Status of E-mobility Roll-out in Asia

High Level 15th Regional Environmentally Sustainable Transport Forum in Asia

Plenary Session 10: The Role of E-mobility Solutions in Decarbonising Transport and Improving Air Quality in Developing Asia

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Asian Transport Outlook

Why E-mobility?

"Electric vehicles powered by low-GHG emissions electricity have large potential to reduce land-based transport GHG emissions, on a life cycle basis . Advances in battery technologies could facilitate the electrification of heavy-duty trucks and compliment conventional electric rail systems."

- IPCC 6th Assement Report

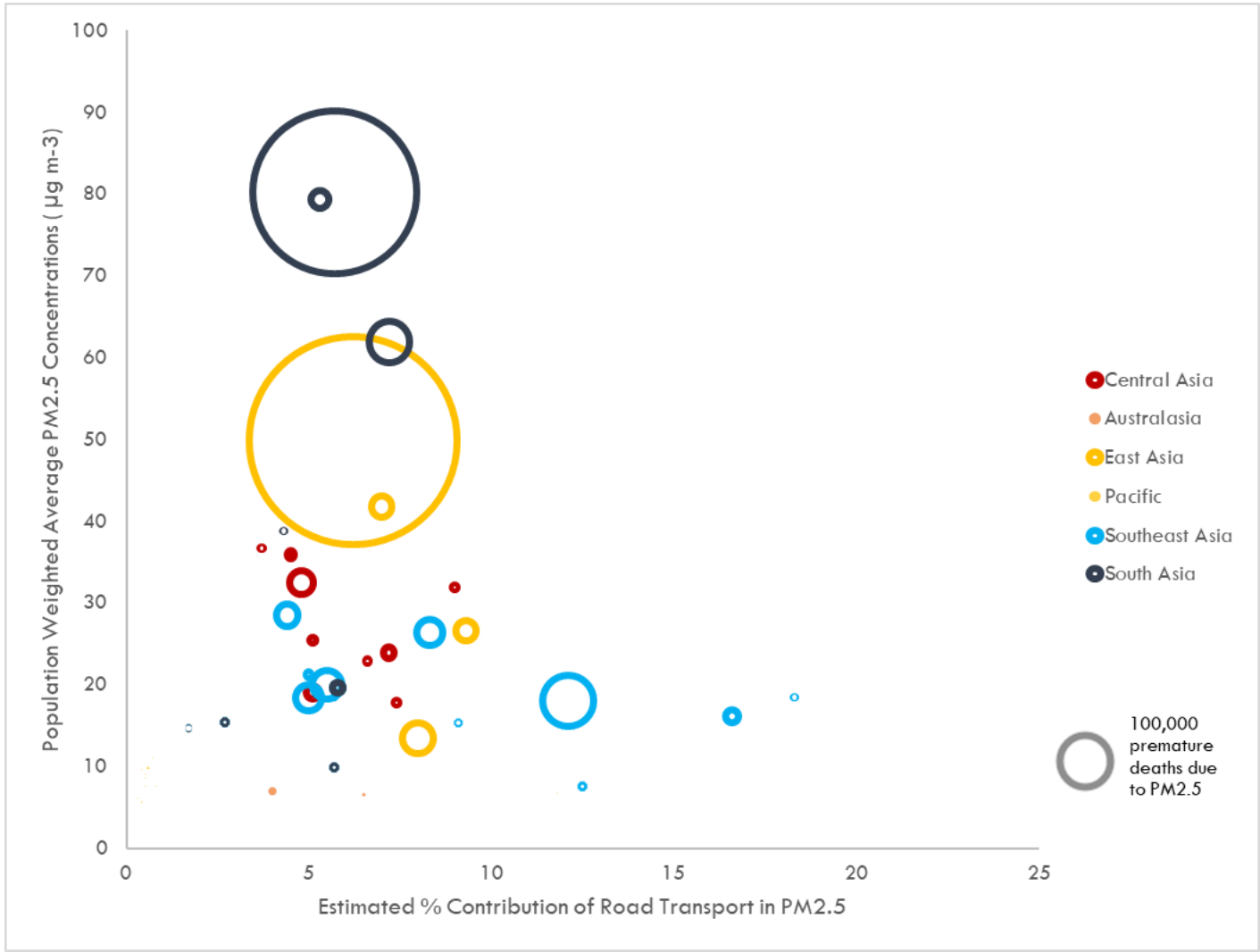
"Electrification is one of the most important strategies for reducing CO2 emissions from energy in the Net Zero Emissions by 2050 Scenario, where the majority of emissions reductions from electrification come from the shift towards electric transport and the installation of heat pumps."

-IEA Net Zero Roadmap

"Electro-mobility coupled with investment in renewable energy is critical to carbon mitigation… EVs (micro-mobility, two/three-wheelers, passenger cars, mini buses, busses, trucks, etc.) offer multiple benefits: decarbonisation, cleaner cities, better road use and mobile energy supplies"

- High Level 14th Regional EST Forum in Asia

Transport and Air Pollution Contribution in Asia



Source: Mcduffie Et. al(

How E-mobility can Deliver Decarbonisation and Air Pollution Impacts

- **Direct replacement** of ICE vehicles
- Allows for the **utilization of EVs** to fill in gaps in use cases and provide higher levels/quality of services, for example
  - Promotion of biking through pedelecs
  - Utilization of light electric vehicles in urban freight
- Can strengthen **more efficient modes** (e.g. public transport support through last mile services)

Aichi 2030 Declaration – Recognizing the Contextualization of E-mobilty

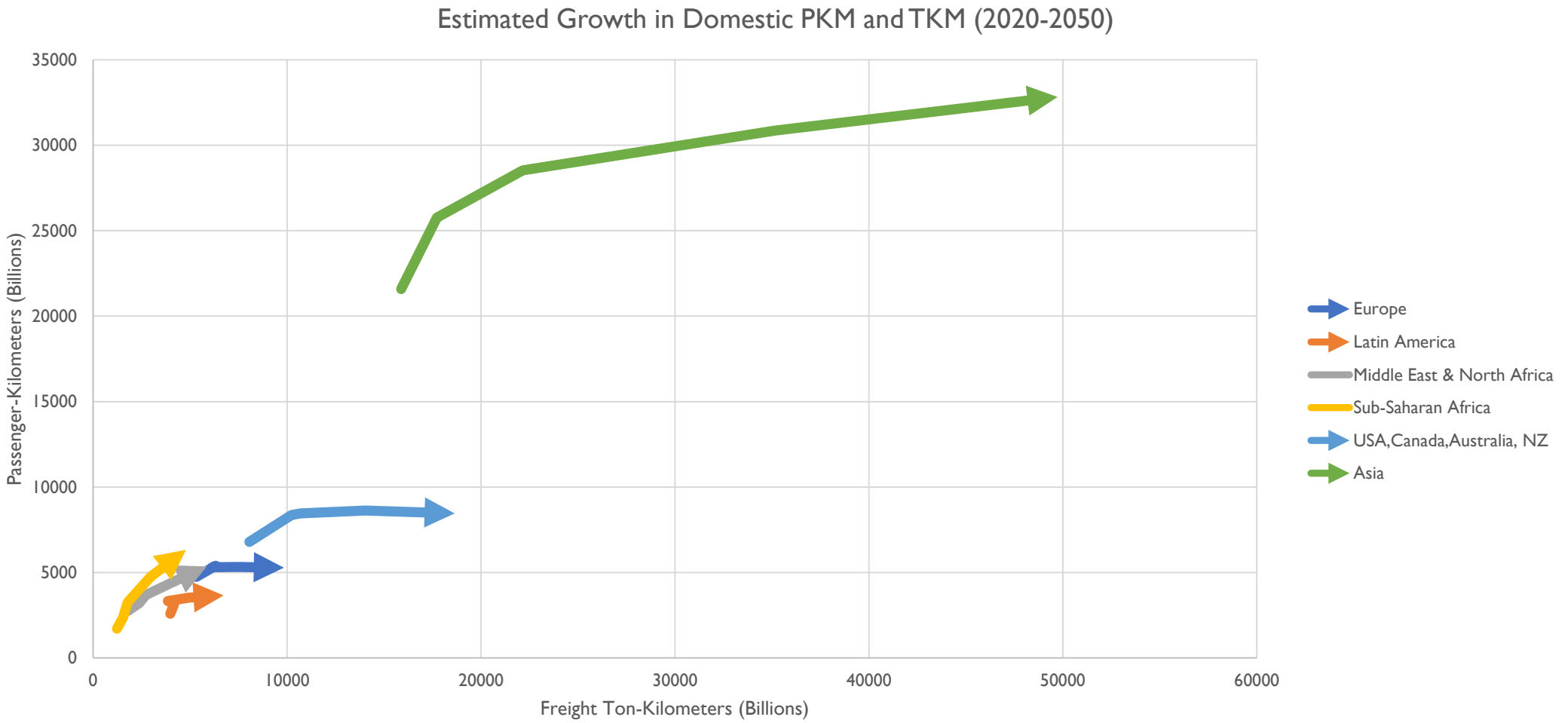
"Strategy 4: Achieve significant shifts from road-based transport to more sustainable modes of inter-city passenger and goods transport, through expansion of and improvements to **electrified rail**, and inland water transport infrastructure and services…

