



Asian Transport Observatory (ATO) – Building transport intelligence across Asia-Pacific

Adwait Limaye

Data and Policy Analyst

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asiantransportobservatory.org



52 Economies (ADB Members + Russia and Iran)

460 Urban Centers (412 Asia-Pacific, 48 International)

>50 Urban Centers with a detailed review



ATO National Database

Explore over 450 transport indicators from 51 economies divided across nine categories



ATO National Transport Policy Documents Database

Explore close to 1100 transport policy documents in Asia and the Pacific



ATO Urban Database

Explore more than 260 urban level transport indicators across nine categories



ATO Cost Database

Explore more than 1,300 transport-related projects and benchmark their costs within subregions or income groups in Asia and the Pacific



ATO Analytical Outputs

Read about analysis made using ATO transport data and policy information

Asian Development Bank (ADB) has Won the 2024 IRF Award for Environmental Stewardship for Asian Transport Outlook!

2024-10-18  Istanbul, Türkiye

 / [Updates](#) / [Asian Development Bank \(ADB\) has Won the 2024 IRF Award ...](#)



Pacific Sub-regional Observatory – Coming Soon!

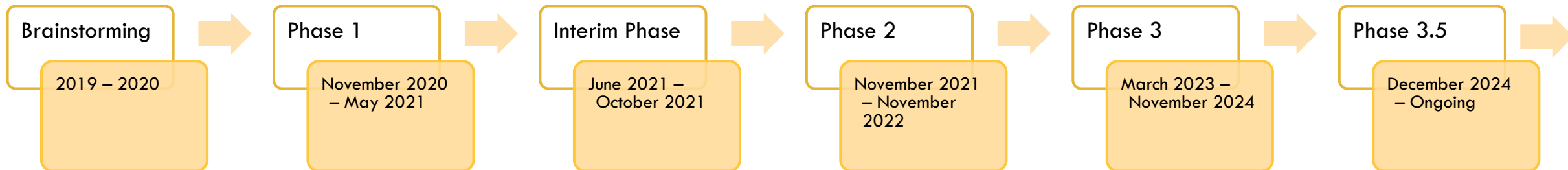
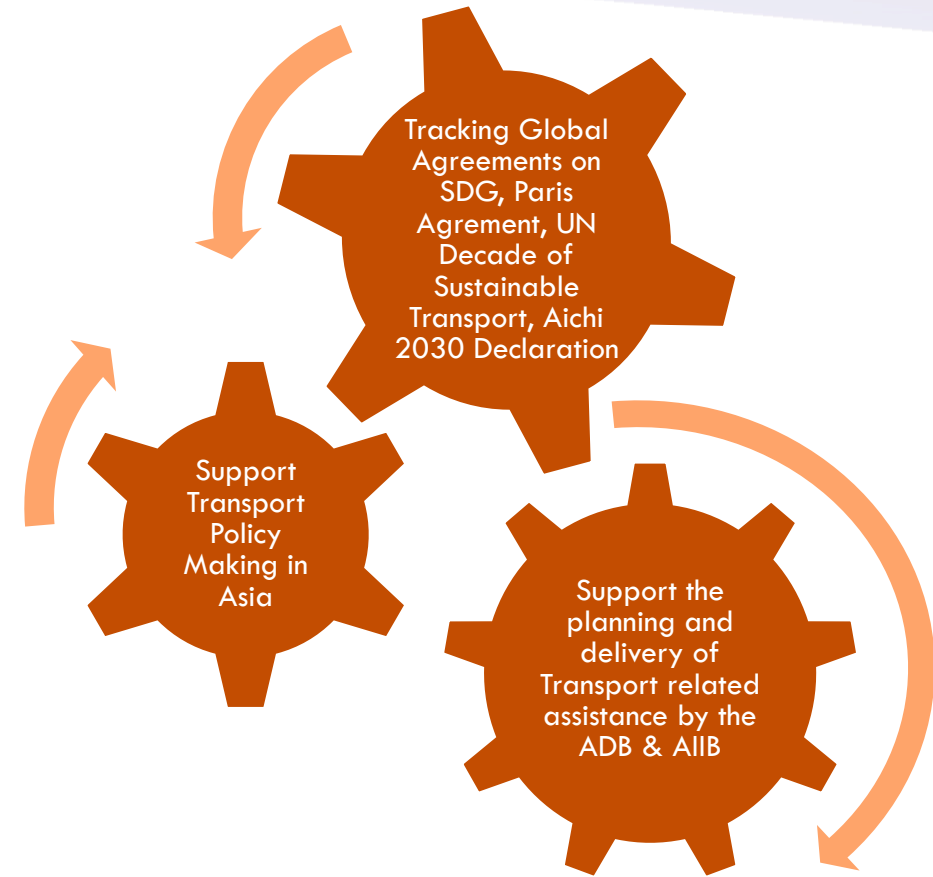
The World Bank has joined the Asian Development Bank (ADB) and the Asian Infrastructure Investment Bank (AIIB) in supporting the Asian Transport Observatory (Asian Transport Observatory). The World Bank's contribution centers on a Pacific sub-observatory within the platform, designed to equip Pacific Island Countries (PICs) with data and insights for investment planning and policy reforms that reduce emissions and advance sustainable transport. This work is supported through the Accelerating Decarbonization of the Road Transport Sector in PNG and the Pacific Islands Road Transport Programmatic Advisory Services and Analytics (PASA). The effort will draw on collaboration with Pacific transport partners and produce PIC-focused knowledge products, including country profiles and thematic reports at national and regional levels.



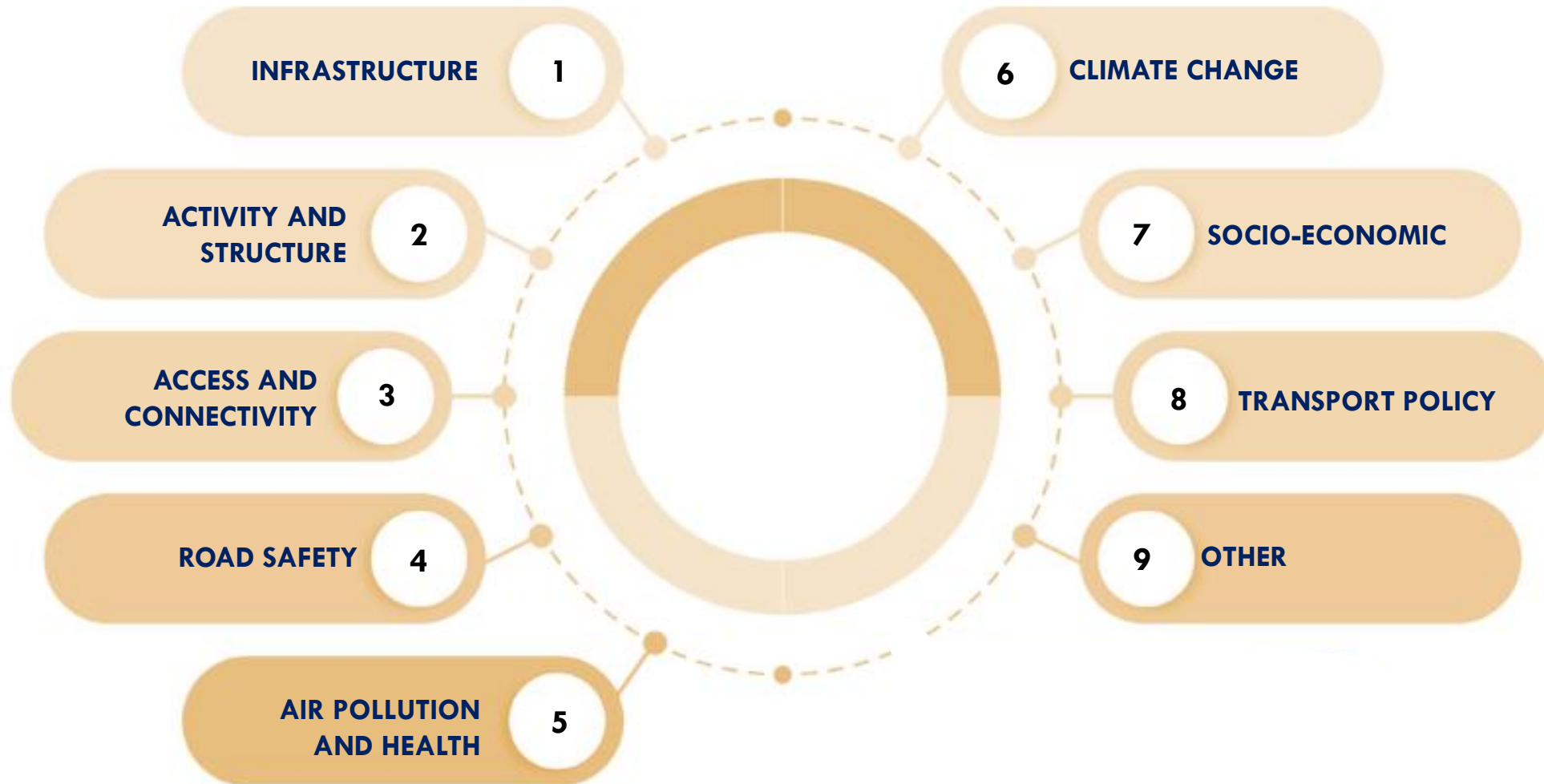
Asian Transport Observatory (ATO)

