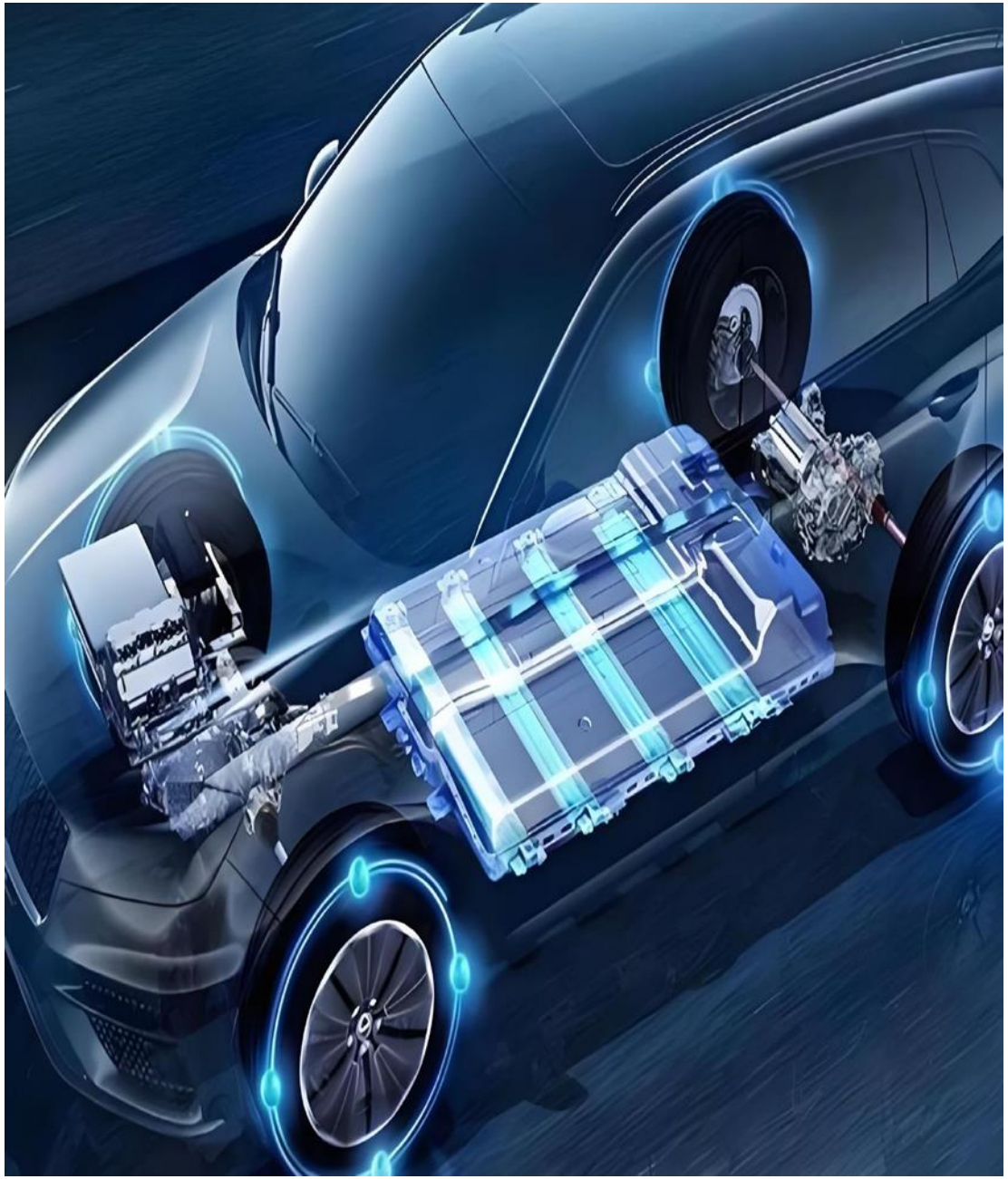
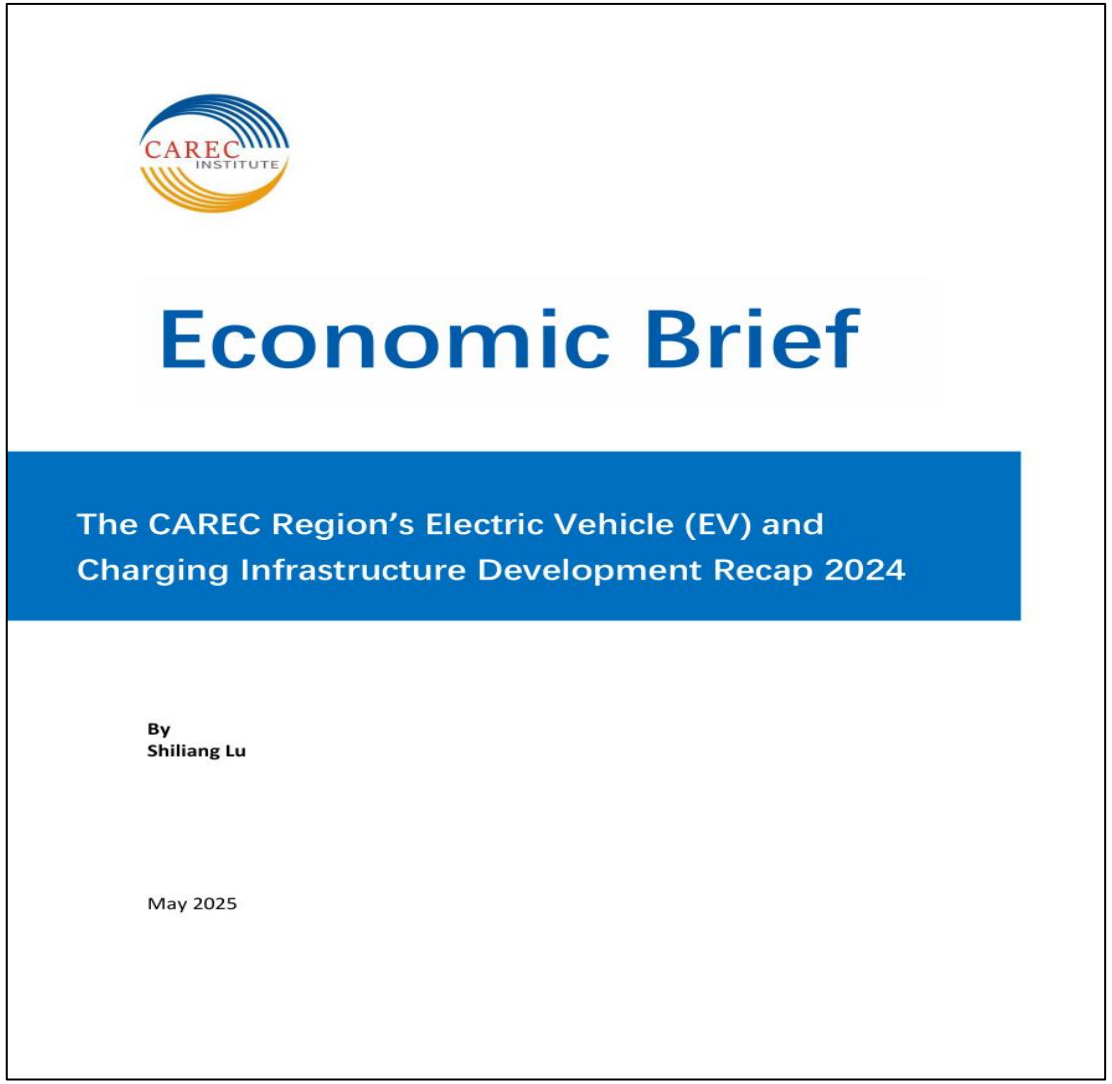
Promoting Electric Vehicle (EV) Deployment in the CAREC Region