Strategy 6: Require the integration of dedicated walking and cycling infrastructure in transport plans in all cities and massively scale up investments in walking and cycling to realize widescale improvements to pedestrian and bicycle (including **electric bicycles**) facilities, adoption of "complete" streets design standards..

Strategy 8: Promote research in low carbon transport systems and encourage the shift towards the use of low-carbon fuels, eventually shifting to electricity or hydrogen, to power passenger and freight vehicles. In the medium term also using hybrid technology. Rapidly develop the infrastructure for **electric mobility** and/or hydrogen based mobility, both ultimately generated from renewable energy."

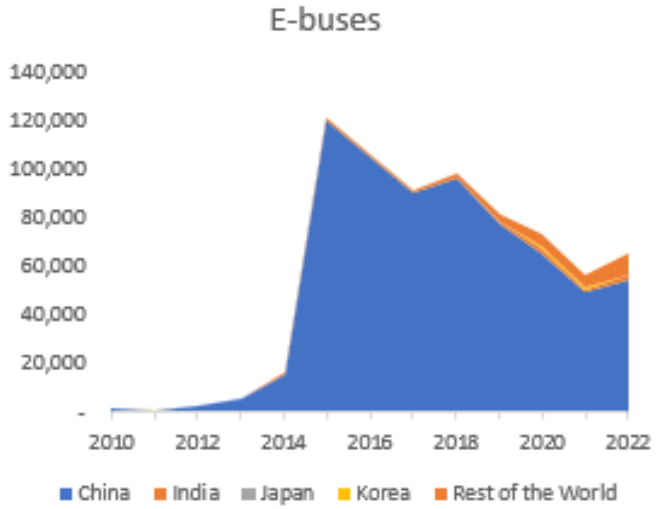
-Aichi 2030 Declaration

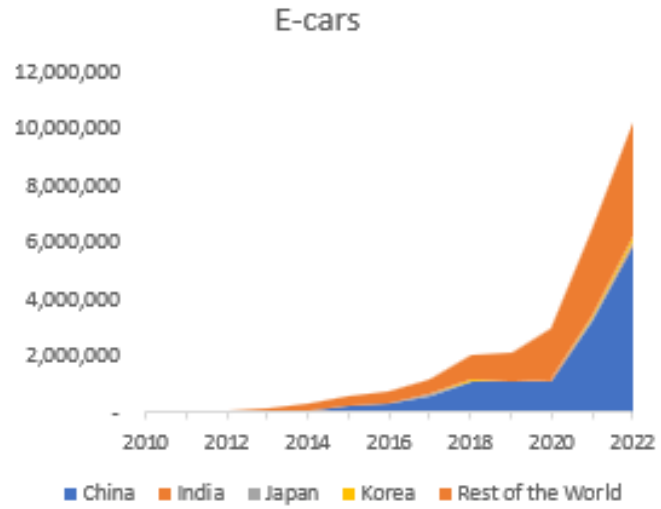
Room for Growth and Opportunity for Transition

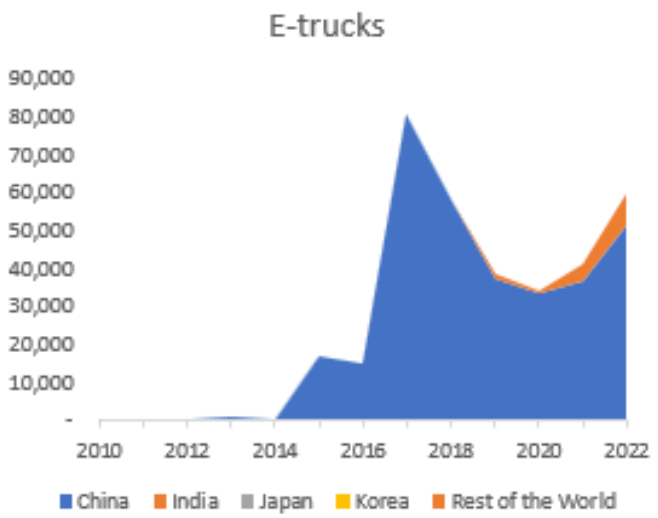


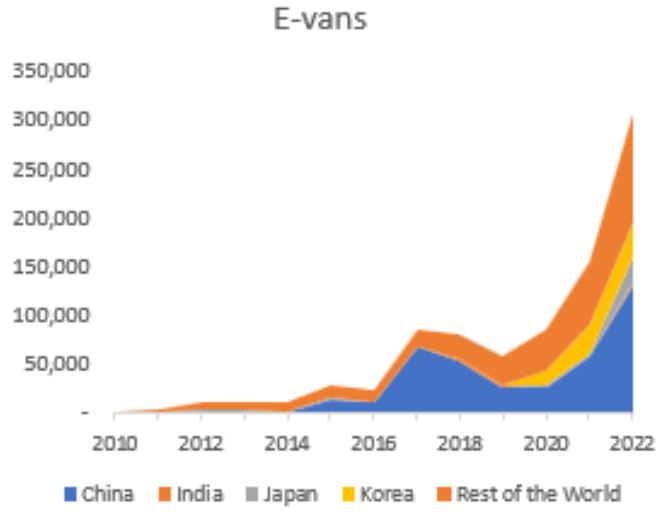
Source: Data from ITF (2023)

