

# Railway Decarbonisation in Asia Pacific

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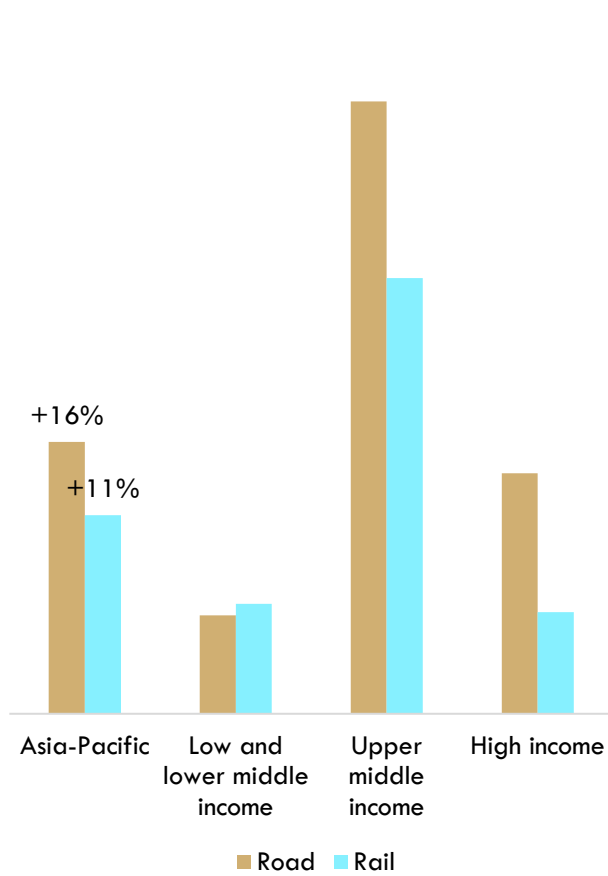


#### ATO Analytical Outputs

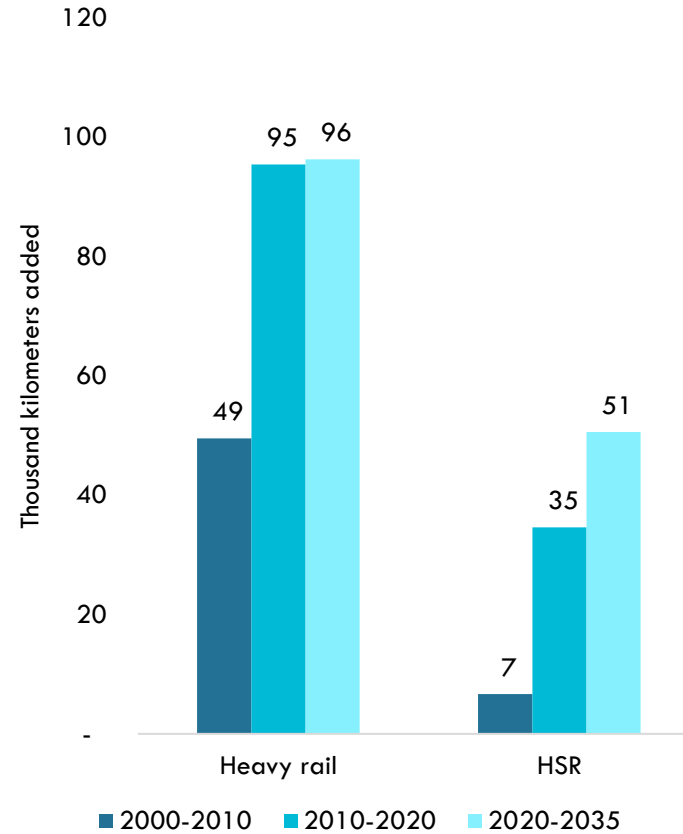
Read about analysis made using ATO transport data and policy information