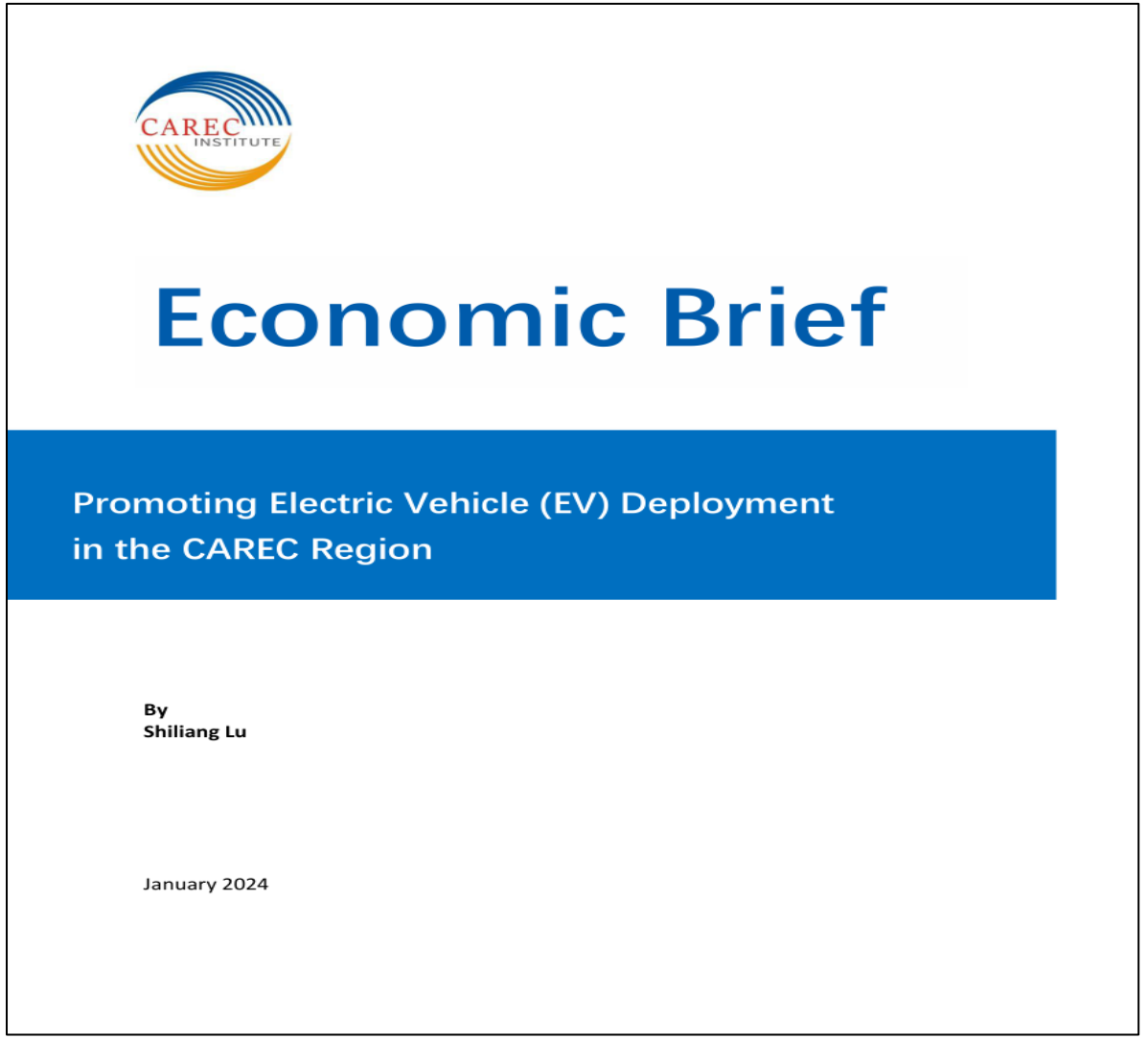
Shiliang(Tim) LU
Research Specialist, CAREC Institute
11 September 2025