Electric Vehicle Sales Estimates





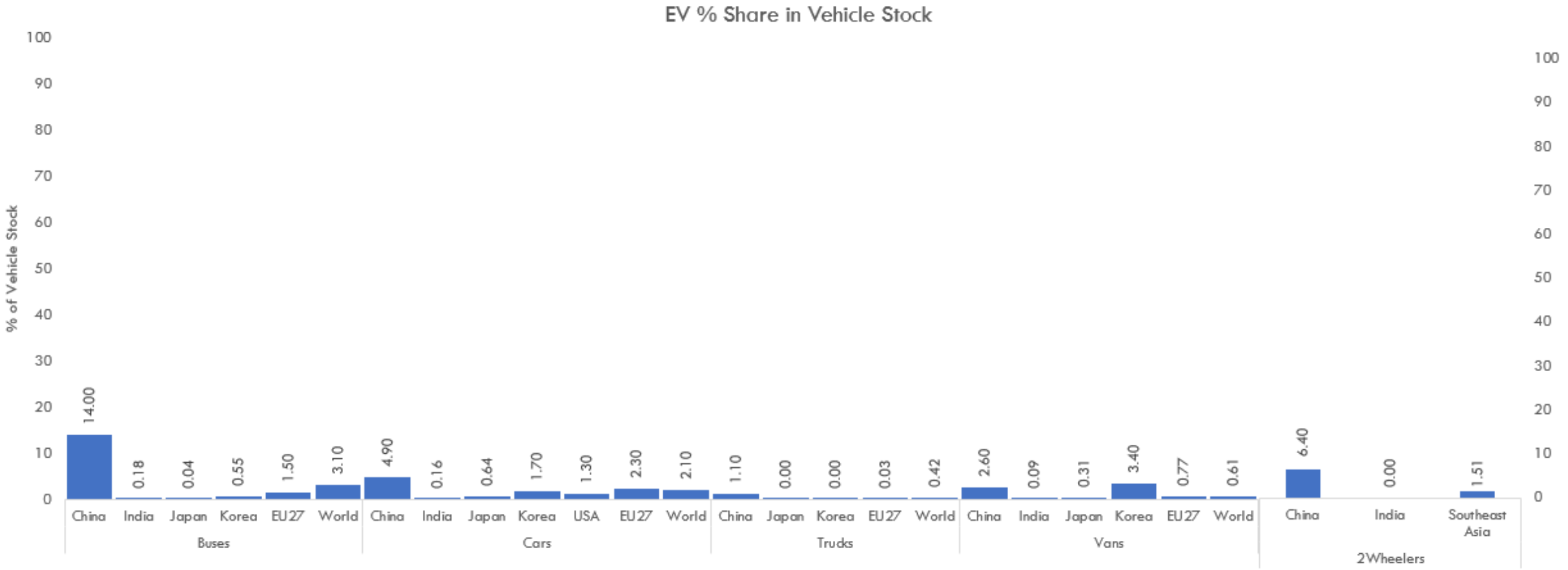




Source: IEA. (2023). GEVO.

Source: IEA. (2023). GEVO.

EV Share in Vehicle Stock

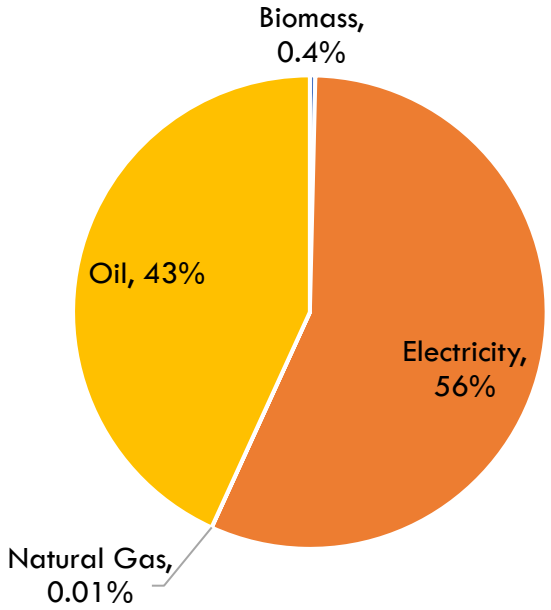


Source: IEA. (2023). GEVO. & DNV. (2023). Energy Transition Outlook

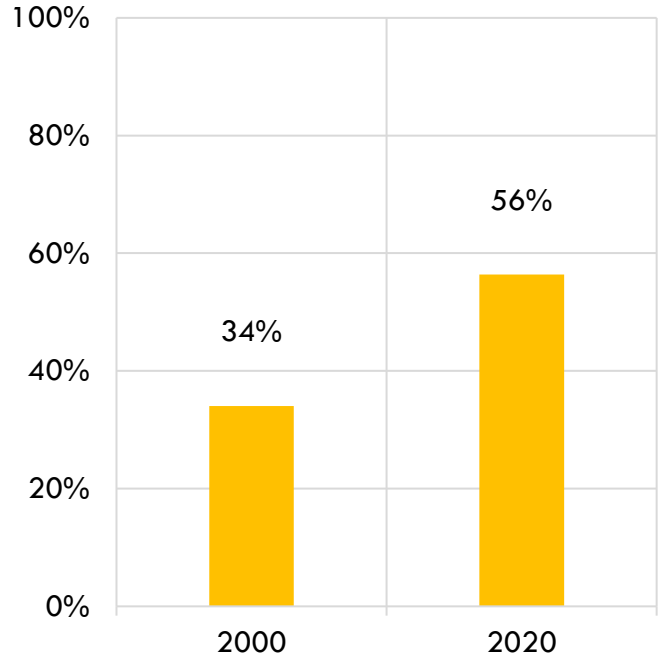
Transport energy consumption, Rail electrification and CO2 emissions

In 2018, Asian railways carried 6% and 16% of passenger and freight transport demand, but share only 3% of total transport energy consumption and emitted only 2% of fossil transport CO2 emissions