# Rail Infrastructure Expansion in Asia-Pacific

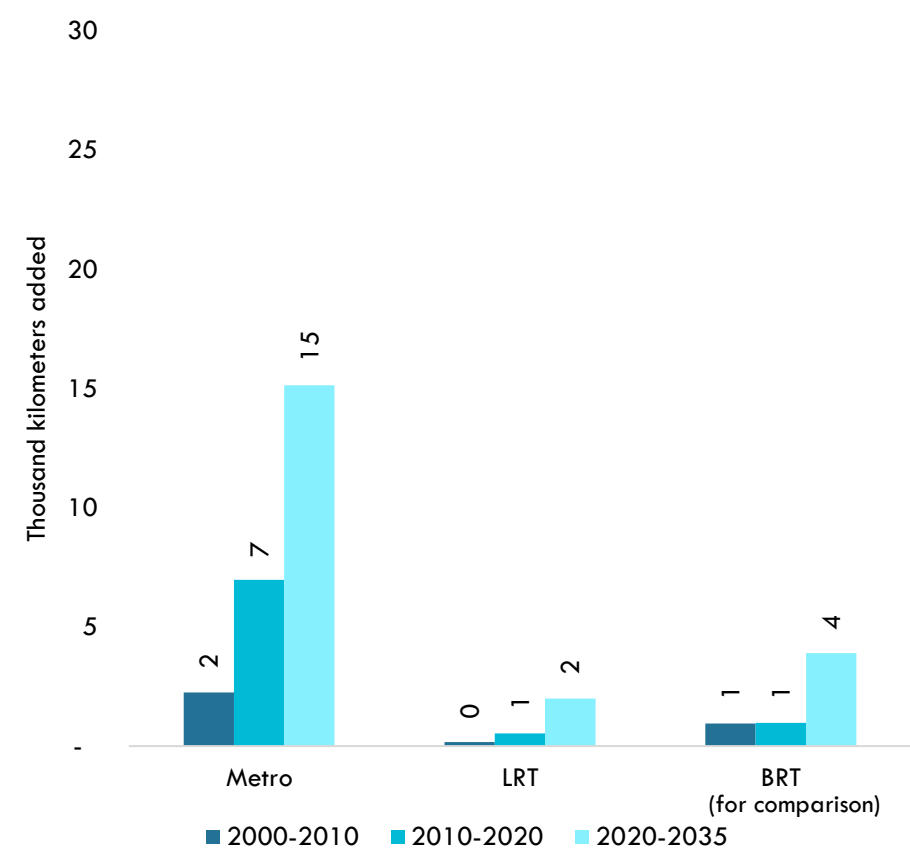
Change in Infrastructure Availability (per capita) 2020 vs 2025