Email: timl@carecinstitute.org





https://www.carecinstitute.org/publications/accelerating-electric-vehicle-adoption-in-the-carec-region-insights-from-the-2024-economic-brief/



https://www.carecinstitute.org/publications/economic-brief-promoting-ev-electric-vehicles-ev-deployment-in-the-carec-region/

Background: climate change

To address climate change issues, countries have taken various measures, including:

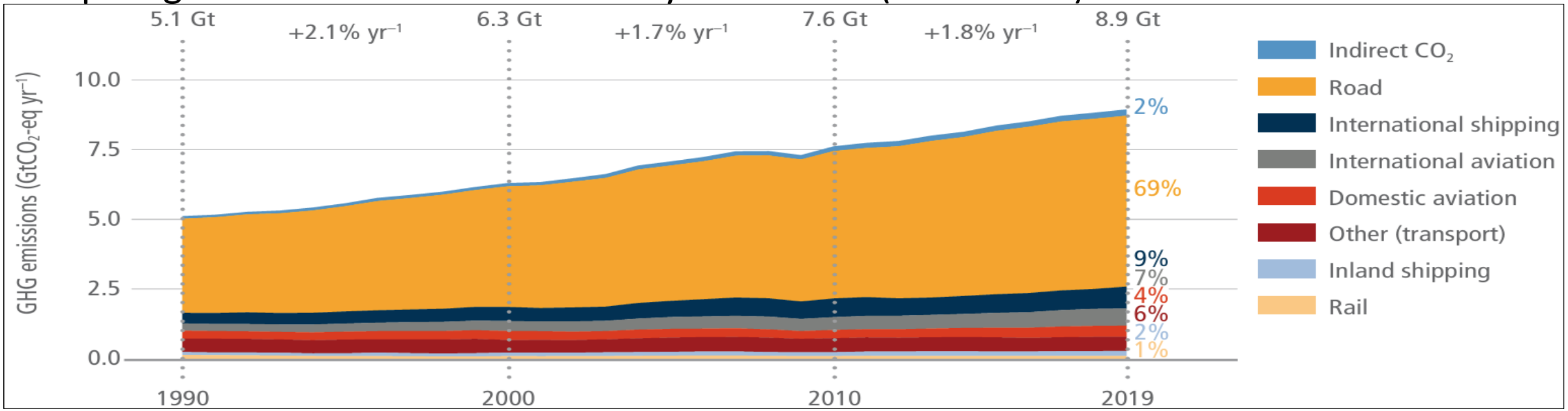
- submission of NDCs/INDCs every five years
- acceleration of energy transition to renewables
- encouragement of green development

…

Background: transport-induced GHG emissions

"Transport contributes over 1/3 of global CO2 emissions out of all end-use sectors, with its average growth rate increasing faster than any other sectors from 1990-2022 except for industry." — International Energy Agency (IEA)

Transport global GHG emission trends by subsectors (1990-2019)

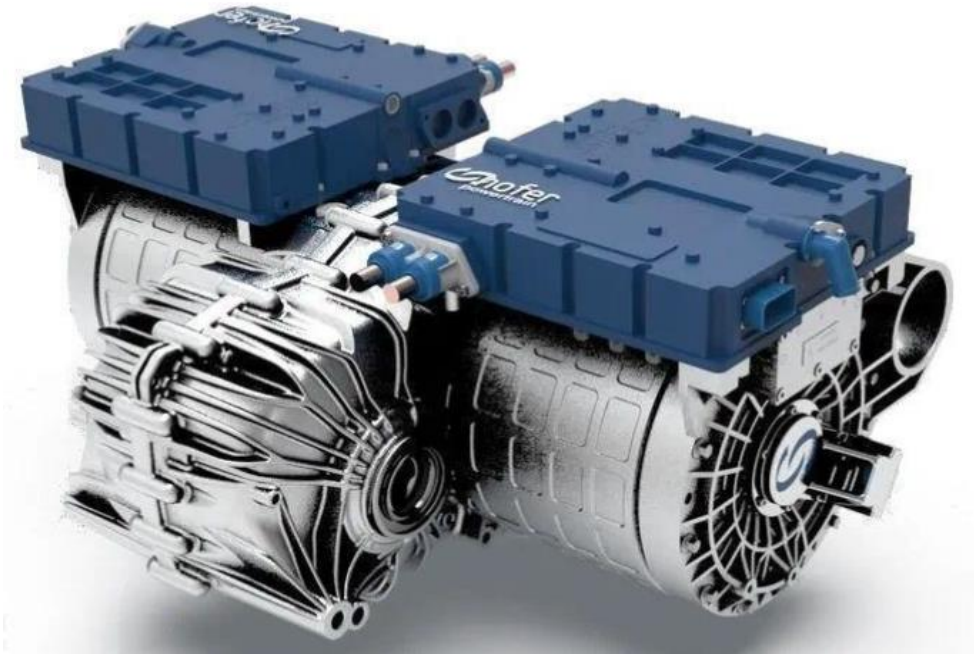


Source: IPCC, Climate Change 2022: Mitigation of Climate Change

Solution: deployment of electric vehicles

Internal Combustion Engine Vehicle (ICEV)

Electric Vehicle (EV)