Transport Energy Consumption, 2022

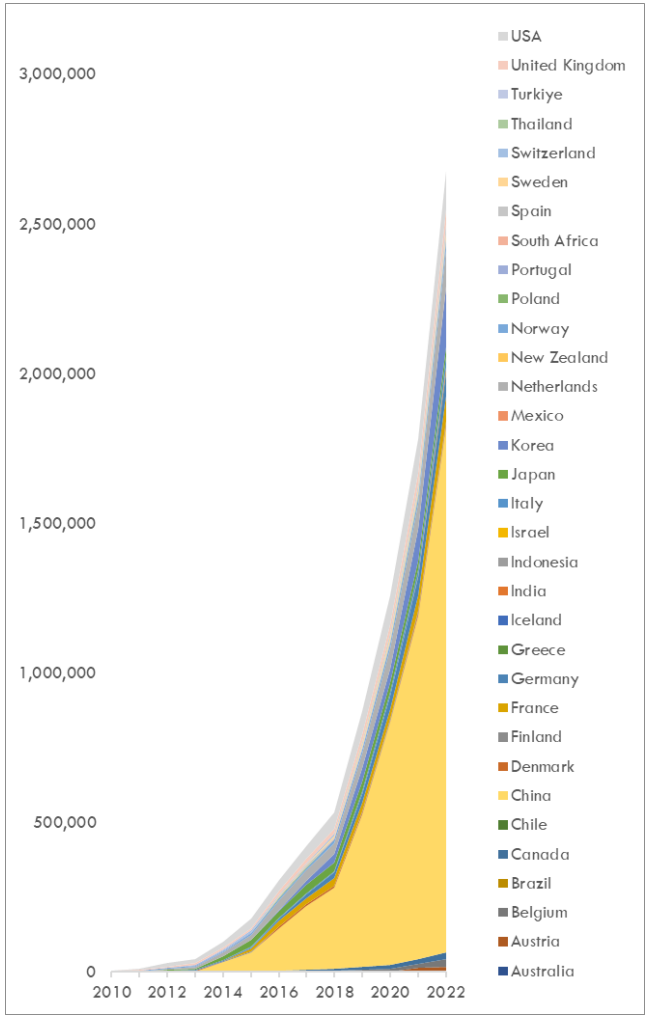


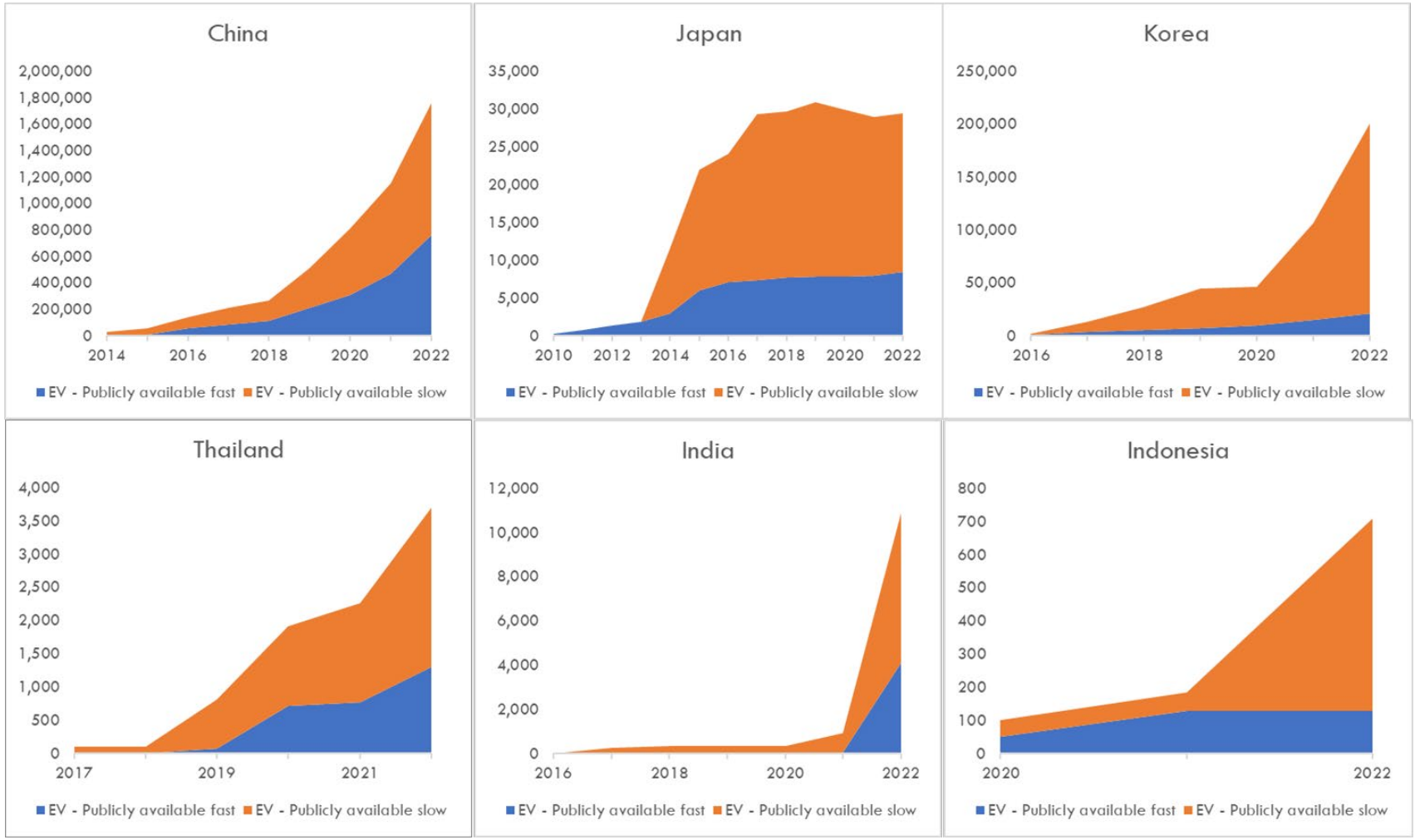
Share of Electrified Tracks in Asia - Pacific