Heavy Rail and High-Speed Rail Infrastructure Expansion

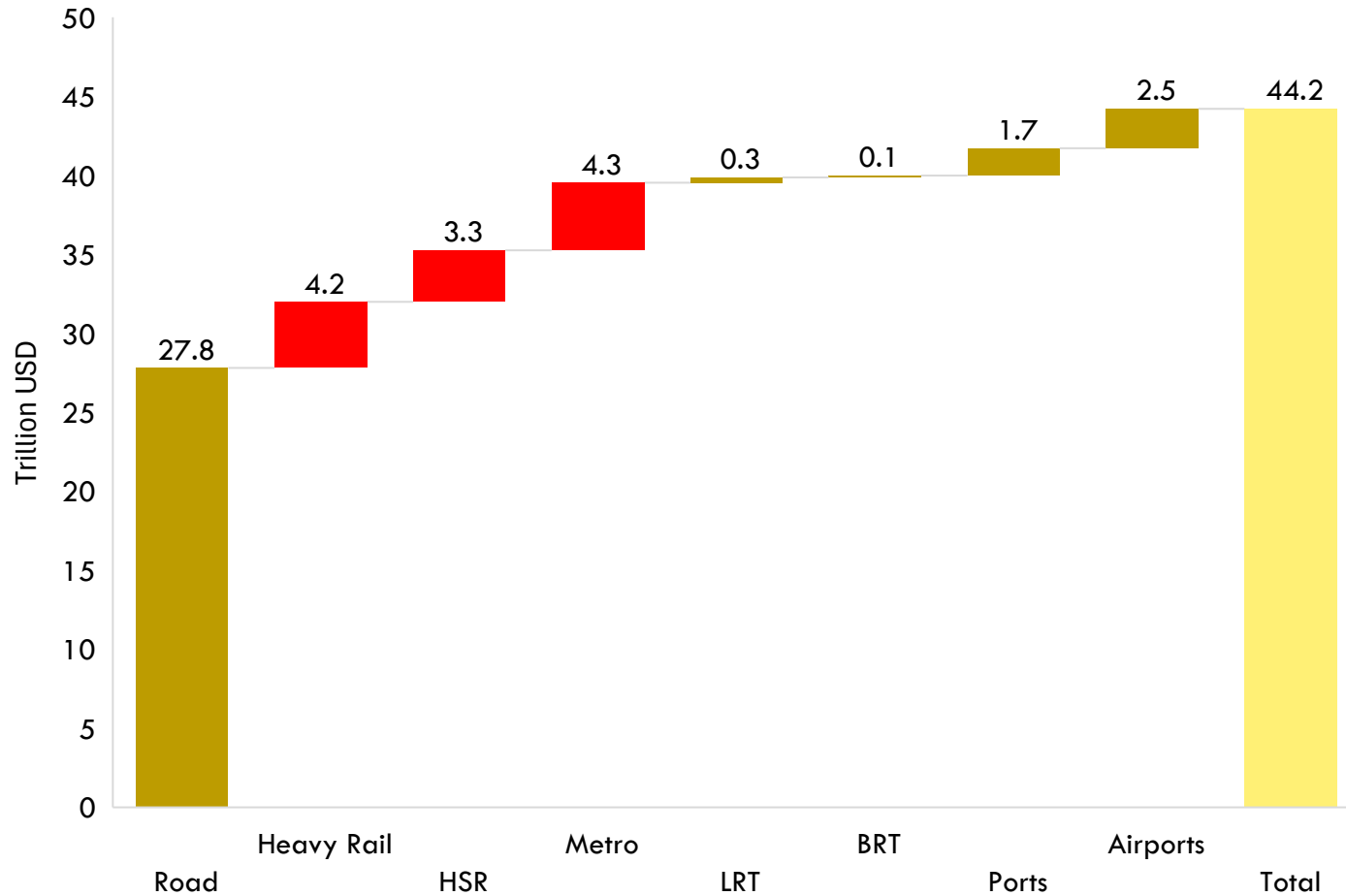


Urban Rapid Transport Infrastructure Expansion

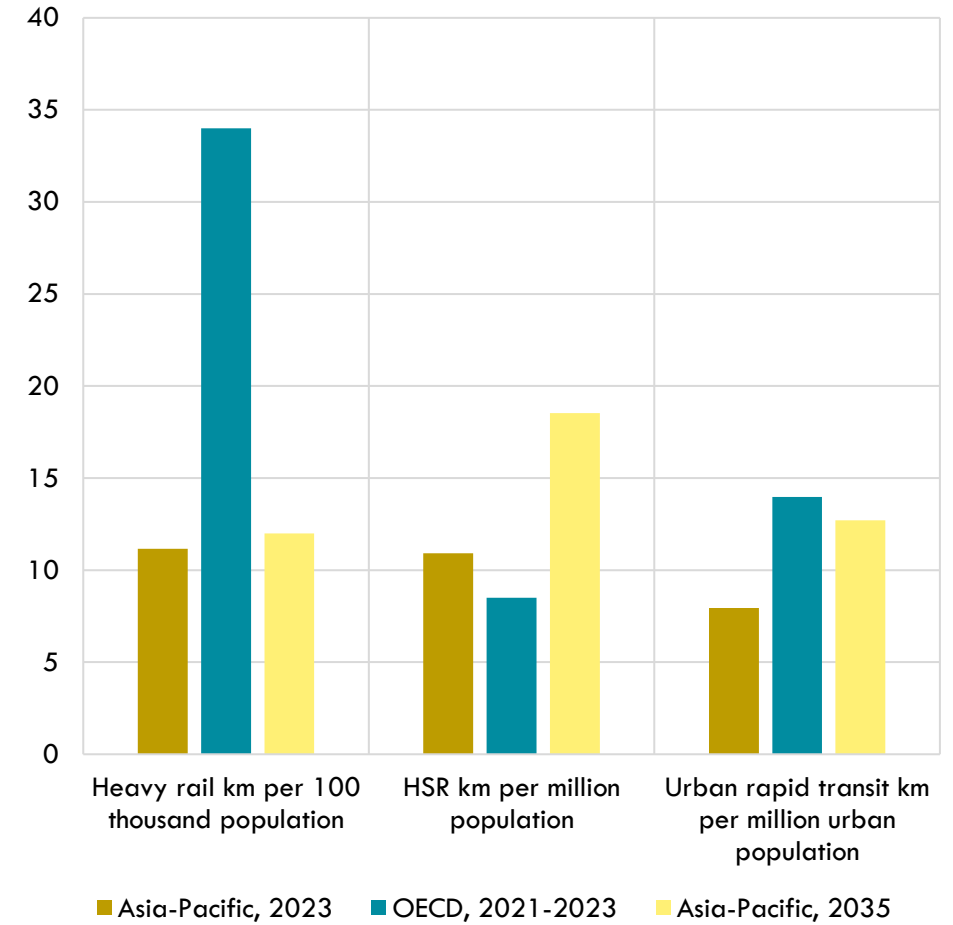


# Infrastructure Investment in Asia-Pacific

Transport infrastructure investment in Asia-Pacific between 2020 to 2035



