reduction and Recovery (GFDRR)

# Climate compatible development for mitigation, adaptation and SDGs

## Infrastructure for climate action (2021)



- Infrastructure is responsible for the vast majority of greenhouse gas emissions worldwide, estimated at 79 per cent of total emissions, with most associated with energy, buildings and transport
- The transport sector can influence 76 SDG targets across all 17 SDGs (45 per cent) - 20 Transport outcomes are directly represented in several goals, including SDG 3 (road safety), SDG 11 (access to public transport), and SDG 14 (marine conservation)
- *As we seek to bridge the infrastructure gap and improve the quality of life of people everywhere, it is critical that we invest in sustainable infrastructure that adapts to future uncertain climate conditions; contributes to the decarbonization of the economy; protects biodiversity and minimizes pollution – Inger Andersen, UNEP Executive Director*

Source: UNOPS, UNEP, Oxford University, 2021

# Key actions to promote mitigation, adaptation and SDGs transport

## Infrastructure for climate action (2021)

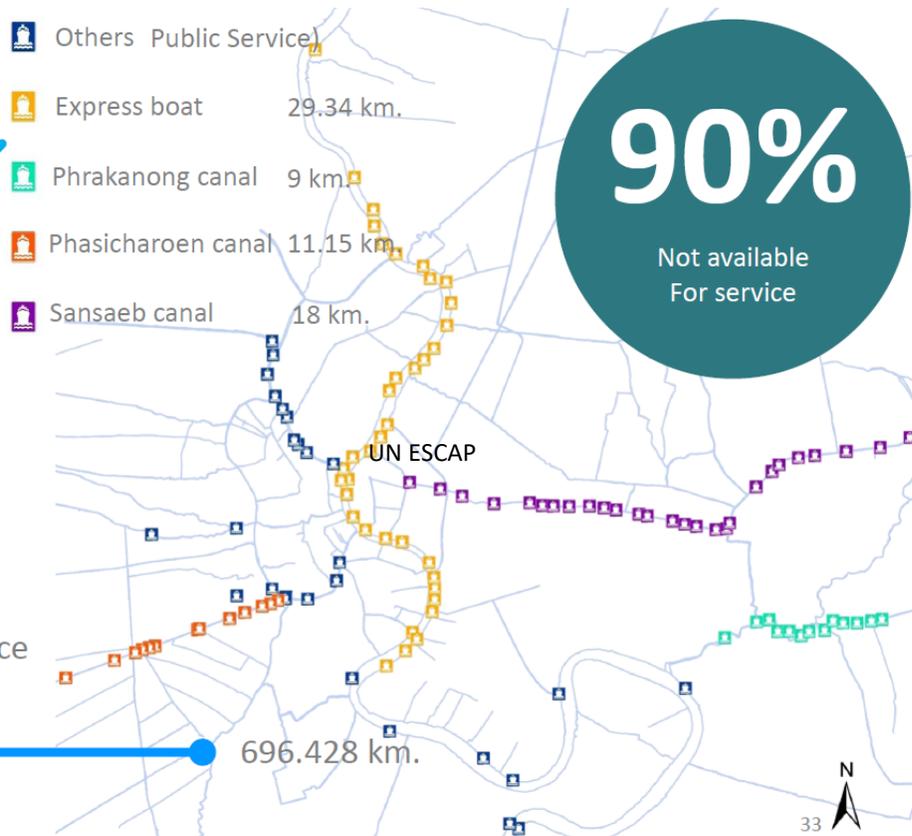
	Mitigation	Adaptation	Development
<b>Planning stage</b>	Geospatial data and modelling capacity – transport network and O-D models prioritize people	Incorporate redundancies into the system e.g. bus and rail transport)	Responsiveness to end users in projects to enhance accessibility for children, women, and vulnerable
	Consider geographical characteristics and prioritize lower-carbon solutions e.g. waterways	Plan and coordinate role in inclusive response to emergencies such as natural disasters	Conduct appropriate assessments to identify negative environmental Impacts
<b>Delivery stage</b>	Ensure sustainable procurement using appropriate criteria e.g. emissions	Build business case for adaptive infrastructure	Support communities through labour-intensive projects
	Integrate circular economy principles according to design specifications	Prioritize the use of Nature-based Solutions e.g. managing stormwater through sustainable drainage systems	Explore new financing mechanisms to enhance equitable service outcomes and enhance access to Communities
<b>Management stage</b>	Conduct proactive maintenance at regular intervals	Conduct proactive maintenance e.g. drainage system clearance	Ensure human resource policies are in place for operators
	Plan retrofits to existing assets e.g. bus, trams, rail to run on renewables	Explore low-cost maintenance of existing asset stock	Manage operation and maintenance costs to ensure inclusive access to public transportation