Source: ATO Data (UNStats, Country Stats,World Bank), ITF Outlook, DNV Outlook

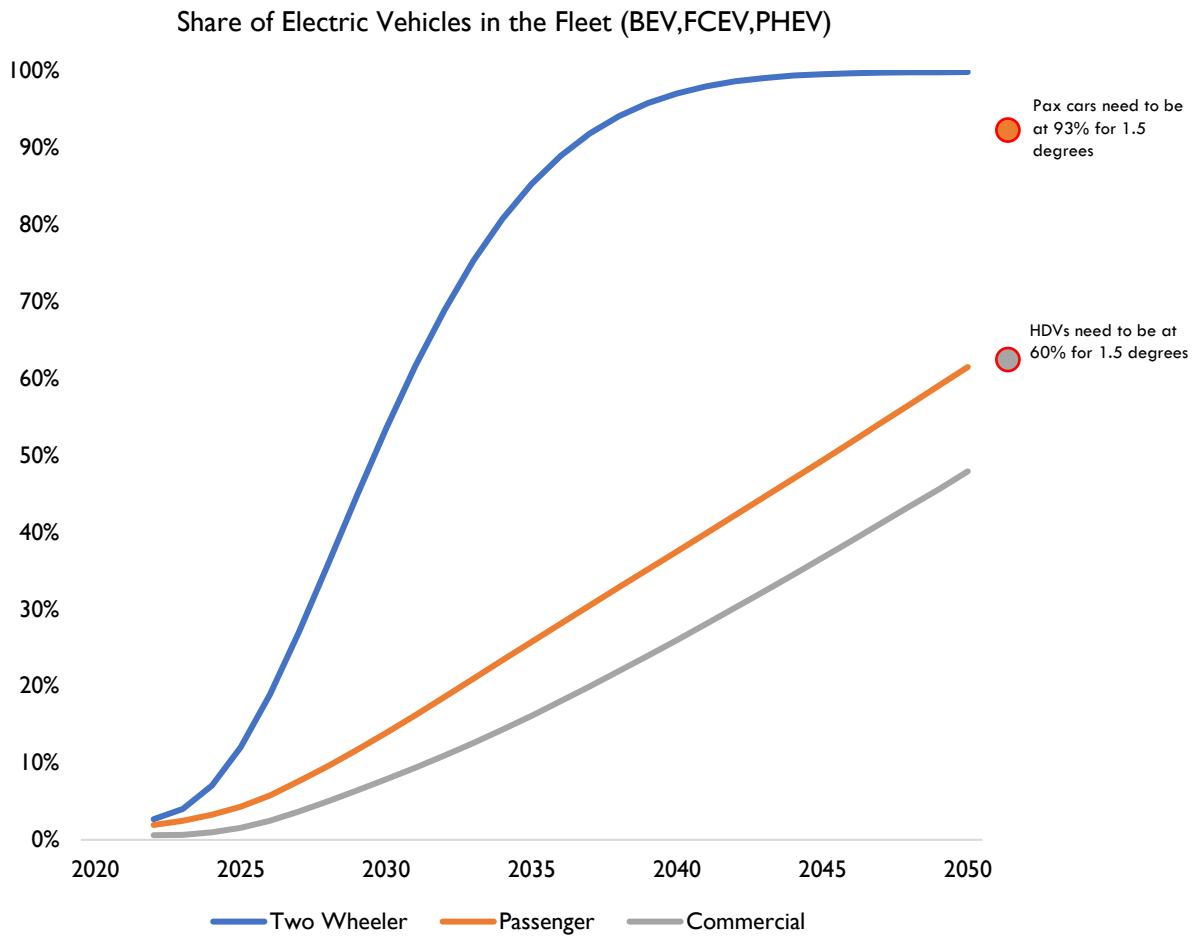
Public EV Charging Points

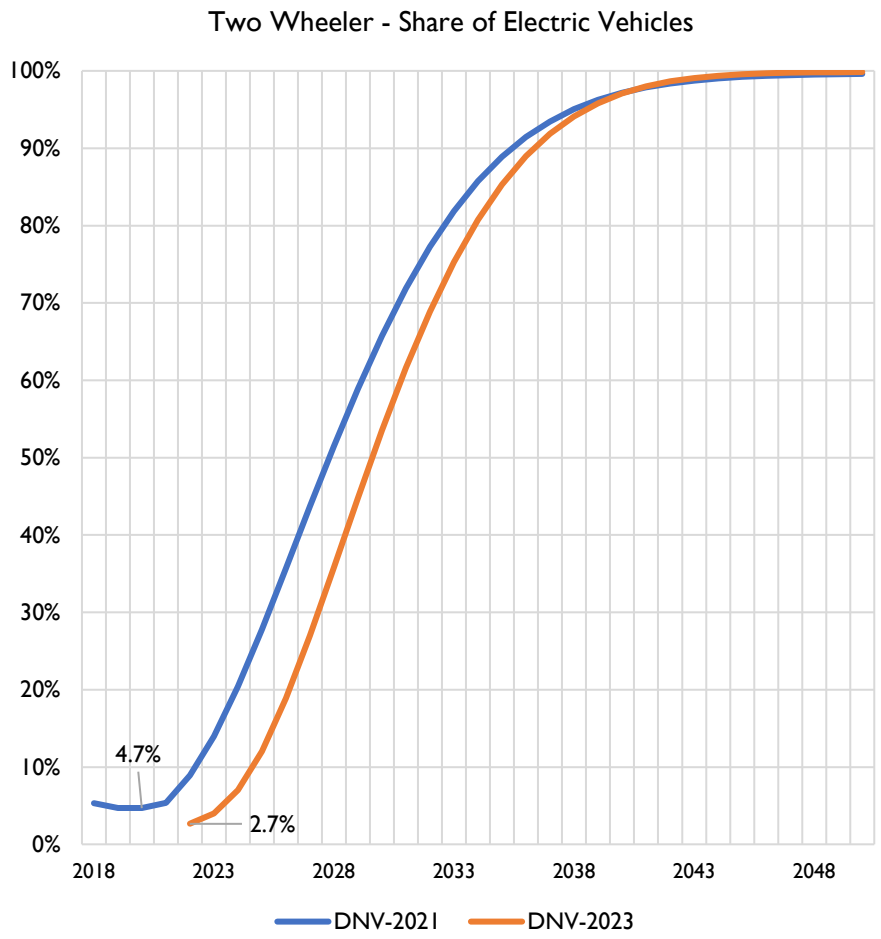




Source: IEA. (2023). GEVO.

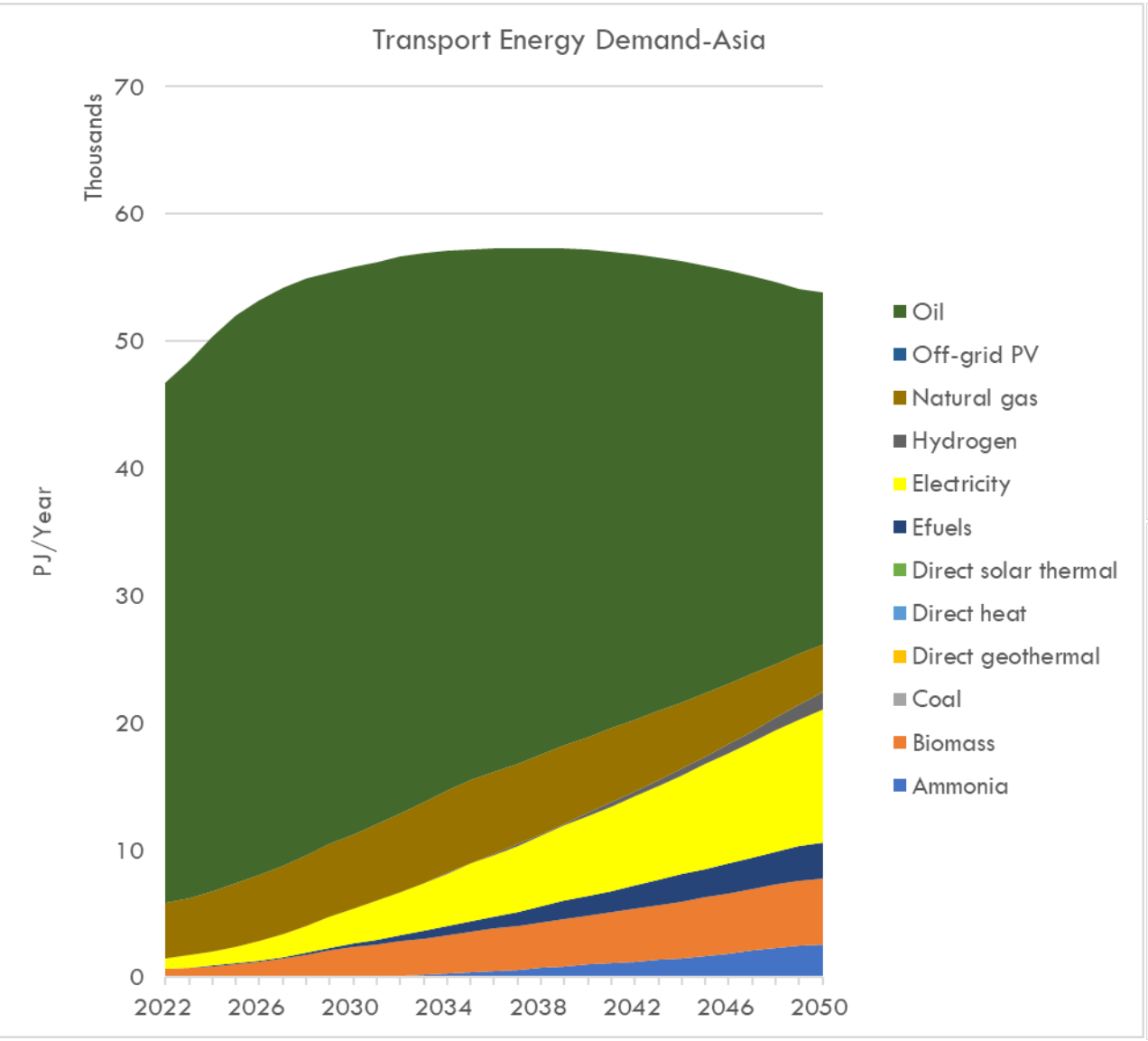
Trajectories towards Electrification of the Transport Sector