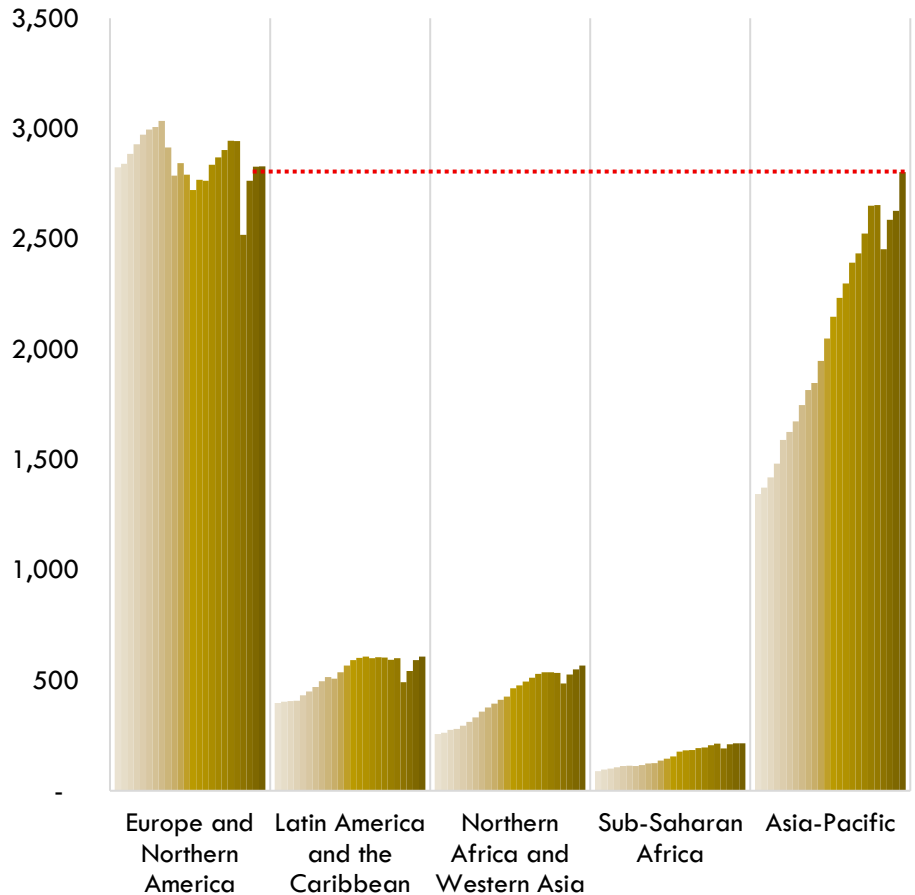
Infrastructure Gap



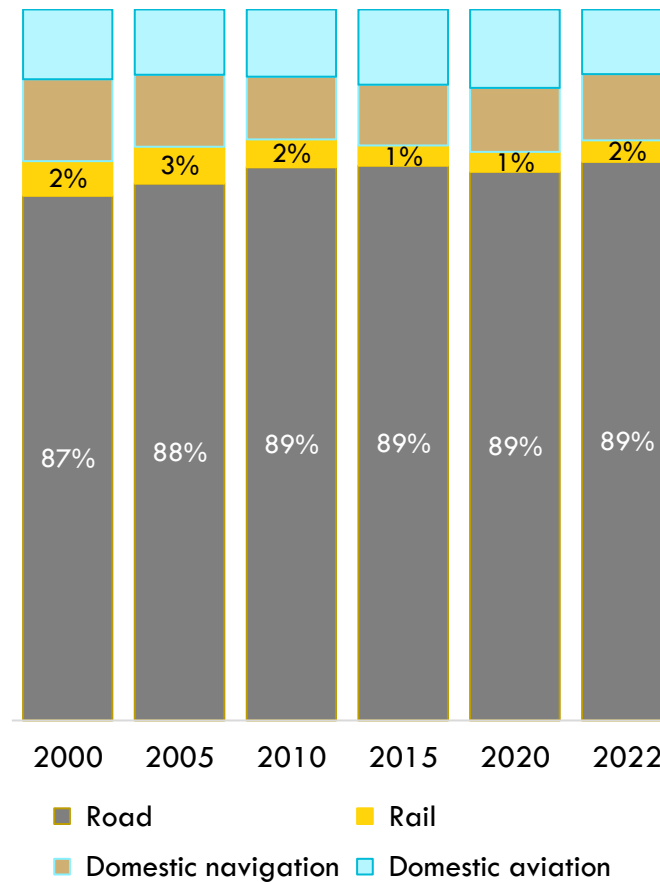
# Rail's Role in Transport Emissions

~2% of sector CO<sub>2</sub> since 2000; electrification rising, 80%+ in at least 5 economies