A Catalyst for Sustainable Transport in Asia

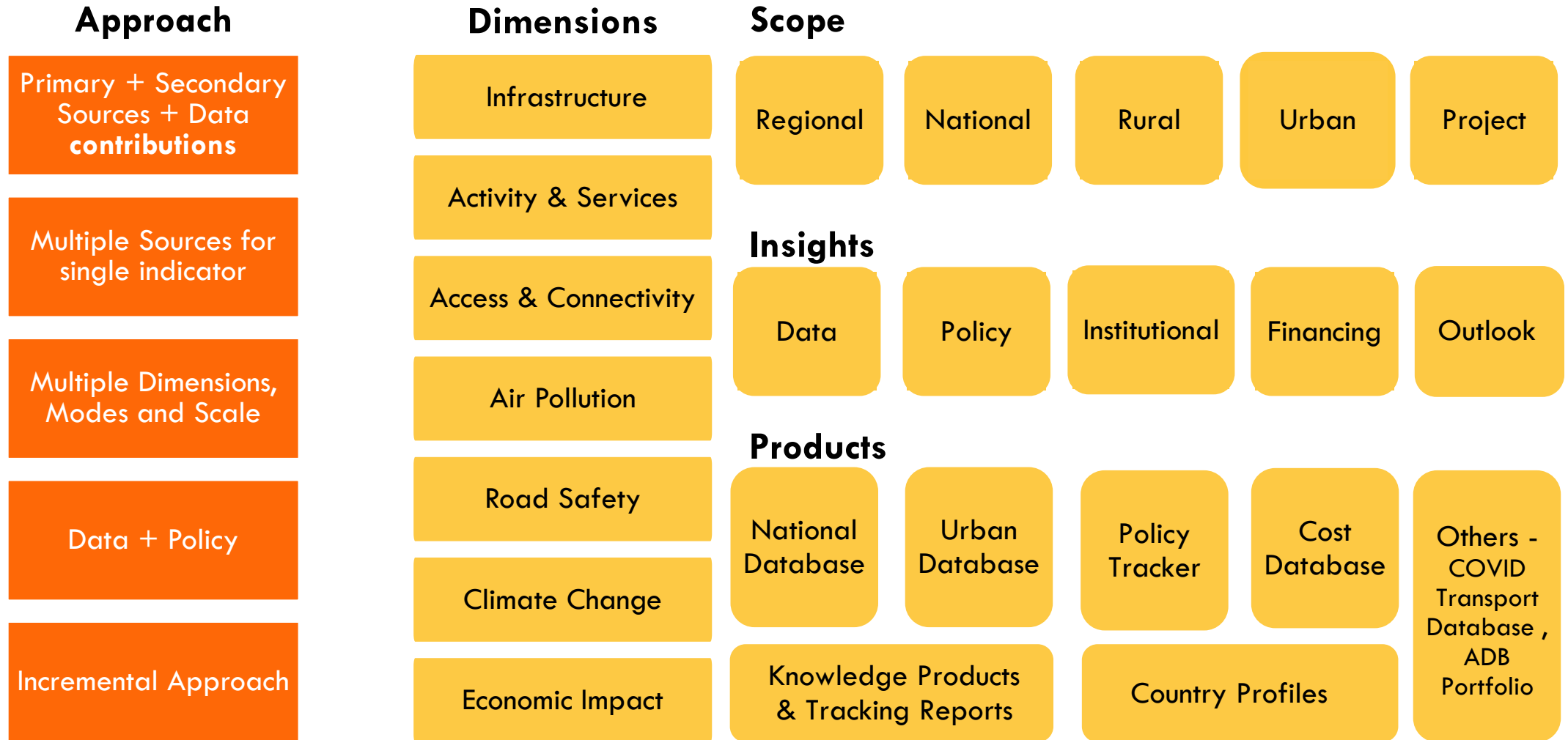
- 52** Economies (ADB Members + Russia and Iran)
- 460** Urban Centers (412 Asia-Pacific, 48 International)
- >50** Urban Centers with a detailed data
- 700** Indicators
- 430k** Data points