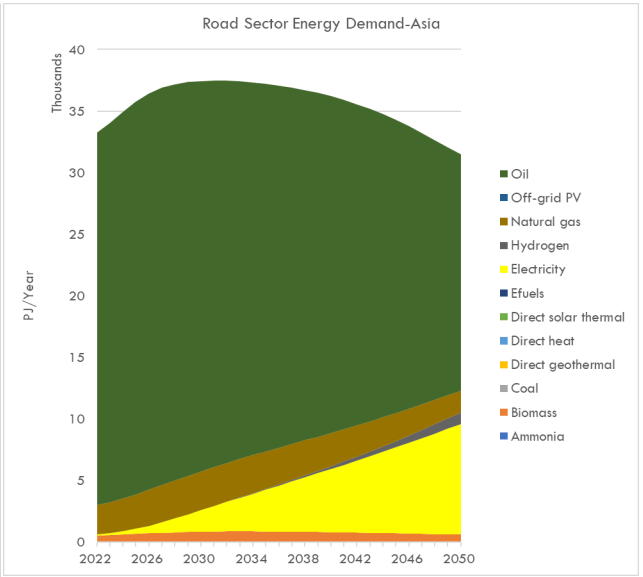


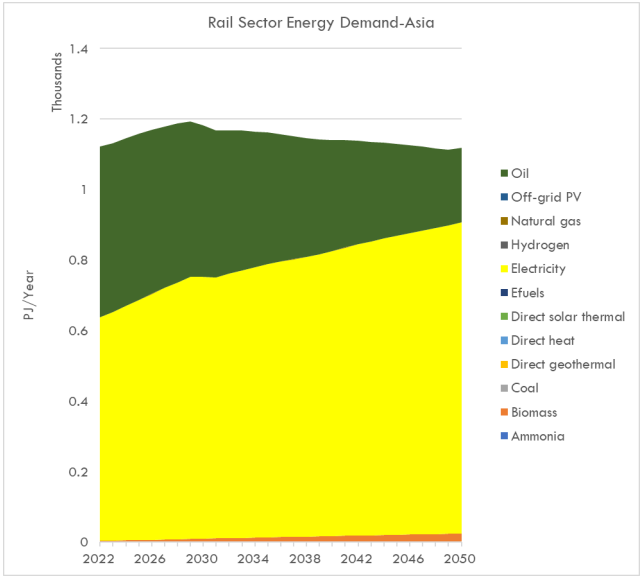


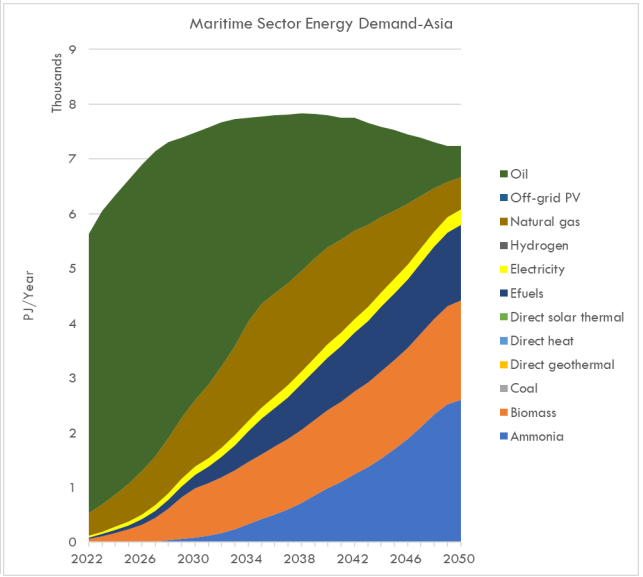
Source: DNV (2023) Energy Transition Outlook and IRENA (2023)

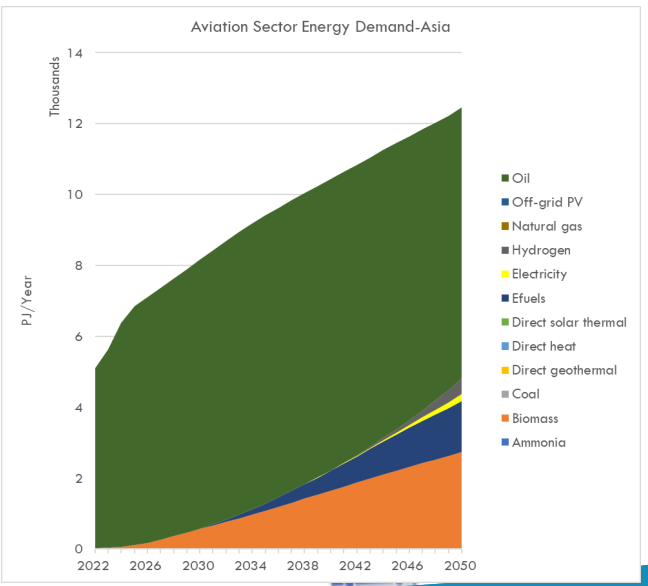
Electricity as an Energy Carrier for Transport