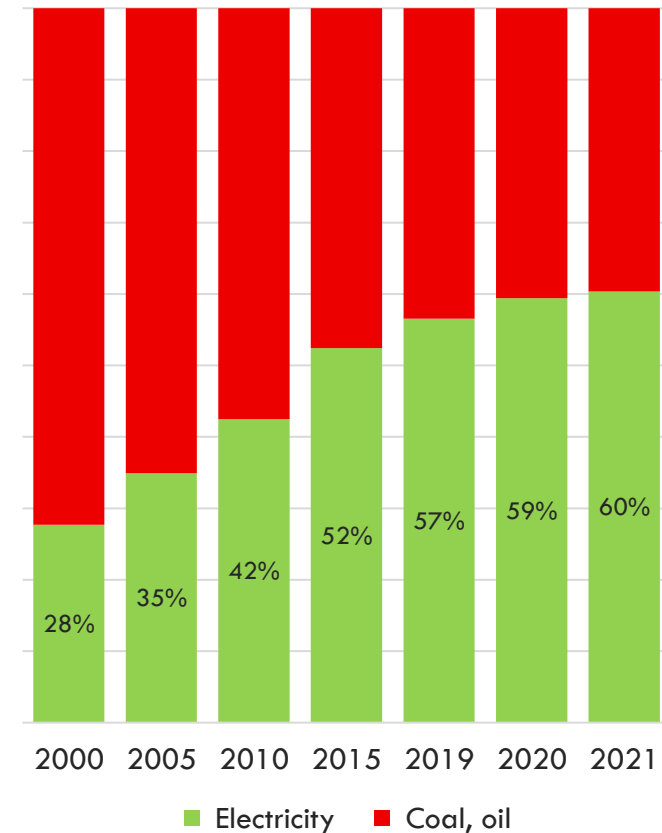
Domestic transport CO<sub>2</sub> emissions, 2000-2023



CO<sub>2</sub> emissions (% by Mode)



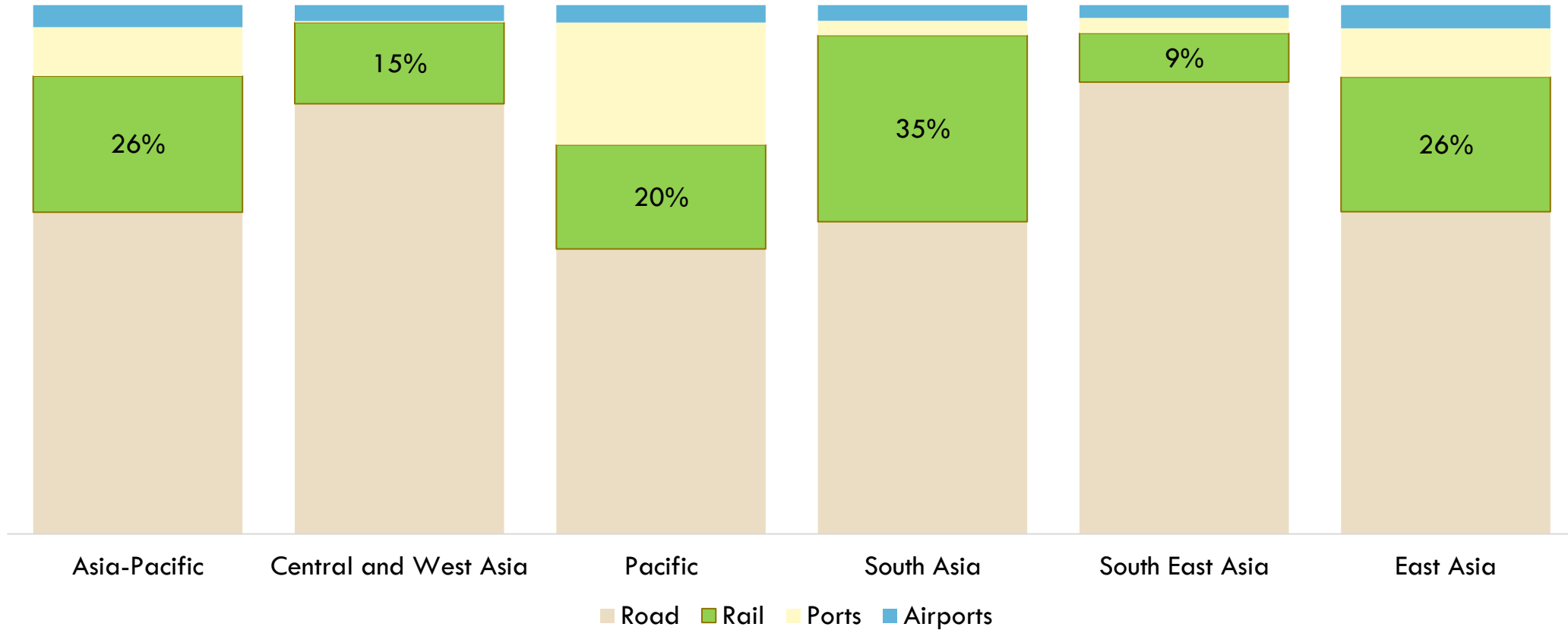
Rail energy consumption in Asia-Pacific (share by fuel)