ATO - Dimensions

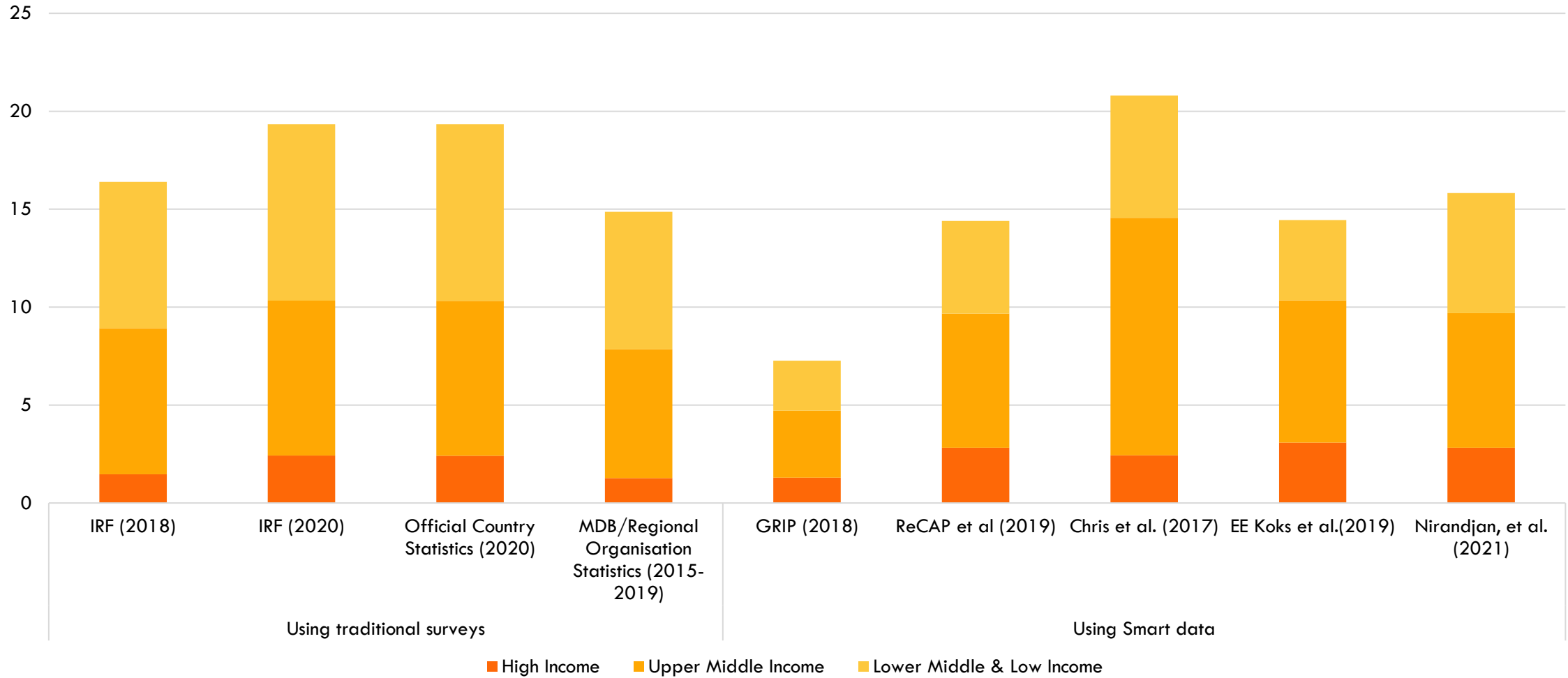


ATO adopts a unique Implementation Approach



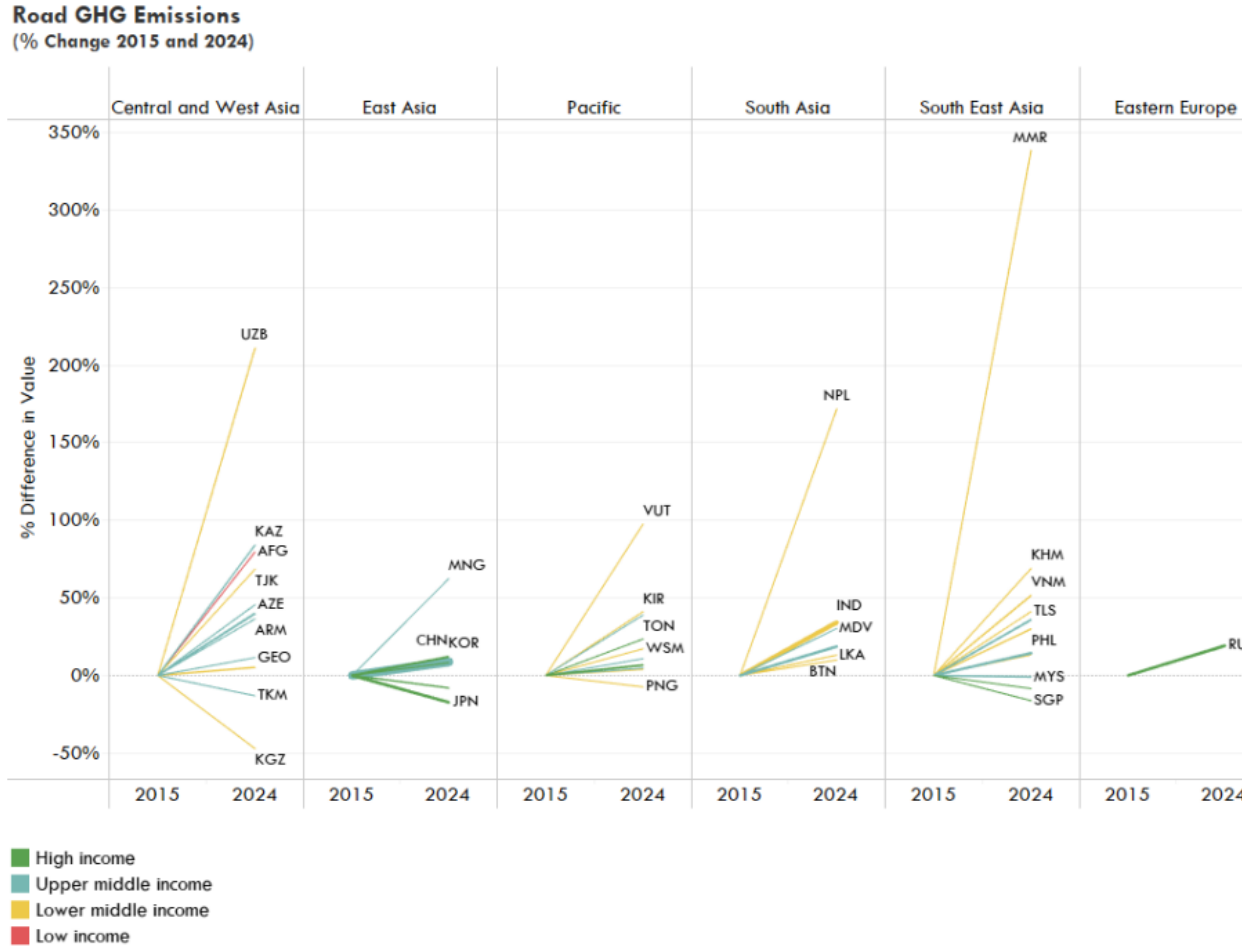
ATO facilitates data validation

Road Length (Million km)

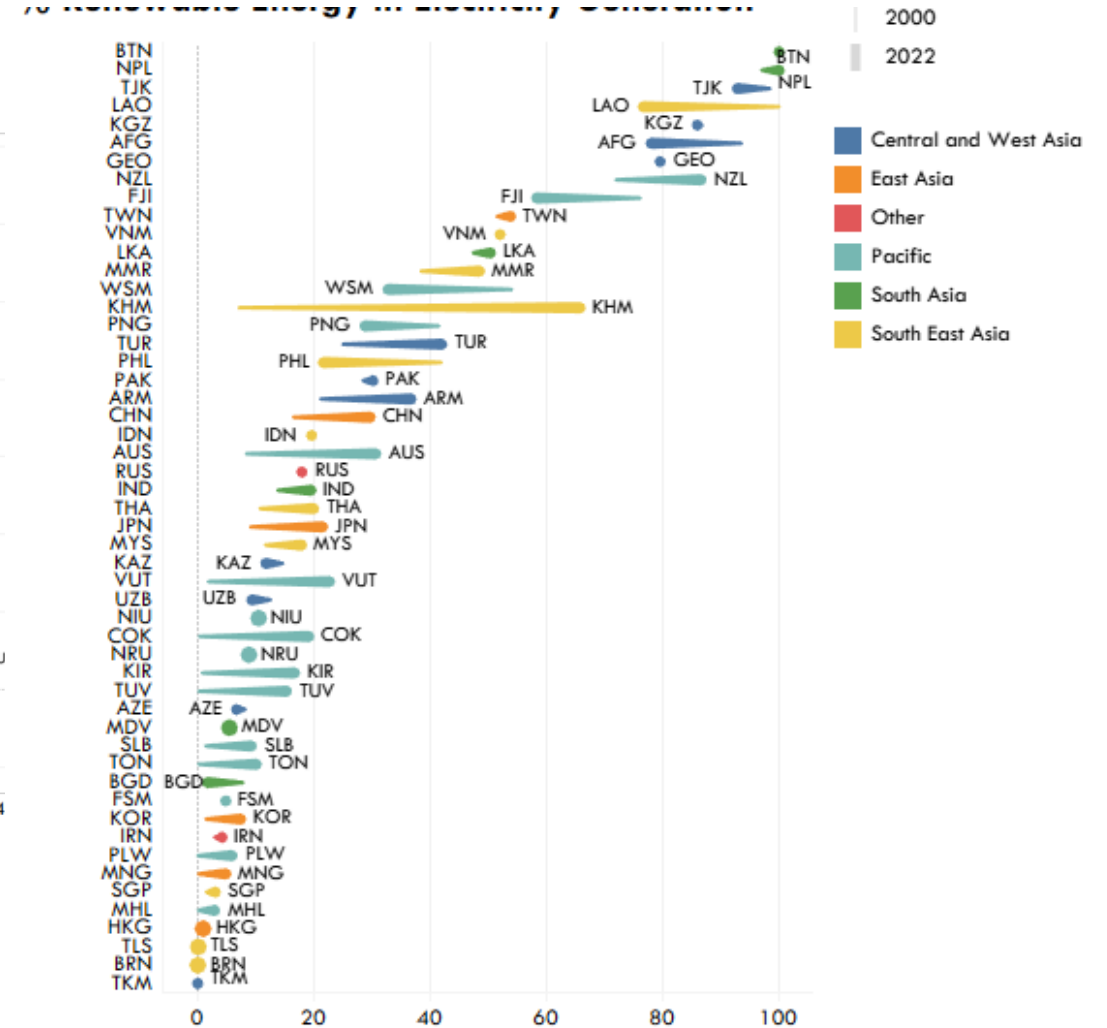


ATO facilitates benchmarking (National)