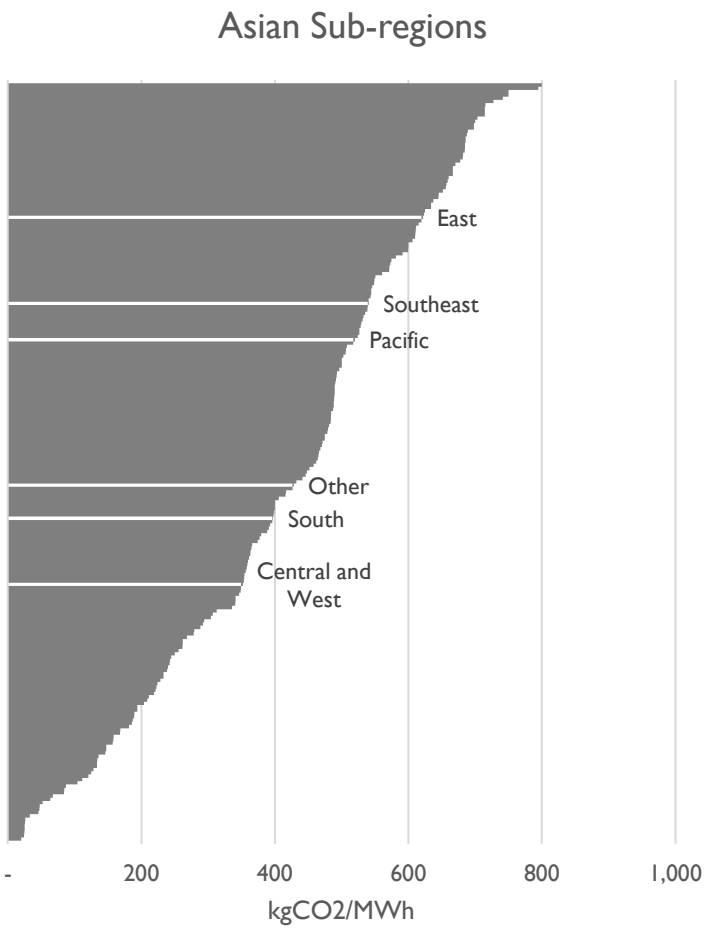


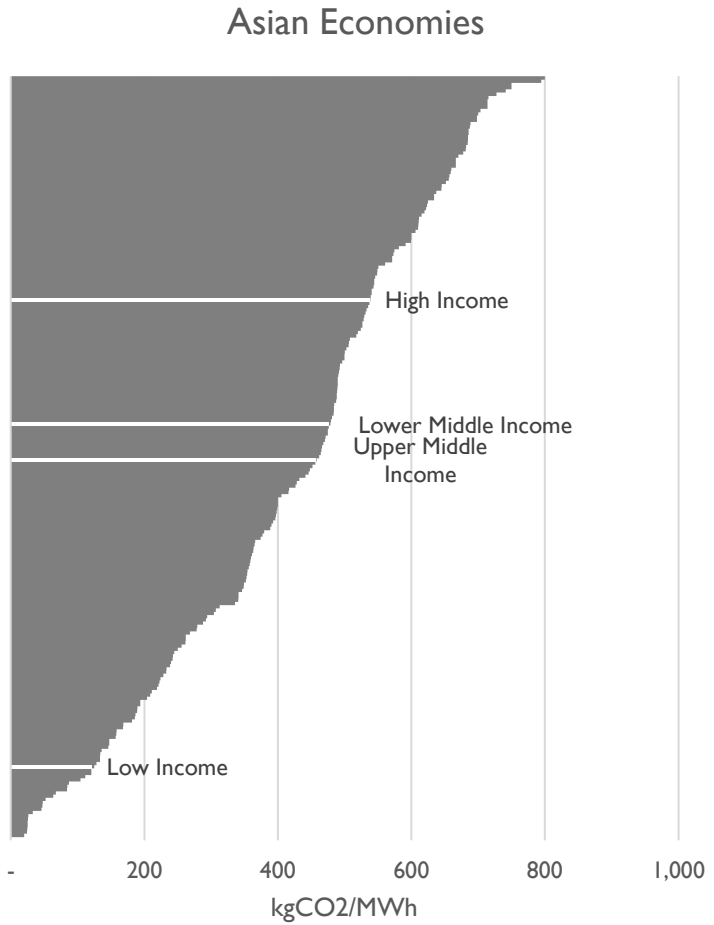


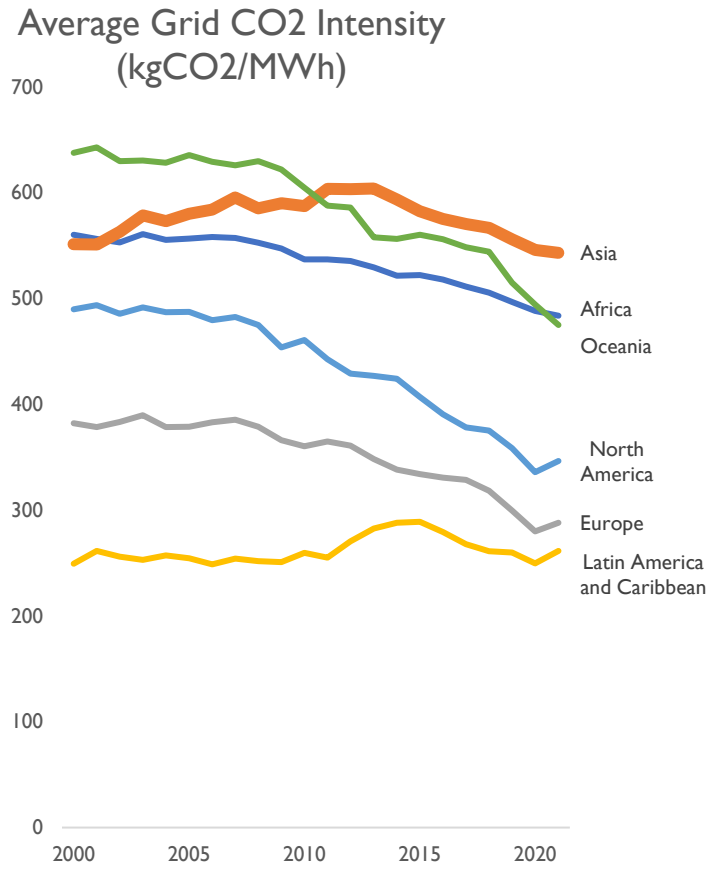


Source: DNV. 2023. Energy Transition Outlook

Asia at a Glance : Average CO2 Intensity of the Grid



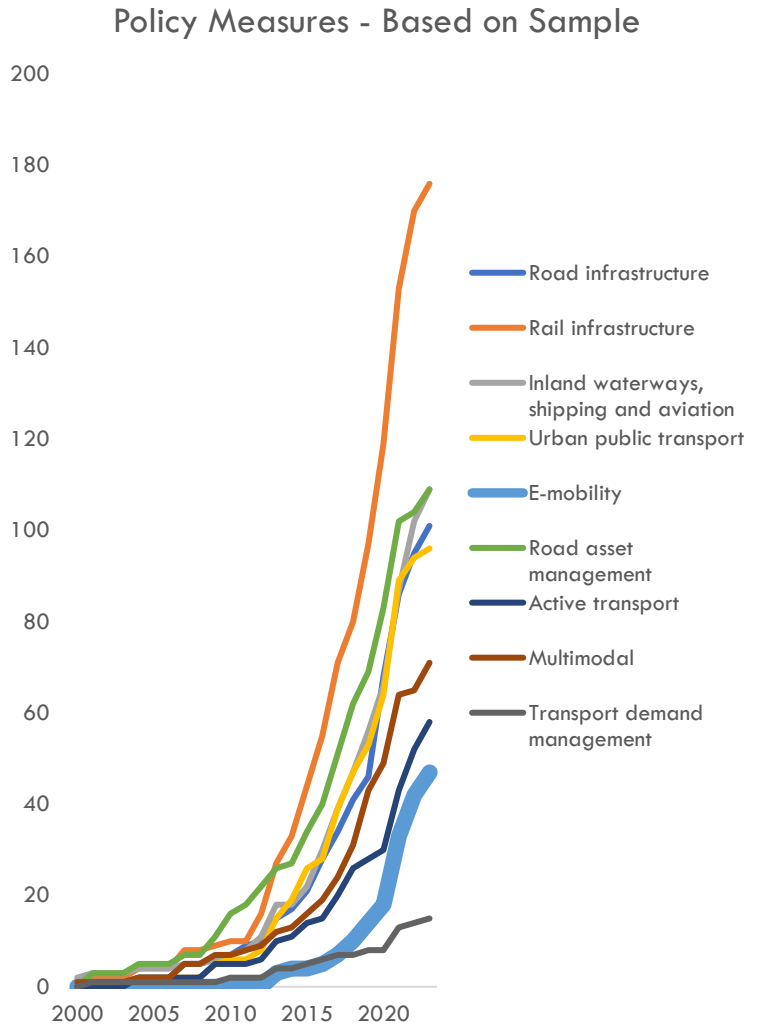




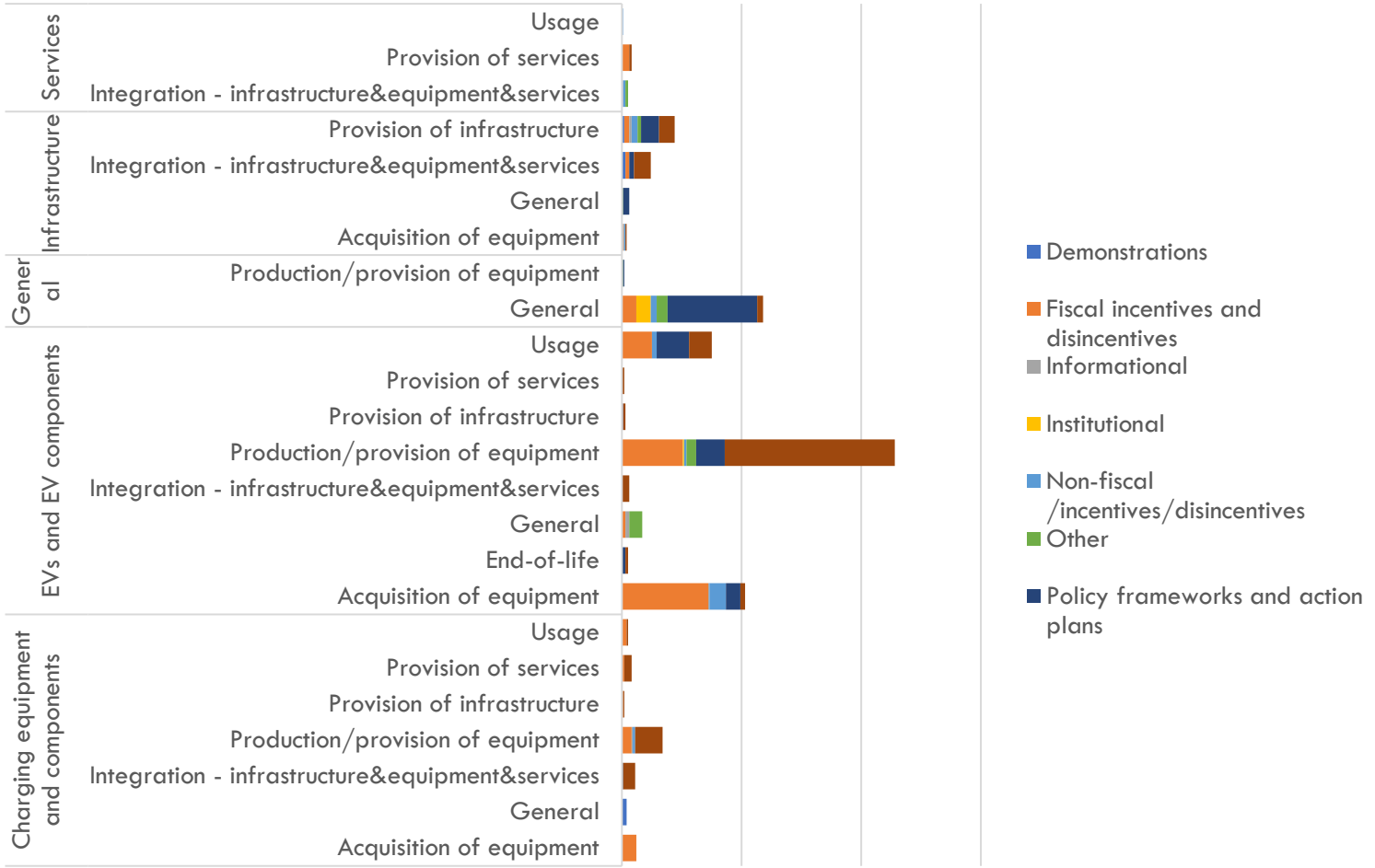
Source: Ember (2023)