Research questions

1. To what extent GHG emissions from the transport sector is significant for the CAREC countries?

2. What is the progress of EV adoption and its infrastructure deployment in the CAREC region?

3. Where do the EVs of the CAREC countries come from?

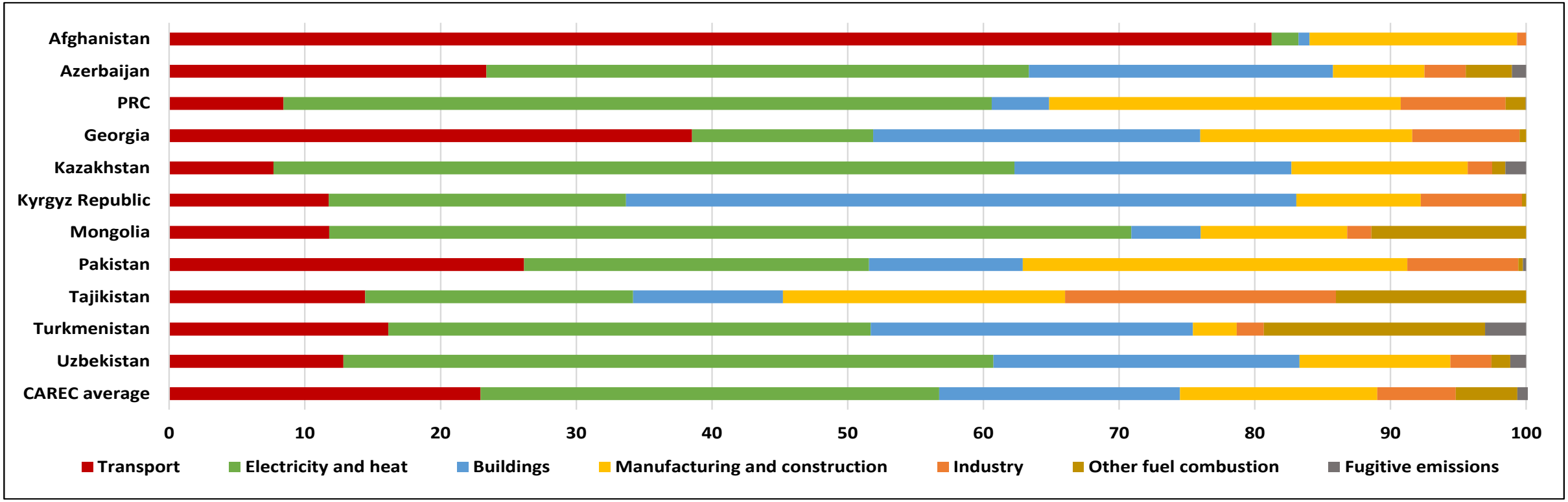
4. How many EVs does the PRC export to the CAREC countries?

5. What should the CAREC countries consider when building EV infrastructure?

Finding 1

Average CAREC CO2 emissions from the transport sector accounted for almost 1/4 of the total CO2 emissions from all sectors.

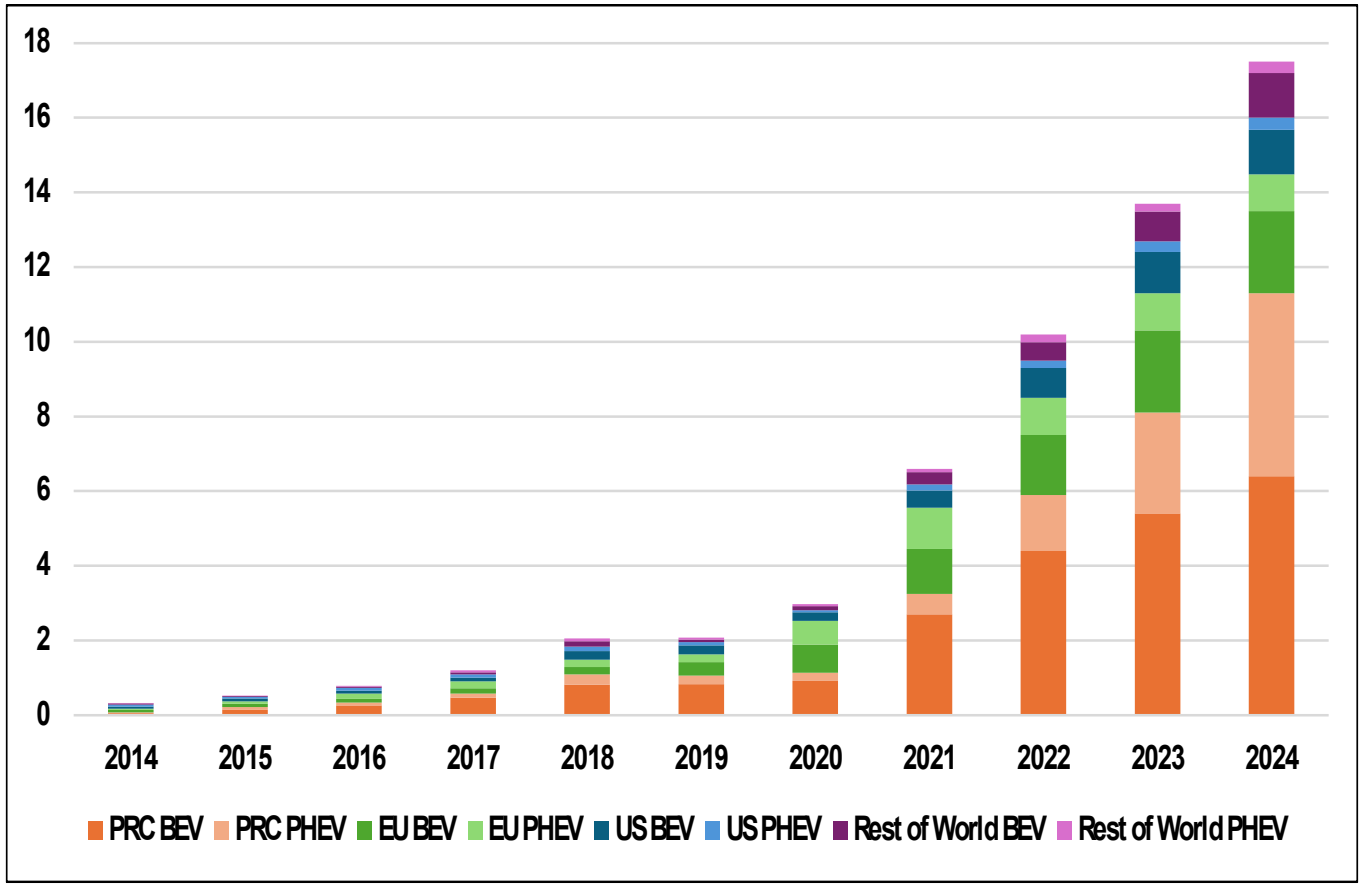
Annual CAREC CO2 emissions by sector (excluding land-use change and forestry), in % of total CO2 emissions, 2019