Road transport GHG Emissions Trajectories

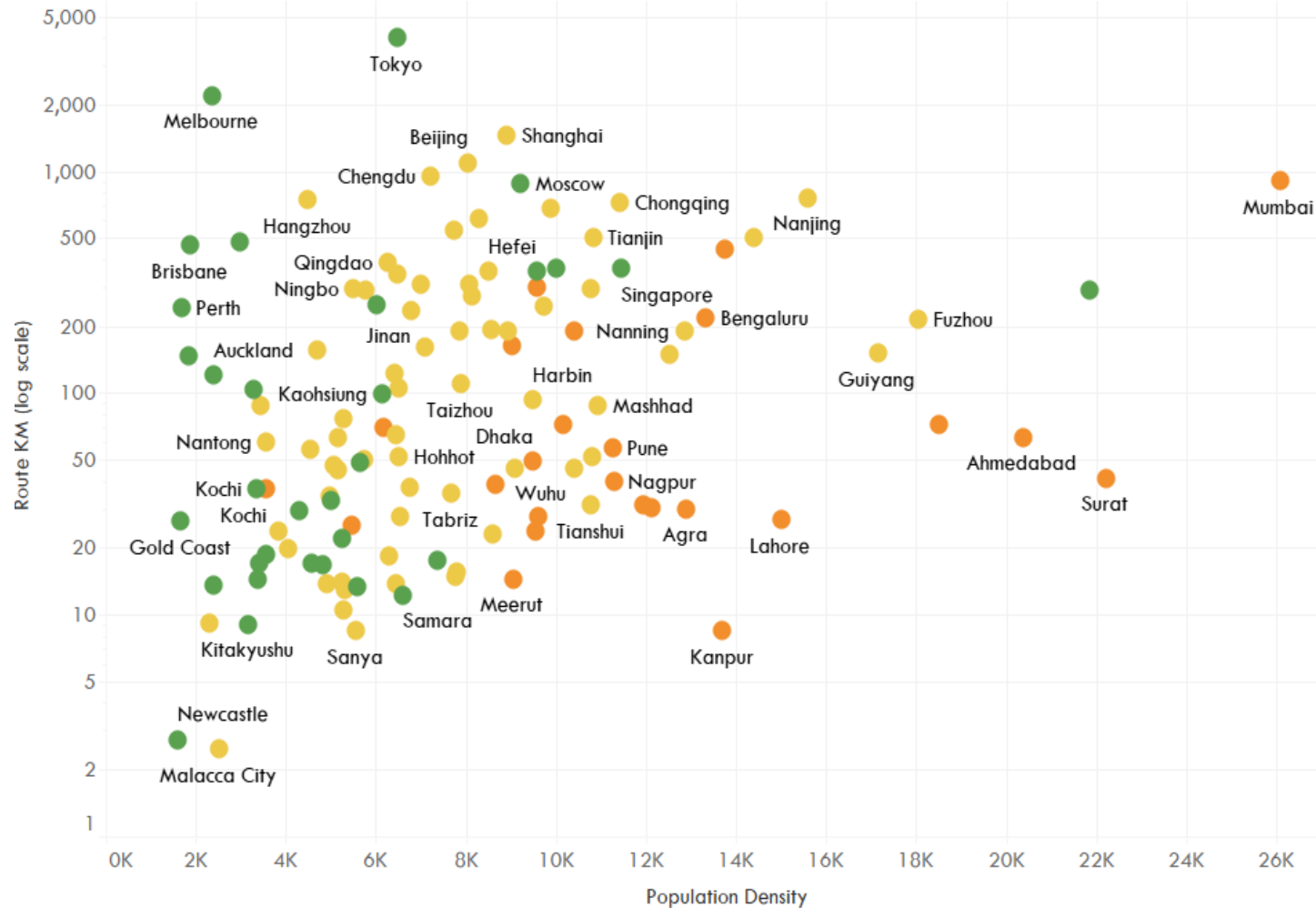


% Renewable Energy in Electricity Generation

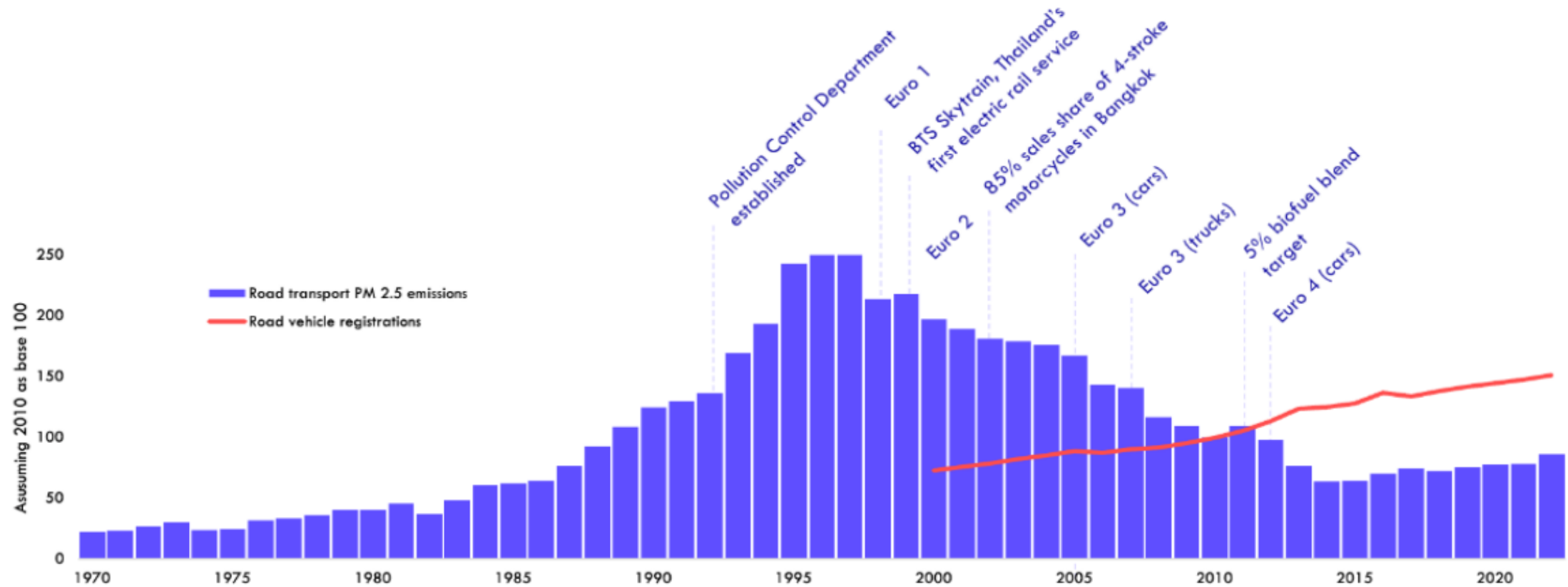


ATO facilitates benchmarking (Urban)

Rapid transit route kilometer vs. population density



ATO enables systematic assessment of how transport data aligns with policy



Thailand Road PM2.5 emissions and vehicle registrations

ATO is a one-stop solution for ~700 transport and related data indicators

ATO National Database [Walkthrough Video](#) – Sample indicator download

Asian Transport Observatory National Database

Indicator: Trade - Electric LDV (including hybrid-electric)

Indicator ATO Code: TAS-VEP-081

Description: Primary trade data including import and export by product or service code. Data is presented as total value of trade. This considers code/s 870340, 870350, 870360, 870370, 870380

Scope: National

Mode: Road

Sector: Passenger

Units: Thousand USD

Source: International Trade Centre (ITC)

Website: <https://www.trademap.org/>

[<< Table of Contents](#)

Economy Code	Economy Name	Import						Export				
		2017	2018	2019	2020	2021	2022	2023	2017	2018	2019	2020
AFG	Afghanistan				20	67		22				
ARM	Armenia	223	69	1,266	3,448	5,153	32,792	64,260	33			90
AUS	Australia	114,651	88,951	253,953	255,985	804,254	1,606,974	3,971,997	1,638	9,547	2,129	2,519
AZE	Azerbaijan		1,381	1,278	8,549	4,580	31,209	204,184			50	
BGD	Bangladesh	63,535	76,147	108,563	59,115	75,179	49,012	51,203			5	19
BTN	Bhutan	88	90	238	307	1,363	4,572	847			15	
BRN	Brunei Darussalam			3	156	2,021	1,086	2,015			68	
KHM	Cambodia	37	185	924	2,440	4,869	15,256	19,954		10		
CHN	People's Republic of China	1,909,103	1,663,345	3,498,353	1,917,699	2,907,745	3,560,263	3,989,259	223,674	329,444	961,049	2,551,611
COK	Cook Islands	92	11			3		10				

Capturing the main storylines – E-mobility profiles



Background

Nepal is a landlocked country nestled in South Asia, bordered by China to the north and India to the south, east, and west. It is renowned for housing eight of the world's ten tallest mountains, including Mount Everest. Covering an area slightly larger than 147,000 square kilometers, Nepal ranks as the 93rd country globally in terms of size. With a population of approximately 30 million people, it stands as the 48th most populous nation worldwide and is a significant cultural and natural hub in South Asia, known for its rich history, diverse cultures, and vibrant traditions.

Nepal's GDP per capita is projected to grow at long-term annual average rate of 6.2% (up to 2050). Nepal has a relatively low urbanisation rate, estimated to be at around 22% in 2023, compared to the sub-regional average in South Asia at 34%. Passenger transport activity is estimated to grow at 1.5% per annum up to 2050, while freight transport activity is estimated to grow faster at 4.8% per annum over the same period.¹ Due to the lack of viable fossil fuel reserves, Nepal imports all its oil needs, and spends at least 1.5 billion USD per year on refined oil imports.²

The vehicle registration in Nepal has reached 5.2 million in 2022.³ Consequently, we can expect continued growth in the vehicle fleet. While Nepal's motorization index is still relatively low at 125 vehicles/capita, Nepal's motorization index has grown 25 times since 1990, and has exhibited the fastest growth in South Asia, and second only to China in the whole Asian region.⁴

The transportation sector is one of the major contributors to greenhouse gas (GHG) emissions in Nepal and is estimated to contribute about 44% of the total combustion GHGs in the country (total of 12 million tons in 2020). Ninety-nine percent (99%) of the transport CO2 emissions is from the road sector.⁵

In terms of ambient air pollution, the road transport sector is estimated to contribute 5.3 % of the total burden of disease related to Particulate Matter 2.5 (PM2.5) — in the country. Road transport air pollution is also deemed to have significant contributions to the burden of disease related to ischemic heart disease (25%), and more significantly to chronic obstructive pulmonary disease (41%) in the country.⁶ Kathmandu, which hosts around 845 thousand people, had an average of 37 µg/m³ of PM2.5 in 2020, which is at least 7 times higher than the WHO PM2.5 guideline value of 5 µg/m³.⁷



Electricity at a Glance

The Electric Vehicle Association of Nepal (EVAN) estimates that in 2018, 1 number of EVs had reached 45,000.⁸ Around the same time, it had been estimated that at least 10% of all new sales of cars were EVs. The Ministry of Finance reported that in 2022, there were 12,000 electric rickshaws that were registered in Nepal.⁹

The introduction of public transport came to Nepal in the 1970s, with the introduction of the electric trolley bus in Kathmandu and went on up to the 1990s. It was also a trailblazer in terms of electrifying three-wheelers, as motor-powered rickshaws were introduced in the early 1990s. Rickshaws in Kathmandu Valley, were banned in the 1990s due to air pollution. The popularity of the rickshaws eventually led to the open-market manufacturing plans, and almost 40 charging stations. At least 10 were being supported by the industry in the early 2000s.¹⁰ In 2018, it is estimated that at least 700 electric rickshaws were running in the Kathmandu Valley.¹¹ These rickshaws faced challenges related to batteries, costs that came along with the battery requirements. The banning of rickshaws in Kathmandu also had an unintentional effect. To the surprise of the government, it provided compensation to the owners, allowing them to import petrol microbuses at lowered tariffs (160%), which had led many to replace their diesel temples with fossil-fueled microbuses.¹² The electric tempo industry essentially stagnated in 2000 but is now being revived through various initiatives, supported by the government. For example, it is working with entrepreneurs to develop new forms of e-rickshaws, as well as e-bus conversion.¹³ A project supported by the Migration Agency (Ministry of Physical Infrastructure and Transport; Ministry of Environment, Forest and Conservation; and Ministry of Finance, implemented by GIZ) in 2018 had more than 3,000 electric microbuses, as well as charging stations that by 2030, 85% of all new minibuses purchased in Nepal will be electric.¹⁴

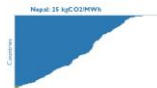
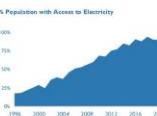
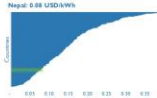
The government is also introducing e-buses in Nepal. Sajha Yatayat, one of the largest public transport service providers in the country had purchased 10 electric buses from China in 2021, with a grant from the government, but have had issues in deployment due to lack of charging infrastructure challenges in the Kathmandu Valley.¹⁵ Sundar, another operator, is also operating at least 4 electric buses in the Kathmandu Valley.¹⁶

The electric vehicle (EV) charging infrastructure in Nepal is undergoing rapid developments, with efforts to expand and modernize the network to support the growing interest in electric vehicles. As of February 2023, there are at least 350 charging stations in Nepal.¹⁷ These stations are mostly CCS2 chargers, while some of these stations by the National Authority also feature chargers for GB/T plugs. The private sector is playing a significant role in putting up these charging stations (Tata, 'surya', Deo-Group, MG Motors, Hyundai, BYD).