E-mobility Ambitions and Measures

Country	Target	Type	Type2
Afghanistan	By 2030 10% of all new light and heavy vehicles entering the fleet must be based on EV and alternative fuel technology	sales-based	percentage
Bangladesh	Mujib Climate prosperity plan also targets for 30% of registered vehicles will be EV by 2030	stock-based	percentage
Bhutan	50 percent of vehicle fleet in the country is converted to clean and eco-friendly technology by 2030.	stock-based	percentage
Brunei Darussalam	all passenger vehicles be electric by 2035	stock-based	percentage
	60% total vehicle sales target by 2035	sales-based	percentage
China	72% share of NEVs in national urban public transport stock and 20% in logistics distribution stock by 2025	stock-based	percentage
India	2030, it expects 70 percent of all commercial cars, 30 percent of private cars, 40 percent of buses, and 80 percent of two-wheeler and three-wheeler sales to be electric	stock-based	percentage
Indonesia	two million electric vehicles (EV) by 2025	stock-based	absolute
	50,000 ICE 2wheelers to be converted to electric by 2023	stock-based	absolute
	13 million electric 2Ws and 2.2 million electric cars by 2030,	stock-based	absolute
Japan	Green growth strategy aims to achieve 100% EV sales for passenger cars by 2035	sales-based	percentage
Lao PDR	30% vehicles (2-wheelers and passengers' cars) to be EVs	stock-based	percentage
Malaysia	125,000 EVs on the road by 2030	stock-based	absolute
Nepal	EV to comprise 25% of all private passenger vehicle sales by 2025 and 90% by 2030.	sales-based	percentage
	Similarly, it aims to reach a target of 20% for four-wheeler public passenger vehicles by 2025 and 60% by 2030.	stock-based	percentage
Pakistan	30% of all the passenger vehicle and heavy-duty truck sales by 2030, and 90% by 2040. It sets even more ambitious goals for two- and three-wheelers and buses; 50% of new sales by 2030 and 90% by 2040.	sales-based	percentage
Philippines	6.3M EVs until 2040	stock-based	absolute
Republic of Korea	By 2040, Korea plans to distribute 8.3 million electric vehicles and 2.9 million hydrogen vehicles by 2040	stock-based	absolute
Singapore	By 2050, these are the high scenario targets by type of vehicle : private (50%); taxis (60%); public buses (100%); private buses (50%); freight (50%); motorcyles and scooters (70%); BEV carsharing (100%)	stock-based	percentage
Sri Lanka	Replace all state-owned vehicles with electric or hybrid models by 2025 and all private vehicles by 2040	stock-based	percentage
Thailand	"30 by 30" policy, targeting 30% of the domestically produced vehicles to be zero-emission by 2030	production-based	percentage
Viet Nam	By 2030, the government aims for EVs to account for 10% of all new vehicles sold in Vietnam	sales-based	percentage



Tracking E-mobility Policy Measures

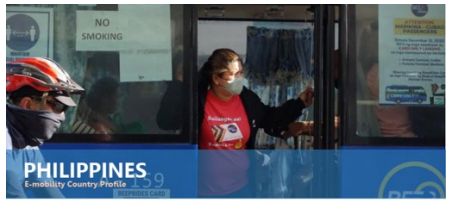


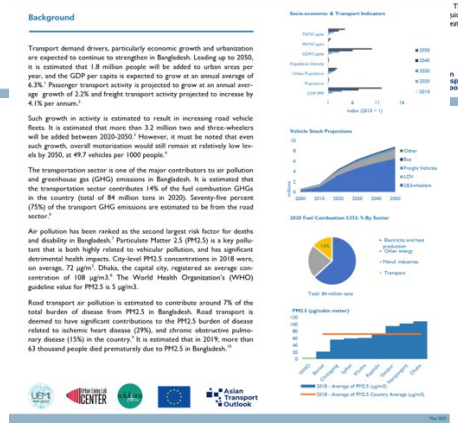
- Significant attention towards supporting the acquisition of EVs
- Policy measures on charging, and integration need to be bolstered
- End-of-life policy measures need to be instituted
- Measures targeting institutional capacities, set-ups for transition can be ramped up

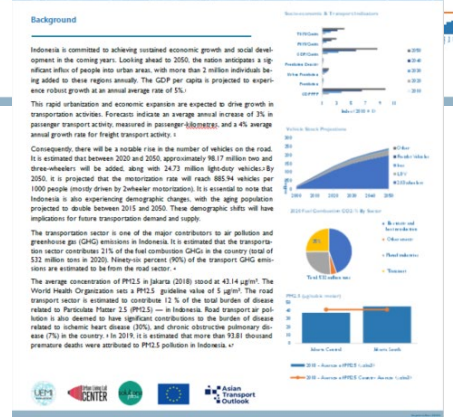
Summary

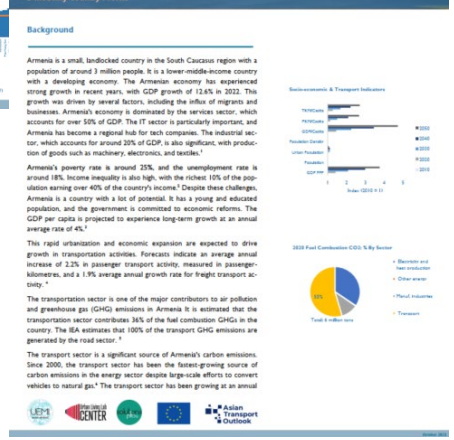
- E-mobility can deliver significant benefits towards decarbonising + air pollution mitigation
- Progress at varying pace and magnitudes being observed in the region
- Need to contextualize e-mobility in sustainability hierarchy
- Various challenges from a socio-technical system standpoint need to be addressed
- E-mobility emphasizes the importance of an integrated approach

E-mobility Profiles









emobility.tools

https://asiantransportoutlook.com/

UNEP E-Mobility as a Driver for Change project - Towards a **gender** transformative and just transition to electric mobility.

The project is embedded in UNEP's Global Electric Mobility Programme

- The goal of the 10 minute survey is to map electric mobility stakeholders, players, and projects around the world and to compile resources on how to improve the gender inclusiveness of E-mobility projects.

- Looking to identify knowledge gaps on gender and E-mobility; enhance gender mainstreaming in global, national and local E-mobility initiatives and gather insights for an international Gender and E-mobility baseline report.
  More information: heather@heatherallen.co

SCAN ME

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