Source: Our World in Data; author's calculations.

Finding 2-1 The transition to e-mobility continues to flourish in the world.

Global passenger EV sales, 2014-2024, million

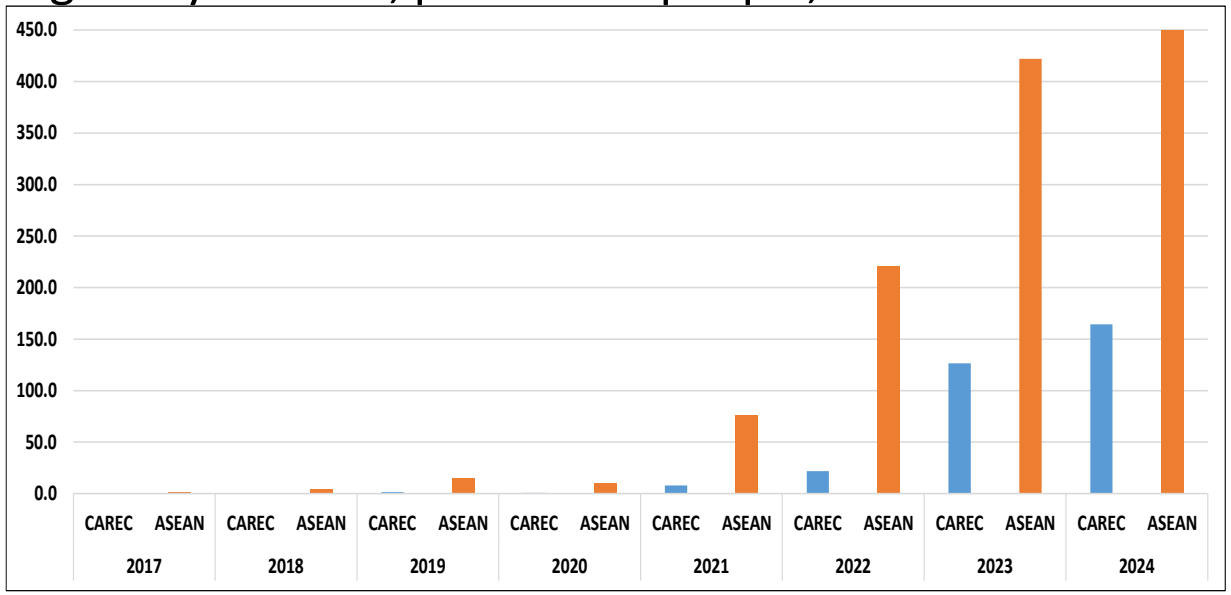


Source: IEA, Global EV Outlook 2025; author's compilations.

- Global EV sales exceeded 17 million units. (+25%)
- The PRC's EV sales topped 11 million units. (+40%)
- Sales of EVs in the US increased to 1.6 million units. (+10%)
- EV sales in the EU stagnated but the share remained around 20%.
- Rest of the world saw a record increase of EV sales, particularly in Asia and Latin America.

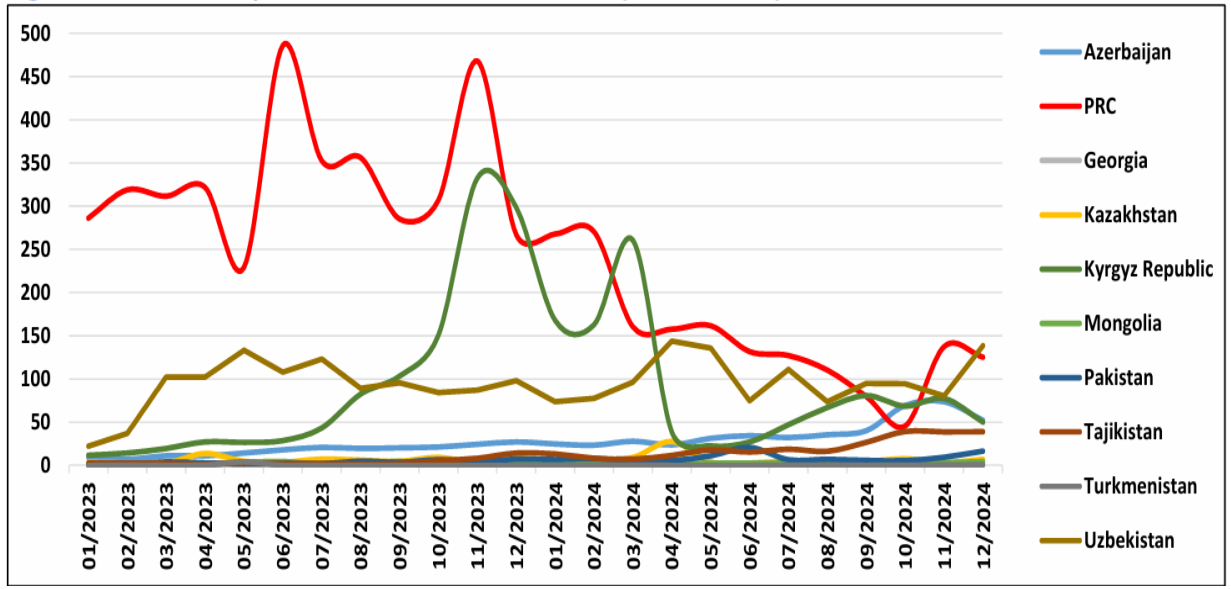
Finding 2-2 EV deployment in the CAREC region is in early stages, but the market is growing.