The average price of electricity in Nepal (2021) was estimated to be 0.08 USD/kWh.¹⁸ This ranks as the 53rd cheapest average rate globally. Ninety percent (90%) of the population has access to electricity in Nepal.¹⁹ In terms of the emissions impact of the electricity grid, the national average is estimated at 25 kgCO₂e emitted per MWh, which is the fourth cleanest grid in the world in terms of CO₂ emissions.²⁰ Nepal's electricity is mainly from locally-produced hydropower. The remaining requirements were fulfilled by importing electricity from India, mainly to balance the shortage of power in winter.

E-mobility Country Profile: Nepal

Charging Station Approximate Locations



E-mobility Country Profile: Nepal

Policy Measures: Highlights

In May 2019, the Prime Minister's Committee on Climate Change adopted E-E-E-E-mobility is being supported by various policies in Nepal such as its second (enhanced) NDC (2020) which mentions the following relevant targets and measures:²¹

- 25% of all private passenger vehicle sales (including 2-wheelers) and 20% of all four-wheelers public passenger vehicle sales will be electric by 2025
- 90% of private passenger vehicle sales and 60% of four-wheeler public passenger vehicles sales will be electric by 2030
- Develop 200 km of electric rail network by 2030
- Expand clean energy generation from 1,400 MW to 15,000 MW by 2030.

Its first Nationally Determined Contribution (NDC) issued in 2016 included electric mobility-related targets such as the following:²²

- Increase the share of EVs to 20% against 2010 levels by 2020
- Reduce fuel dependency by 50% by 2050 but promoting mass transport, coupled with energy efficient and electric vehicles
- Develop electric rail network by 2040.

The National Action Plan for Electric Mobility (2018) aims to halve Nepal's fossil fuel consumption by 2050. The import tariffs for EVs are significantly lower for EVs than their fossil fuel counterparts. It proposes three priority actions:²³

- Establishment of a dedicated unit / centre/ taskforce on electric mobility
- Establishment of a national program on electric mobility that encompasses various pillars such as: legislative support for EV adoption, raising public awareness; supporting consumer acquisition, among others
- Establishment of a national financing vehicle to co-fund e-mobility projects together with the private sector.

The 15th Five Year Periodic Plan (2019/20-2023/24) puts a target of 35% share of EVs in the fleet by 2023/24, and states that electric vehicles will be promoted, and appropriate tariffs will be fixed. It also mentions that charging stations will be gradually set up as needed with the participation from the private sector.²⁴

The Budget Speech 2022/23 states that an arrangement will be made to convert private and public petroleum-based vehicles to EVs. An arrangement for public procurement of EVs will also be developed.

- If a new industry of four-wheel electrical passenger vehicles is established for production or assembly, an arrangement is made to exempt 40 percent income tax for 5 years from the starting date of the transaction of the industry.
- 1% levied on customs duty on the raw materials or spare parts used by the industries manufacturing electric rickshaws and electric motorcycles or scooters
- Nepal Electricity Authority will operate charging stations at 50. The private sector will be encouraged to set up charging stations at petrol pumps.
- The use of electrical equipment and vehicles will be promoted emphasizing renewable energy including solar, wind, and biogas.

After the announcement of these incentives, Motery Pvt. Ltd. (Korean company) announced that it will establish an assembly plant in Bupal. Based on the Nepal Budget for 2022-2023, there had been an increase in excise duty for EVs that are 100 kW and above (30%, 45%, 60% for 100-200 kW, 201-300 kW, and > 300 kW, respectively), while customs duties for EVs > 100 kW have been increased from 15% to 20%.²⁵

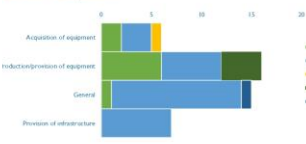
The National Transport Policy in 2001 has an objective of making the transport sector environment friendly and mentions the expansion of solar powered and electricity driven transport. It proposes the provision of economic instruments such as customs and tax incentives towards promoting private sector participation in proliferating non-polluting vehicles.²⁶ The Environmentally Friendly Transport Policy (2014) sets specific targets towards adopting EVs. It mentions a target of increasing the share of environmentally friendly vehicles to at least 20% by 2020. Similarly, the National Climate Policy, as well as the National Environment Policy (both issued in 2019) promotes electric vehicles.^{27, 28} A draft National Sustainable Transport Strategy (2015-2040) also included the promotion of electric vehicles as a key objective.

It is also worth to note that action at the sub-national level is being promoted. For example, the Bagmati Province First Periodic Plan supports the promotion of EVs and establishment of charging stations by municipalities. It also suggests replacing all petroleum-powered vehicles with EVs in urban centres, mainly Kathmandu Valley, Chitwan, Hetauda and Dhulikhel, Banepa, and Panauti by 2028.²⁹

E-mobility Country Profile: Nepal

1 of E-mobility Policy Measures

Distribution of Policy Measures



Measure	Topic	Category	Type of Policy Measure
Acquisition of equipment	Production/preparation of equipment	Policy incentives and disincentives	Custom tariff waiver/ reduction for EV and components
		Policy frameworks and action plans	Income tax waiver for EV and components
		Regulations	Public fleet electrification target
		Policy incentives and disincentives	Public procurement/ de-selection
		Regulations	Regulating use of imported EV
		Policy incentives and disincentives	Corporate income tax reduction/ holiday - manufacturers of EV components
		Regulations	Formal data requirements for lease providers for...
		Policy frameworks and action plans	Custom duties incentives for lower powered EVs
		Regulations	Provisionment of support for vehicle conversion
		Other	General government of support for EV production - readiness impact
		Policy frameworks and action plans	Import-based EV target
		Other	Local EV target
		Policy incentives and disincentives	Tariffs target
		Policy frameworks and action plans	Read-on tax waiver/ or reduction for EV
		Regulations	Production tax - differential
Other	Annual vehicle tax - exemption		
Usage	Demand	Policy frameworks and action plans	EV charging targets
		Policy incentives and disincentives	Direct registration plans for EVs
		Policy frameworks and action plans	General quality (EV) infrastructure
		Policy incentives and disincentives	General government of support for EV mobility
		Policy frameworks and action plans	General government of support for EV charging
		Policy incentives and disincentives	General EV industry plan
		Regulations	Defined sustainable usage
		Regulations	Electric infrastructure targets
		Policy frameworks and action plans	General government of support for charging infrastructure
		Regulations	Local equipment for electricity
		Policy frameworks and action plans	Charging stations integration into public transport stations general support
		Regulations	Real infrastructure - target

up and the table above mainly representatives of the policy measures that had been collected, collated and categorized by the authors. The authors make no claims about the full list, nor the accuracy of the categorization.

Typologies of Indicators covered

- General
- Socio-economic & Transport Indicators

- Energy consumption and emissions
- Access to electricity
- Grid emission factor
- Distribution of policy measures and targets

Interactive Knowledge Products

Cross-cutting

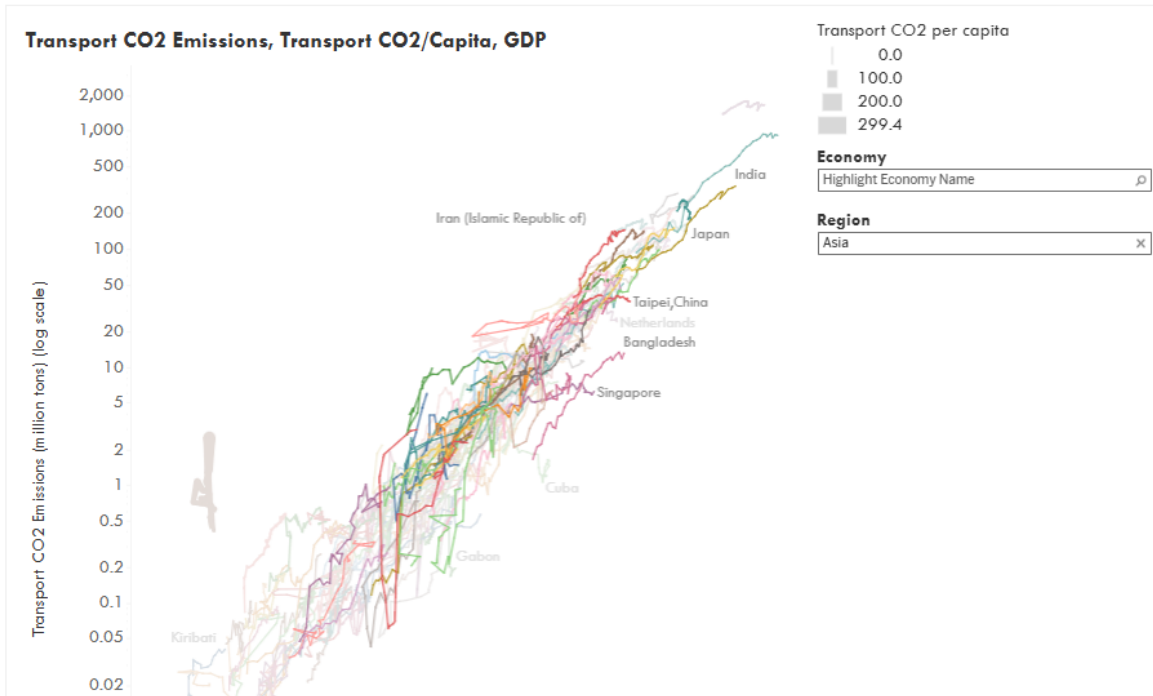
Transport CO2 Emissions Visualization Tool

Home / Insights / Transport CO2 Emissions Visualization Tool

Heading into COP30, Asia's transport story is one of two truths: progress and persistence. Growth in emissions is easing, efficiency is up, and e-mobility is advancing. Decoupling—long deemed improbable—is starting to appear. It's a sign that smart policy and technology can shift the trajectory.