# Disproportionate climate change burden on Rail

Carrying 26% of transport infrastructure losses, with South Asia most at risk

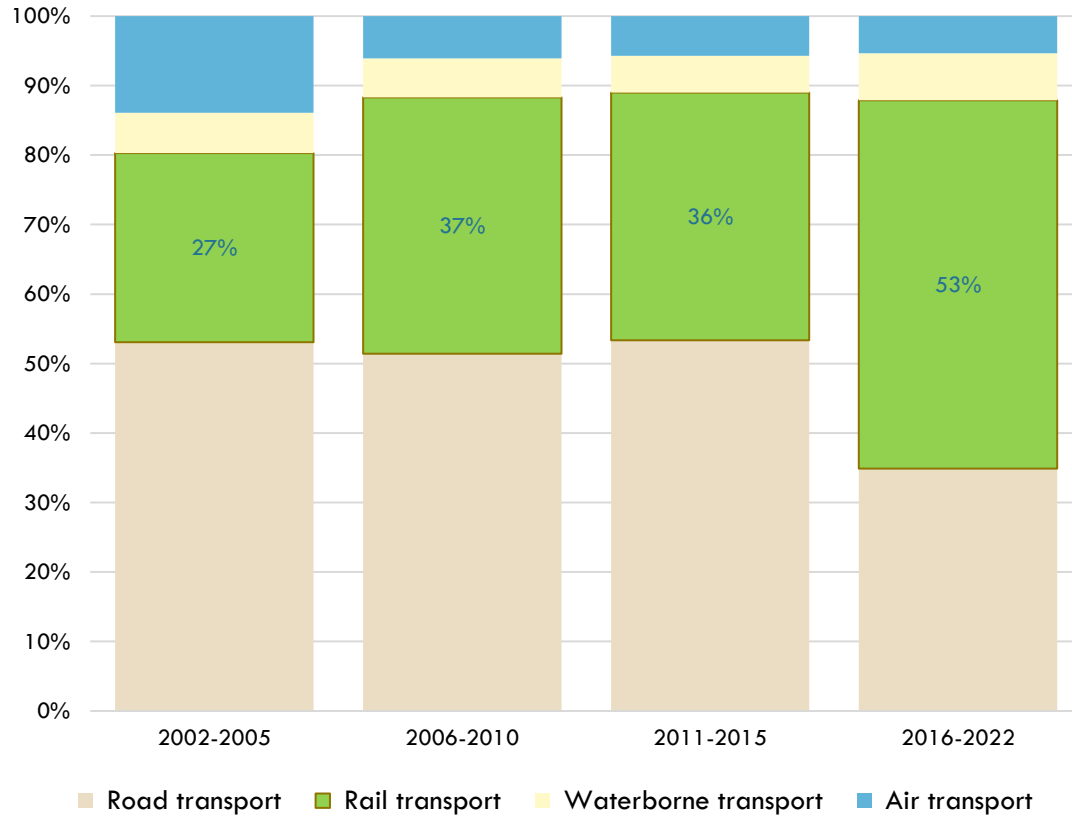
Average annual losses in transport infrastructure, share by mode