The number of EVs exported to the CAREC and ASEAN region by the PRC, per million people, 2017-2024



Source: General Administration of Customs, PRC; author's calculations.

Value of imported EVs in CAREC countries (USD, mln)



Source: Trade Map; author's calculations.

Despite big difference in total numbers, the annual growth rate of the EVs exported by the PRC to the CAREC region was higher than to the ASEAN region in 2018, 2019, 2021, 2023 and 2024 at 271.4%, 303.1%, 989.4%, 491.7% and 30.0%, respectively.

- Including the PRC, the total value of imported EVs by the CAREC region was USD 1.6 billion less in 2024 than in 2023.
- Excluding the PRC, the total value of imported EVs by the CAREC region was USD 599 million more in 2024 than in 2023.

Finding 2-3 Pros and cons of the CAREC countries to shift towards EVs

SWOT analysis of the CAREC region's (excluding the PRC) EV deployment

Strengths	Weaknesses
➢ Clear targets for road transport decarbonization, combined with a variety of tax and other incentives. ➢ Abundant green energy resources such as solar, wind, and water (especially in Georgia, the Kyrgyz Republic and Tajikistan). ➢ Rich in critical minerals needed for EV production. ➢ Steady growth of population with a large group of young generations.	➢ Lack of specific supporting policies for EV transitions in many member economies. ➢ Inefficient power system. ➢ Inadequate supplies of charging infrastructure. ➢ Limited income for the majority of population to purchase EVs. ➢ Low R&D capacity on EV technologies.
Opportunities	**Threats**
➢ Geographical proximity to key EV exporters. ➢ Increasing demand of critical minerals for EV and battery production. ➢ Battery as reservoir capacitors to smoothen peak and valley of the grid.	➢ Instability of electricity supply, with a high degree of seasonality in multiple hydro-rich economies. ➢ Low hydrocarbon prices, coupled with high fossil-fuel subsidies. ➢ Extreme temperature in winter in some areas. ➢ Unfamiliarity with EV technology.

Source: author's presentation.

Finding 2-4

Many CAREC countries have set clear targets and incentives to promote EV adoption.

EV targets of the CAREC countries, by 2030

AFG	AZE*	PRC	GEO	KAZ	MON	PAK	UZB*
10%	Zero emission	40-50%	50%	30%	13%	30%	30%

* Azerbaijan is a member of "Accelerating to Zero (A2Z) Coalition", which is committed to have all new vehicle sales being zero emission by no later than 2040; Uzbekistan targets 30% of its new vehicles sales to be EVs by 2035.

Tax exemptions to promote e-mobility

Import duty	Excise tax	Value added tax	Purchase tax
BEVs in Georgia, Kazakhstan, the Kyrgyz Republic, Tajikistan and Uzbekistan	BEVs in Azerbaijan, Georgia, Tajikistan, Uzbekistan, and Pakistan (including imported and locally produced EVs)	BEVs in Azerbaijan and Tajikistan	The PRC (extended for 3 times, in 2017, in 2020 and 2022, respectively)

Source: IEA, Global EV Policies; ADB, Asian Transport Outlook; SLOCAT, E-Mobility Trends and Targets

Finding 2-5

Charging infrastructure is still scarce in most CAREC countries; however, a national target or ambition has been announced.

Number of charging stations, as of date

AZE	PRC	GEO	KAZ	KGZ	MON	PAK	TJK	UZB
195 (Feb. 2025)	16.1 mln* (Jun. 2025)	150* (Dec. 2024)	426 (Dec. 2024)	150+ (Aug. 2024)	70 (Jan. 2024)	20+ (May 2025)	136** (Jun. 2024)	1,399 (Jul. 2025)

* It refers to the number of charging points. ** The number of charging stations in Dushanbe

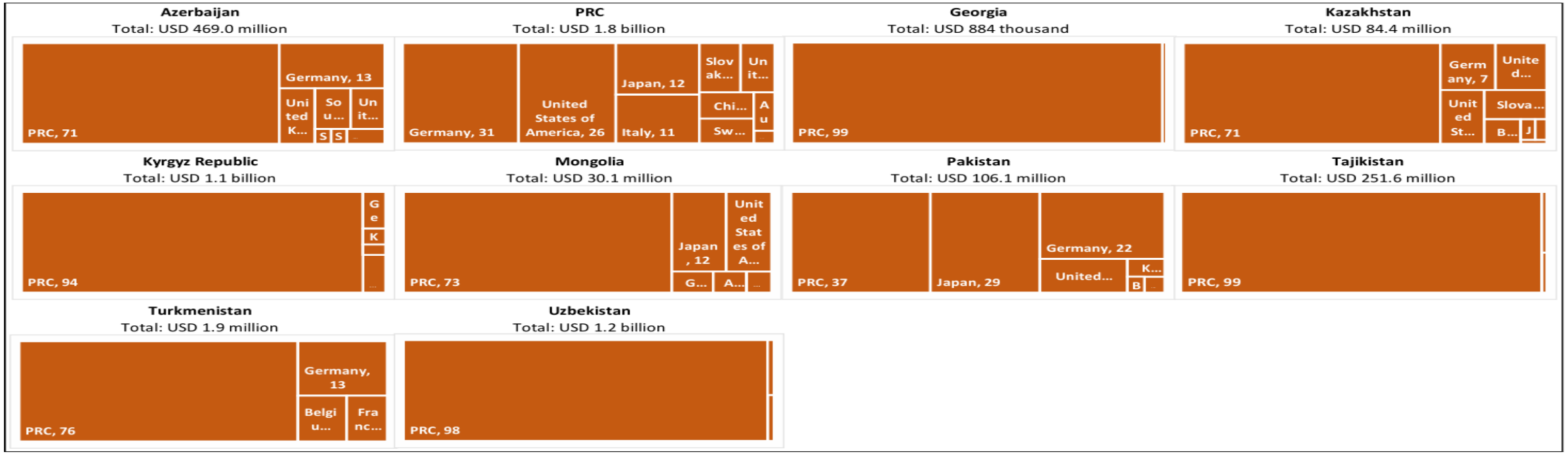
National EV charging infrastructure target/ambition