Please read [The Two Faces of Progress: Decarbonizing Asia's Transport Sector](#) for the full story. In addition, you can use the tools below which provide visual queues relating to the trajectories and progress of the different economies in terms of transport emissions.

The first tool allows you to check the trajectory of each of the economies in terms of transport CO₂ emissions from 1990 to 2024.

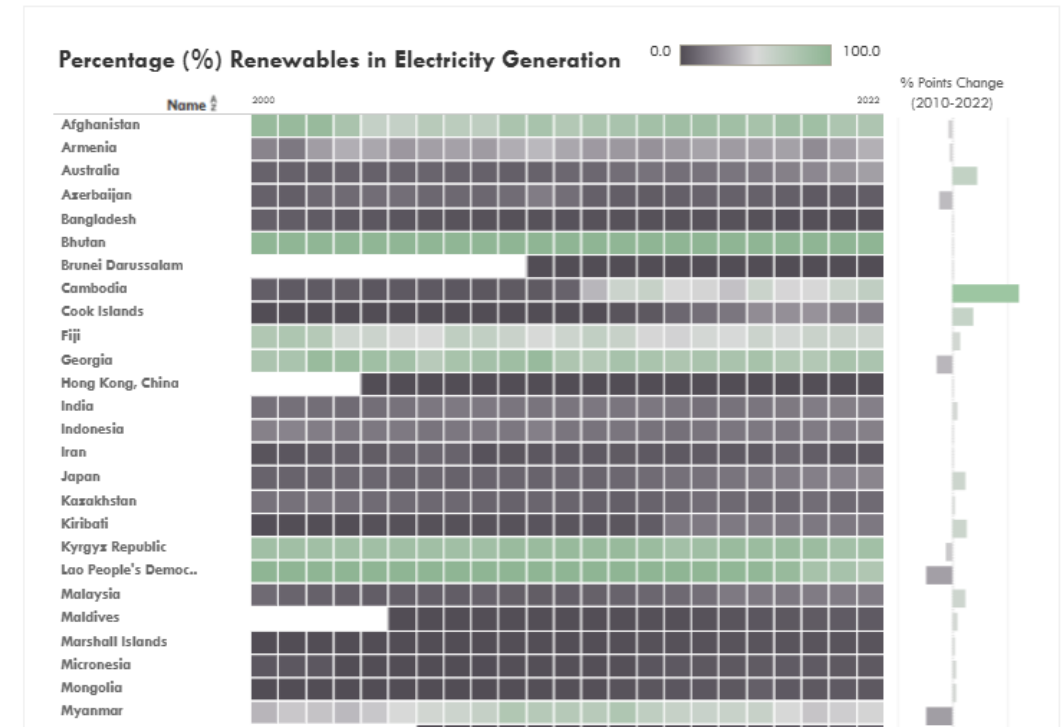


Renewable Energy Share in Electricity Generation - Visualization

Home / Insights / Renewable Energy Share in Electricity Generation - Visualization

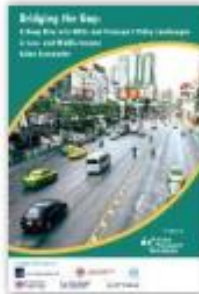
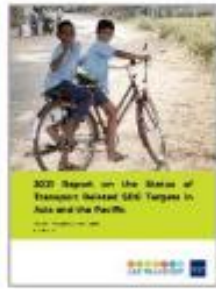
The renewable energy (RE) share in electricity generation (%) refers to the proportion of electricity generated from renewable sources such as wind, solar, geothermal. This indicator measures how much of a country or region's electricity infrastructure relies on RE for generating electricity and reflects the transition from fossil fuels to clean energy.

The visual in the dashboard shows visualizes the percentage of renewable energy in electricity generation across different countries in Asia since the 21st century. It is based on data from the [International Renewable Energy Agency \(IRENA\)](#). The left portion indicates the evolution in the RE % shares from 2000 to 2022, while the bar chart on the right indicates the percentage points change between 2010 and 2022 and depicts the direction and strength of change toward integration of RE in electricity generation.



ATO Knowledge Products

[Link](#)



SDG Profiles
(39 countries)



Transport Climate Profile
(24 countries)



Road Safety Profiles
(24 countries)



E-mobility Profiles
(10 countries)



Green Roads Profiles
(23 countries)



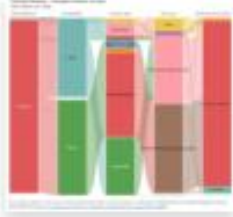
Gender Profiles
(10 countries)



Rail Profiles
(4 countries)

ATO Insights: Interactive visualisations

[Link](#)



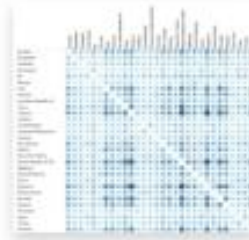
Climate Financing: Transport Sector in Asia - Visualization

2024-11-26

The dashboard presents a detailed overview of climate finance flows specific to regional trends, funding distribution, and sources of investment.

Interactive Visualization

Tags: Climate, Climate finance



Liner Connectivity Index - Visualization

2024-11-08

The Liner Shipping Bilateral Connectivity Index (LSBCI) provides a comprehensive measure between pairs of countries, capturing their level of integration into global liner shipping.

Interactive Visualization

Tags: connectivity, Sustainable Transport, Maritime Transport, Global Trade, Supply chain



Transport CO2 Emissions Visualization Tool

2024-11-18

ATO has created a visualization / animation tool using the data from IEA-EDG. Data from 1990 onwards is represented in the visualization tool which aims at magnitude, direction, and speed of change in transport-sector emissions, ...

Interactive Visualization

Tags: emissions



Renewable Energy Share in Electricity Generation - Visualization

2024-10-30

The renewable energy (RE) share in electricity generation (%) refers to the proportion of renewable sources such as wind, solar, hydro, and geothermal.

Interactive Visualization

Tags: energy, e-mobility, electrification



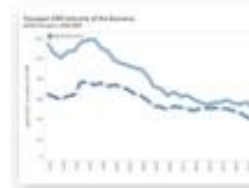
Urban Access to Public Transport - Visualization

2024-10-24

Access to public transport plays a critical role in creating inclusive Access to Public Transport—focuses on how well urban residents' social equity, environmental sustainability, and economic oppor

Interactive Visualization

Tags: urban access, cities, public transport, urban centers



Transport CO2 Intensity of the Economy

2024-10-15

Interactive Visualization

Tags:

Partnerships



Data Sharing

- IRF
- ITEM
- TDCI
- ADB Statistics

Policy

- UNCRD
- UNESCAP Working Groups (rail, road)

Railways

- UNESCAP - ASEAN
- UIC

Roads

- ADB's Green Roads Toolkit
- IRF

Climate Change

- SLOCAT
- UNESCAP
- UK FCDO
- Climate Compatible Growth

Electric Vehicles

- ADB-GEF EV Platform
- UEMI

Road Safety

- Asia-Pacific Road Transport Observatory

Freight

- UNCTAD
- Smart Freight Center

Climate Resilience

- Life Links Council

Air Pollution

- Clean Air Asia

Urban Transport

- Mobilize Your City
- ITDP

Sub Regional/ Country

- World Bank
- MTI (Indonesia)
- SOTEN (Nepal)

ATO across the sector

News, papers, and other works referencing the Asian Transport Observatory

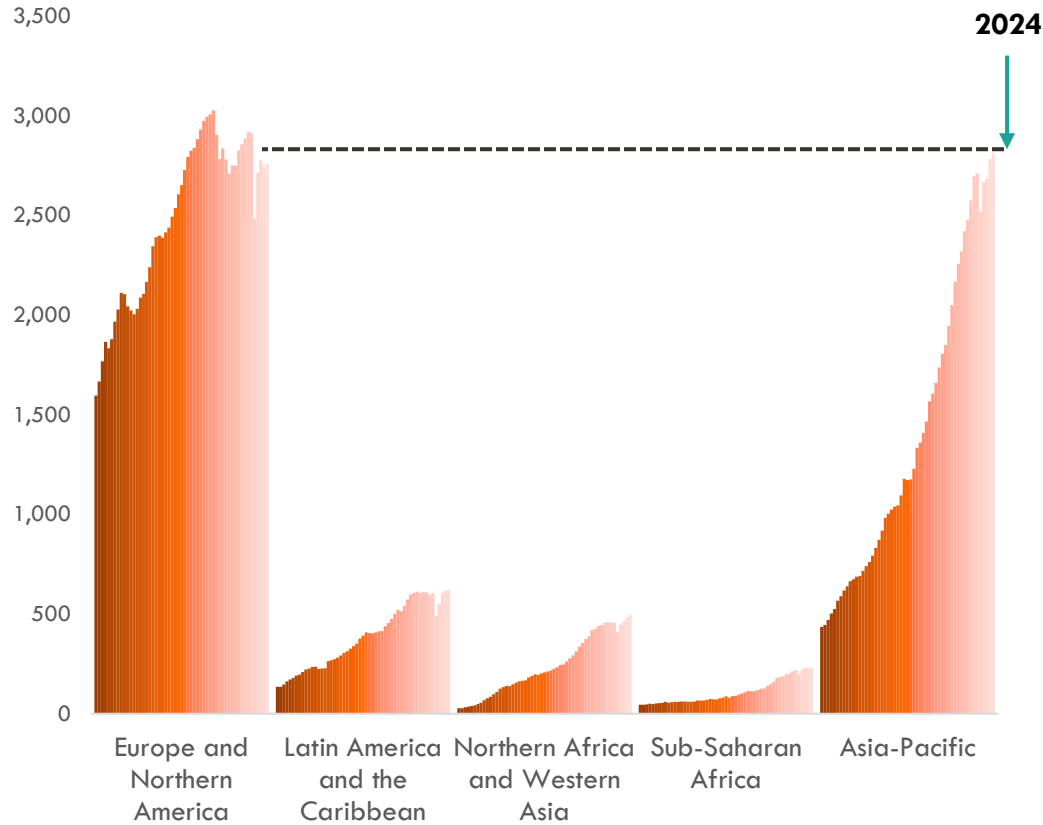


[View list](#)