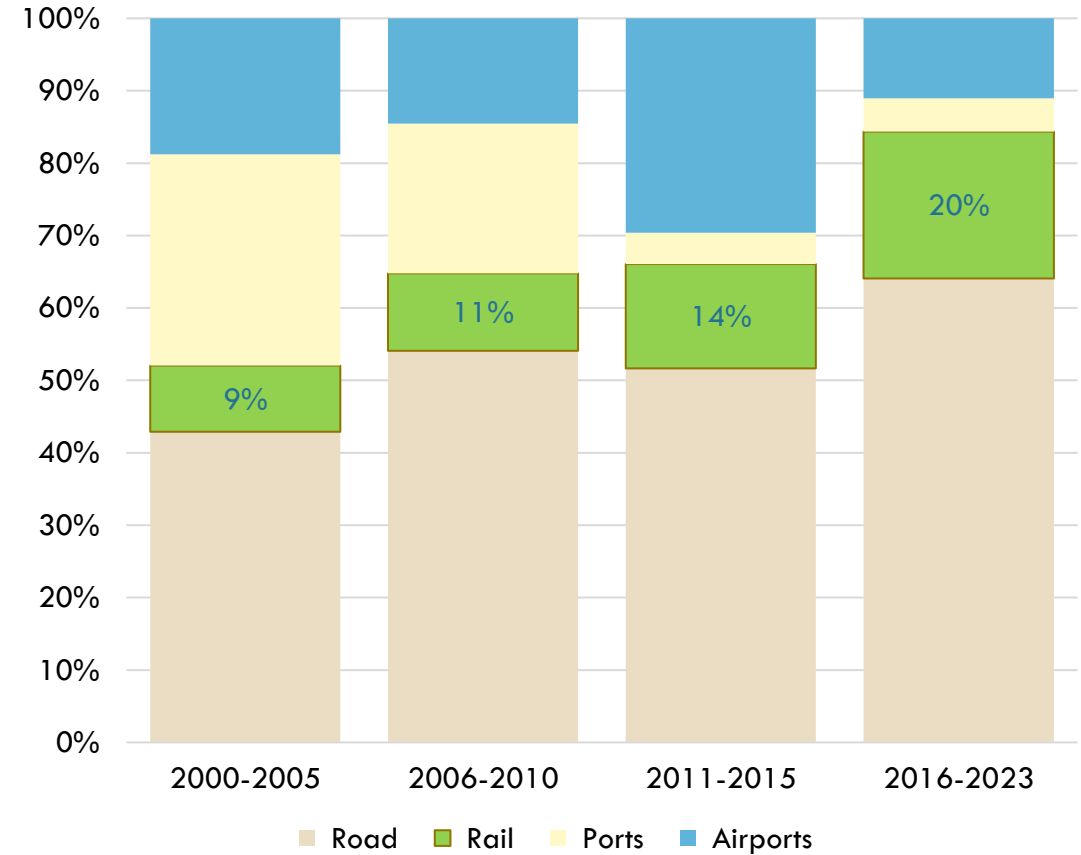
# Growing Role of Rail in Transport Investments (ODA and PPP)