PRC	GEO	KAZ	MON	PAK	TJK	UZB
Build charging infrastructure to meet over 20 million units of EVs by 2025.	Build additional 200 EV chargers throughout Tbilisi.	Increase the value of NEVs and charging equipment to USD 10 billion by 2025.	Establish a network of 1,000 charging stations.	Establish 3,000 EV charging stations by 2030.	Build at least 40 units of charging infrastructure with high capacity (>22kW), 850 with medium capacity (≤22kW).	Install 32,400 electric charging stations by 2025.

Source: Online open sources; author's compilation.

Finding 3 The PRC is the main source of EV imports for most CAREC countries.

Share of EV imports by CAREC countries' trading partners, 2024



Note: Mirror data for the Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan.
Source: Trade Map; author's calculations.

- The PRC remained the largest source of EV imports for almost all CAREC countries.
- Other major EV exporters to the CAREC region include Germany, the US, and Japan.

Finding 4-1 The PRC's EV exports were robust globally but underwent a structural change.

Total number of NEVs exported from the PRC

	Units (mln)	Growth rate
2022	0.673	120.2%
2023	1.203	77.6%
2024	1.284	6.7%
Jan.-Jul. 2025	1.308	84.6%

Number of NEVs exported from the PRC, by type

	Units (thous.)		Growth rate	
	BEV	PHEV	BEV	PHEV
2022	609	68	129.2%	63%
2023	1102	101	80.9%	47.8%
2024	987	297	-10.4%	193.7%
Jan.-Jul. 2025	833	475	50.2%	208.4%

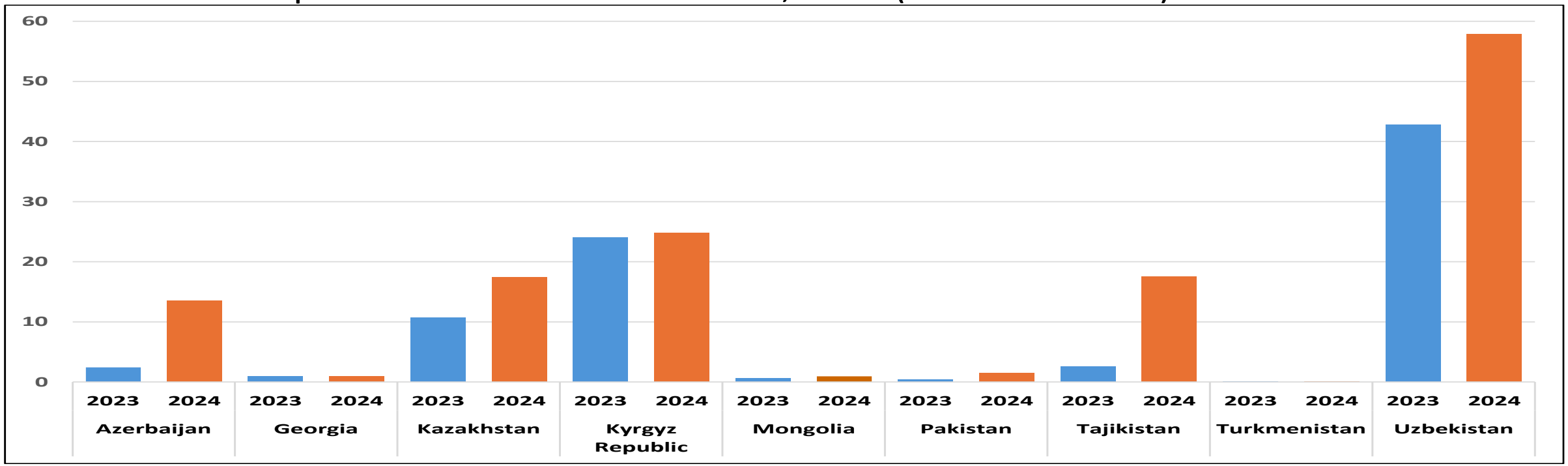
Source: CAAM; author's compilation.

- Production and sales of NEVs remained the 1st in the world in 2024.
- The number of NEVs exported during the first seven months of 2025 has exceeded the total number exported in 2024.
- Growth of BEV exports rebounded, while growth of PHEV exports continued shooting up.
- By country, Belgium was the largest Chinese EV receiver in the world, followed by Brazil, the UK, Thailand, the Philippines, etc.

Finding 4-2 The PRC's EV exports to the CAREC countries increased.

The PRC exported 134,501 units of BEVs and PHEVs to the CAREC countries in 2024, accounting for 10.5% share of its total NEV exports to the world.

The PRC's NEV exports to the CAREC countries, 2024 (thousand units)



Note: The data were compiled based on HS code 870240, 870360, 870370, 870380.

Source: The General Administration of Customs of the PRC; author's compilations.