>300 reports, journal articles, news articles, multi-media citations in current Phase

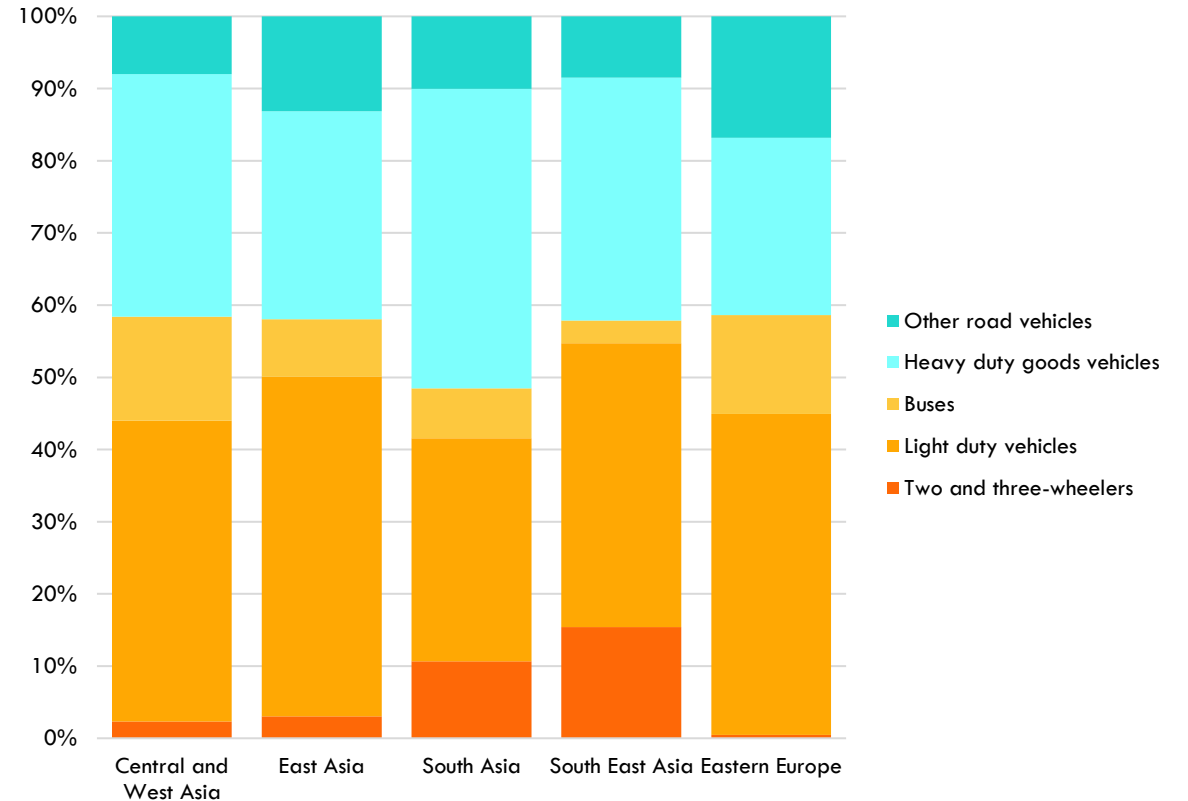
E-mobility in context: ATO insights on transport decarbonization in Asia-Pacific region

Transport CO2 Emissions (million tons) (2000-2024)



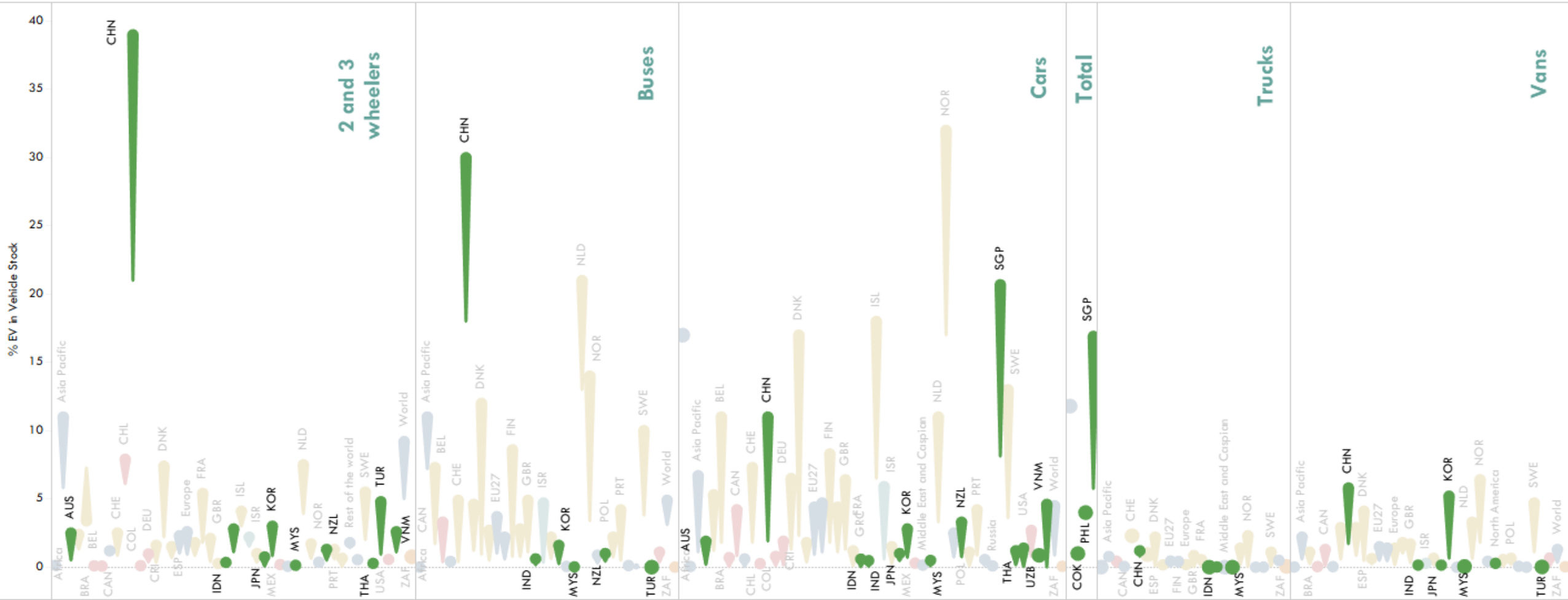
Source: ATO visualization based on data from Crippa et al. (2023)

Road Transport CO2 Emissions Share by Sub-mode by Sub-region



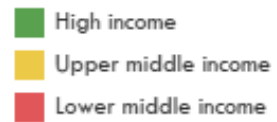
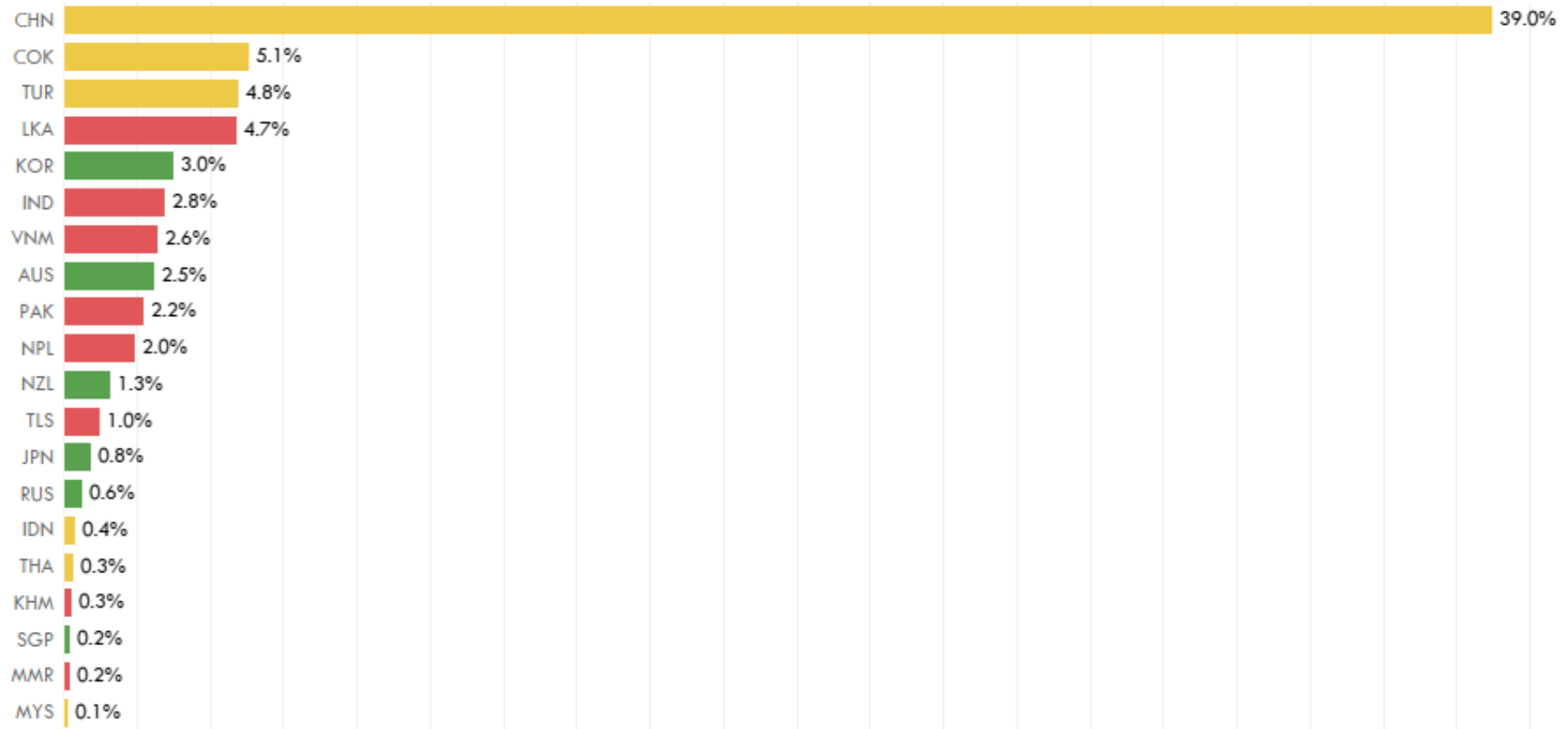
Source: ATO analysis and visualization based on IIASA (2025)