Source: UNOPS, UNEP, Oxford University, 2021

# Case of inland waterways in Bangkok Metropolitan Area

Resilience in Urban Transport towards Hybrid Canal-Rail Connectivity Linking Bangkok's Canal Networks to Mass Rapid Transit Lines

## Bangkok Waterway Network



- Improved waterways promote mitigation, adaptation, and development
- Bangkok has high potential to expand inland waterways and improve mobility and reduce emissions
- Emissions from inland water transport in Bangkok could contribute to the maximum of 1-4  $\mu\text{g}\text{m}^{-3}$  of 24-hr average PM2.5 concentration in the area of 1 km away from the canal and river
- as

Source: Pawineelamtrakul, Associate Professor, Faculty of Architecture and Planning, Thammasat University, Thailand (2018) and Ekbordin Winijkul, Environmental Engineering and Management, Asian Institute of Technology (AIT) and CCAC (2020)



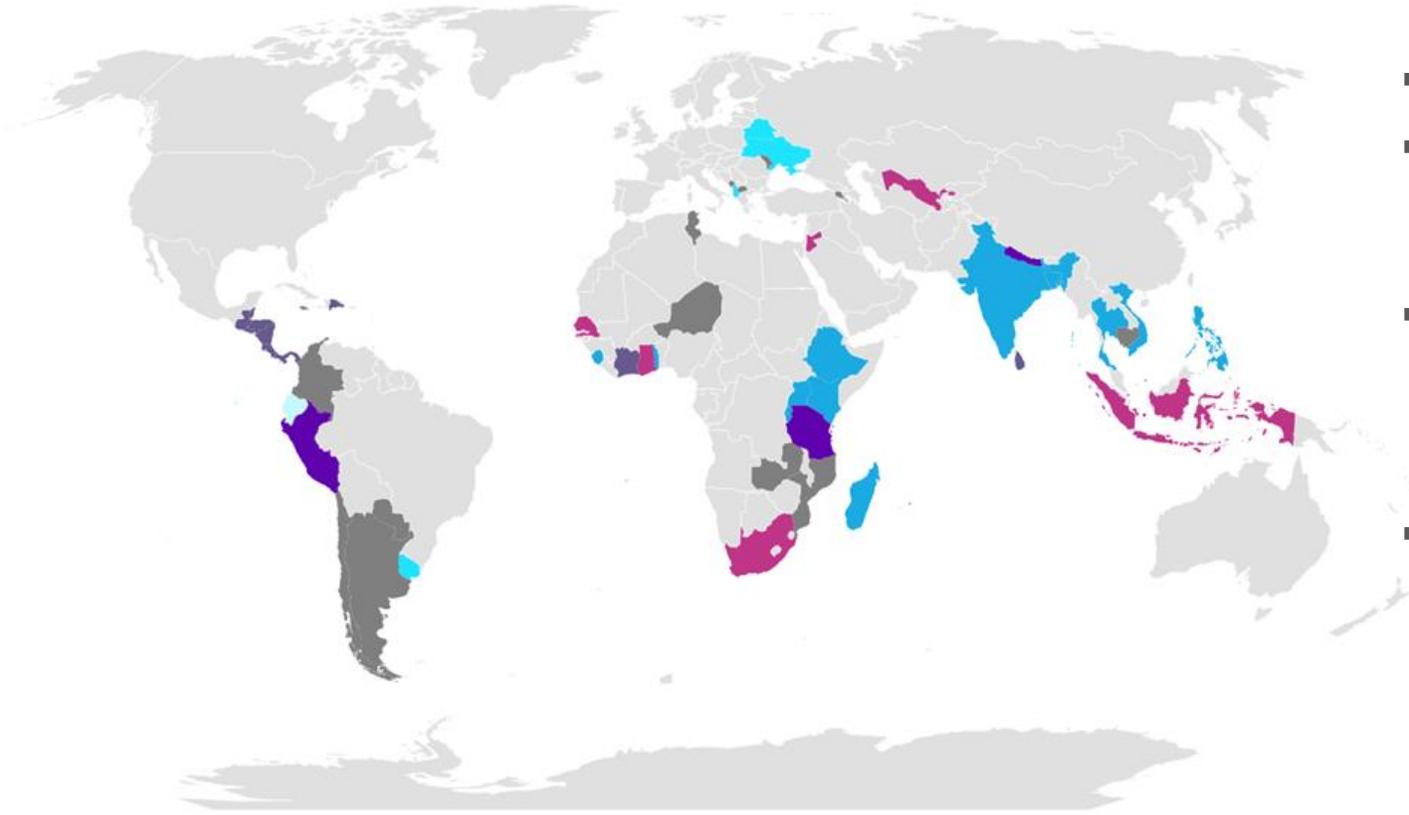
CLIMATE &  
CLEAN AIR  
COALITION  
TO REDUCE SHORT-LIVED  
CLIMATE POLLUTANTS



50  
1972-2022

# Supporting the Race to Zero Emissions Transport

UNEP Global E-Mobility Programme



- More than 40 e-mobility country projects worldwide
- Funded by the GEF, the European Union, BMU-IKI, the Hewlett Foundation, FIA Foundation, the Climate and Clean Air Coalition, Sweden & Norway
- The GEF7 Global E-Mobility programme, the GEF E-Mobility Standalone Projects and EC SOLUTIONSplus city projects add up to 42 e-mobility projects with a grant volume of > USD 85 million
- Integrate links to renewable energy



■ 2&3 Wheelers ■ Buses ■ Buses and 2&3 Wheelers ■ LDVs ■ Buses & LDVs ■ Chargers ■ LCVs