Policy implications for the CAREC region

- ✓ Formulate specific action plans to materialize the targets set.
- ✓ Strengthen domestic business environment and provide more preferential incentives for foreign investors; integrate more local automakers and infrastructure manufacturers into the global value chains.
- ✓ Incrementally phase out the fossil-fuel subsidies and shift the focus more on renewable energies.
- ✓ Modernize grid networks and take full advantage of the functions of batteries as reservoir capacitors through V2G technology.
- ✓ Join in international initiatives on electromobility.
- ✓ Switch the fleets to electric ones in public transport and government sectors.

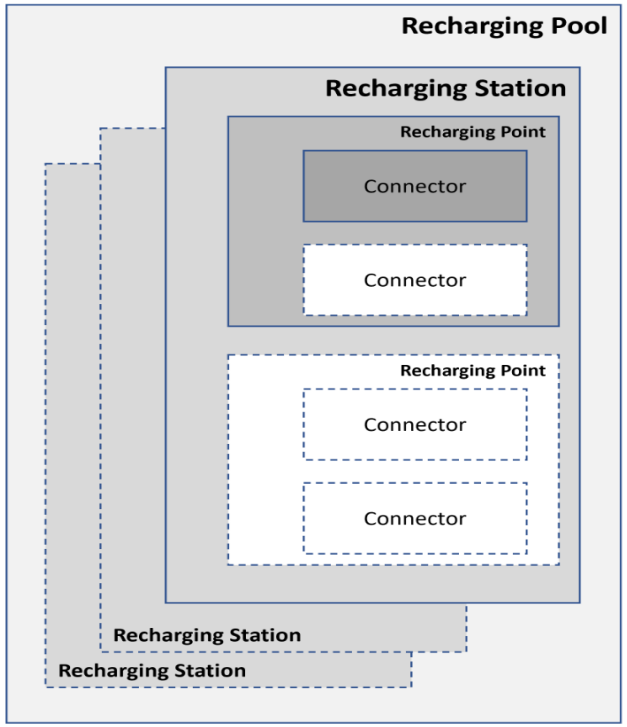
Policy implications for the CAREC region

- ✓ Equip more EV infrastructure also along the highway and in lower tier cities.
- ✓ Provide regular maintenance and after-sale services for the charging infrastructure.
- ✓ Develop charging information sharing platforms.
- ✓ Cultivate local talents for EV industry through cross-border cooperation.

…

Research limitations

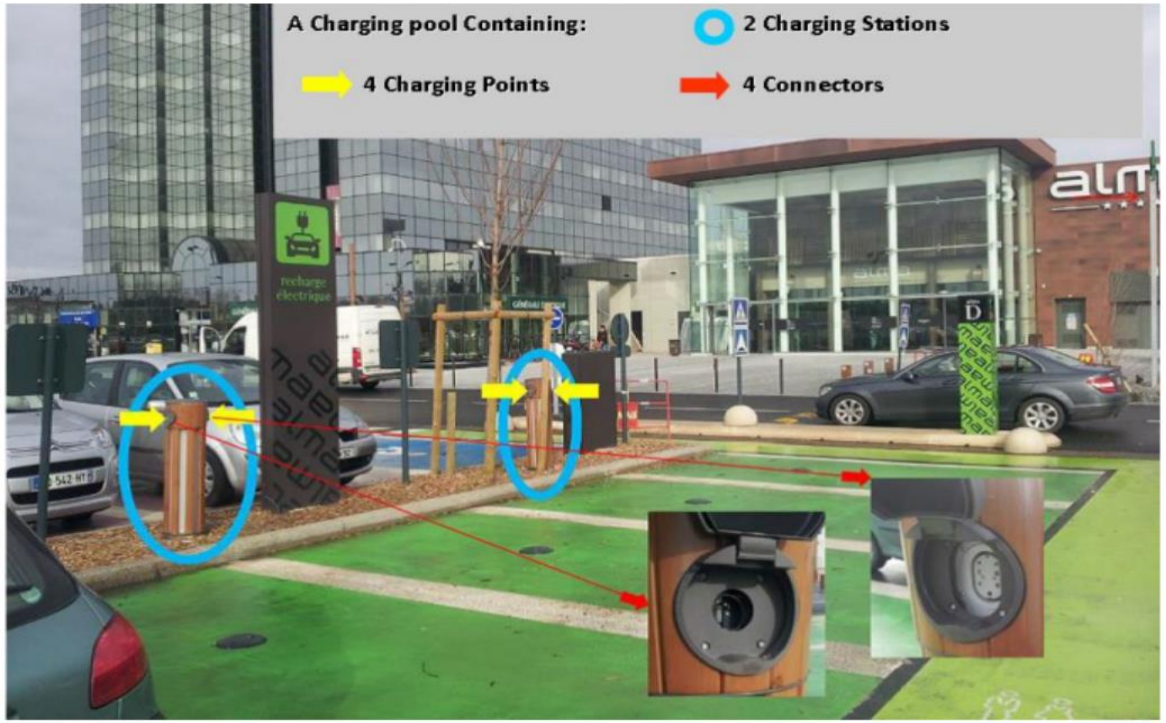
- Definition of an EV varies among countries.
- Naming of EV infrastructure is different.
- Data accessibility and reliability issues still exist.



- A recharging pool can contain several recharging stations
- A recharging station can contain several recharging points
- A recharging point can contain several connectors
- Per recharging point not more than one connector can be active (used for EV recharging(at a time)

A recharging pool contains at least:
- 1 recharging station;
- 1 recharging point;
- 1 connector.

Here presented in total:
- 1 recharging pool;
- 3 recharging stations;
- 6 recharging points;
- 12 connectors.



Source: European Alternative Fuels Observatory
https://alternative-fuels-observatory.ec.europa.eu/general-information/recharging-systems

Thank you,

and looking forward to discussions!