EV % in Vehicle Stock by Vehicle Type 2000 and 2024



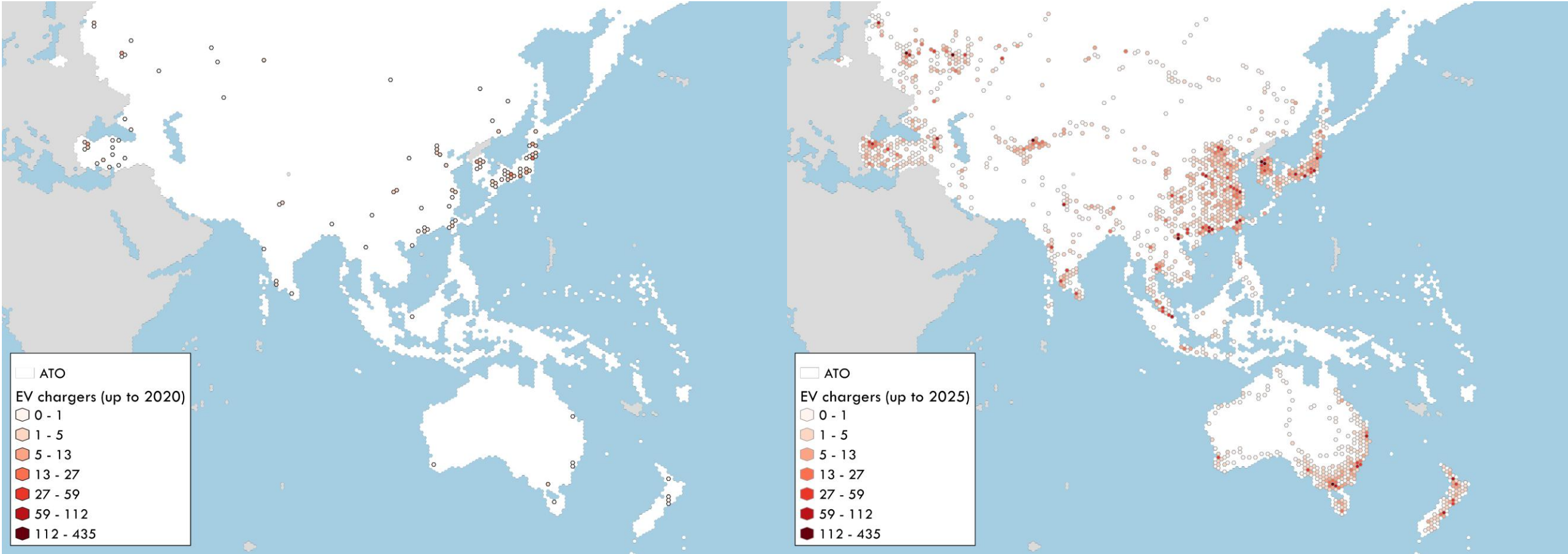
Source: ATO analysis and visualization based IEA's EV Data Explorer and other sources

% of EV 2&3 Wheelers in Total stock



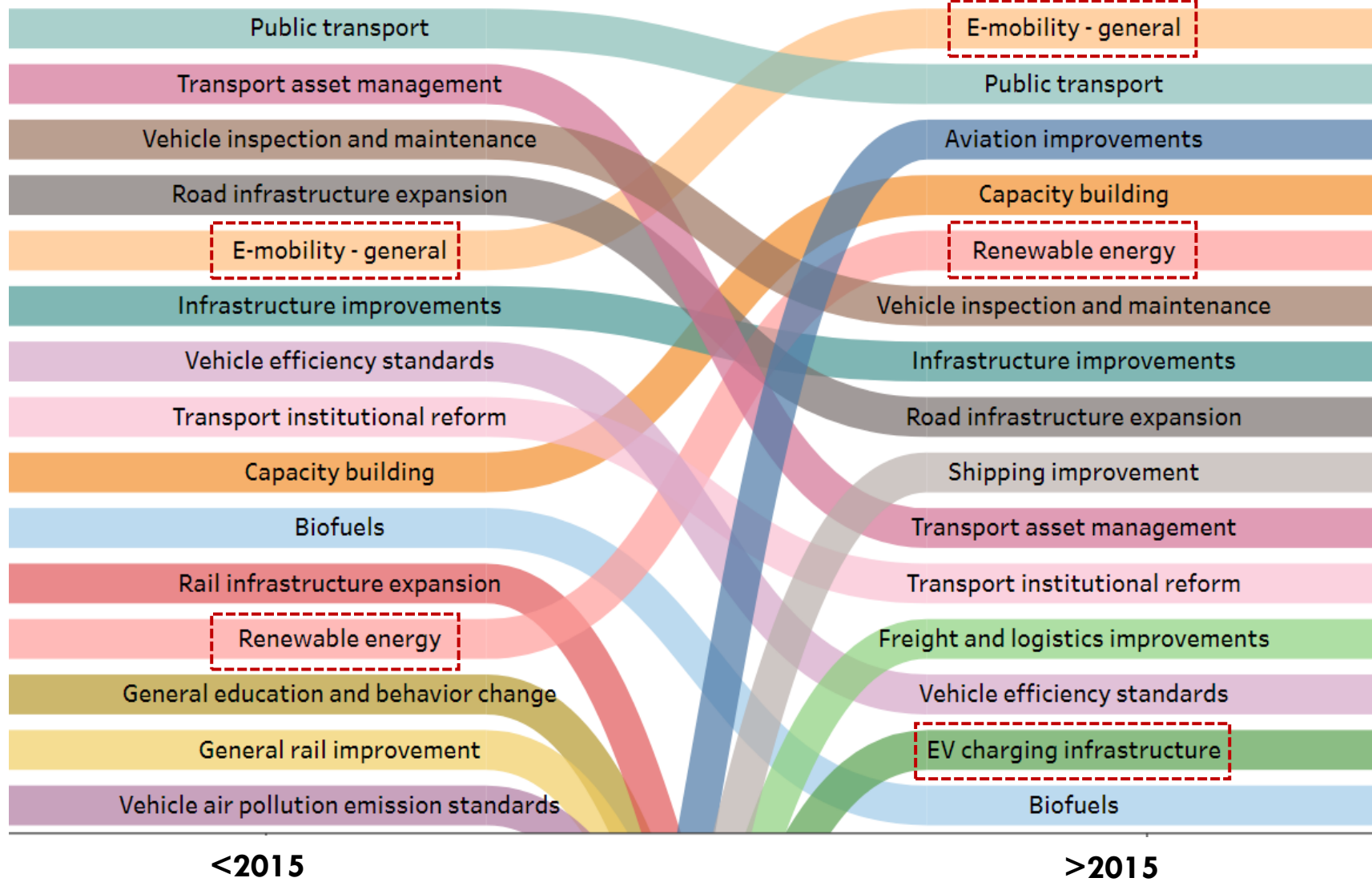
Source: ATO analysis and visualization based on IEA (2025a) and vehicle registration estimates

Charging infrastructure



Source: ATO visualization based on OSM data

Policy Measures in the ATO Policy Database



Source: ATO analysis and visualization based on ATO's policy tracker

asiantransportobservatory.org

“ATO translates data into insights, policies, and investments”

ATO Team	info@asiantransportobservatory.org
Jamie Leather	jleather@adb.org
Andres Pizarro	andres.pizarro@aiib.org
Manuel Benard	manuel.benard@aiib.org
Alvin Mejia	alvinmejia@asiantransportobservatory.org
Sudhir Gota	sudhirgota@asiantransportobservatory.org
Mel Francis Eden	meleden@asiantransportobservatory.org
Adwait Limaye	adwait@asiantransportobservatory.org
Benjamin Soco	benjaminsoco@asiantransportobservatory.org