“High growth rates are now appearing in electric vehicles, electric bikes and electric transit, which would need to displace fossil-fuel powered passenger vehicles by 2035-2050 to remain in line with 1.5C consistent pathway.” (IPCC October 2018)

# Pillars of the Programme

Prioritizing public transport – electric 2&3 wheelers, and buses/ para-transit



## Electric 2 & 3 wheelers

- Economically viable
- Technically mature
- Charging at home outlets feasible
- High growth rates of two-wheeler market in Asia and Africa



## Electric light-duty vehicles

- Close to break-even with conventional cars
- Technically mature
- Highest mitigation potential of global transport energy use and emissions



## Electric buses

- Economically viable on high-capacity lines
- High potential to improve local air quality
- Manageable recharging infrastructure requirements

# Summary

- Most countries in Asia are at high risk to climate and disasters
- CO<sub>2</sub> emissions and air pollution from transport are still growing due to rapid motorization and inefficient transport systems
- Promote mitigation, adaptation and achieving SDGs in transport infrastructure development, at the planning, delivery, and management stage
- Need for sustainable, resilient, low-carbon and zero emissions transport systems
- Critical stage in planning and assessment e.g. less benefits of urban roads expansion/ elevated roads and highways, if at all – leads to more vehicle traffic jams, air pollution and urban blight, increases urban heat islands, increases GHG emissions from transport, and does not serve mobility needs of majority of people in cities



**Pasig River, Manila, Philippines**

Photo by CEphoto, Uwe Aranas

# Thank you



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