## Rising Share of ODA and PPP

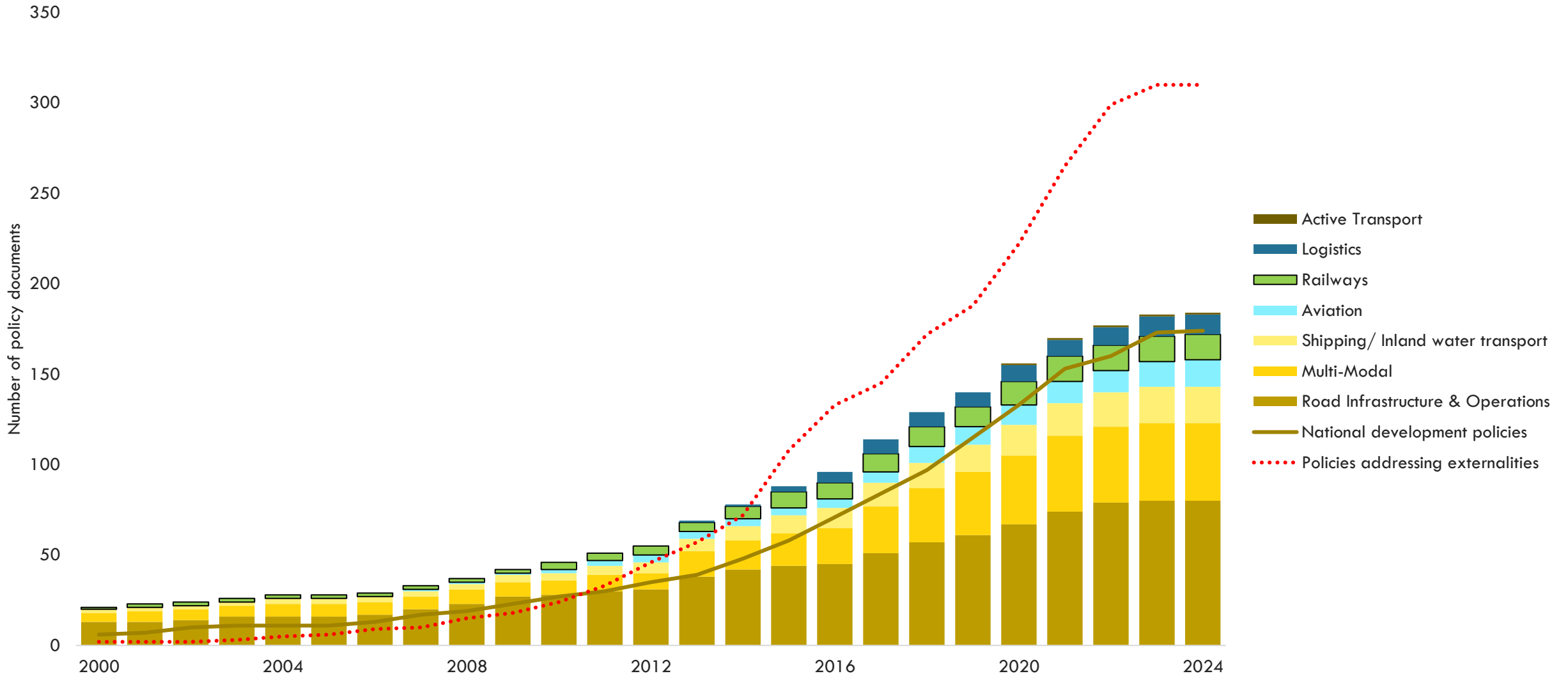
Official development assistance in Asia-Pacific transport sector



Public-private partnership investments in Asia-Pacific transport sector



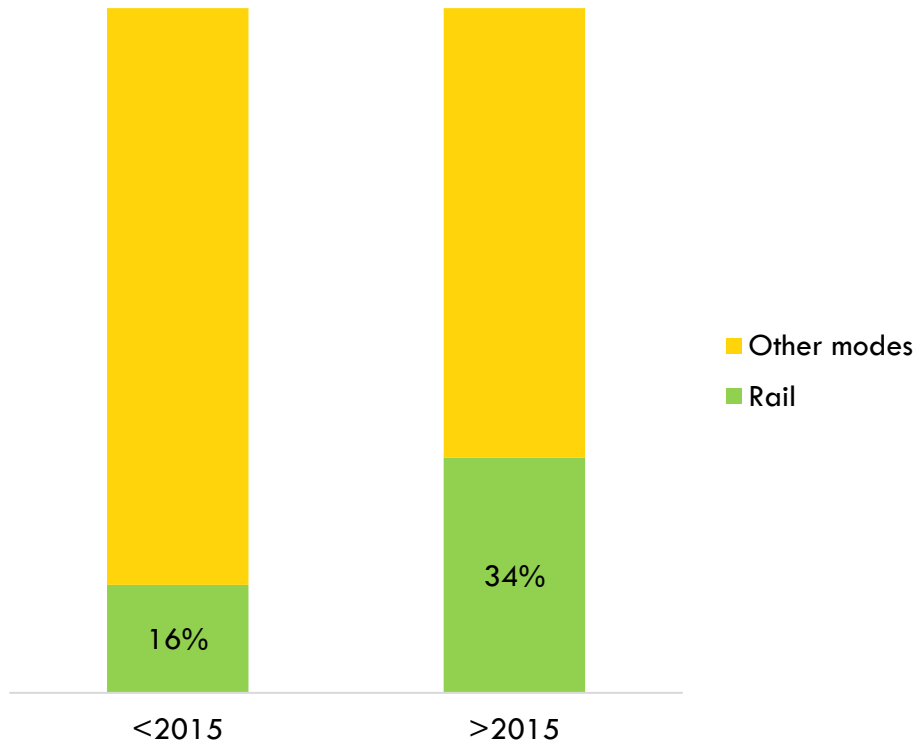
# Policies to Reduce Transport Externalities - Railway Policies



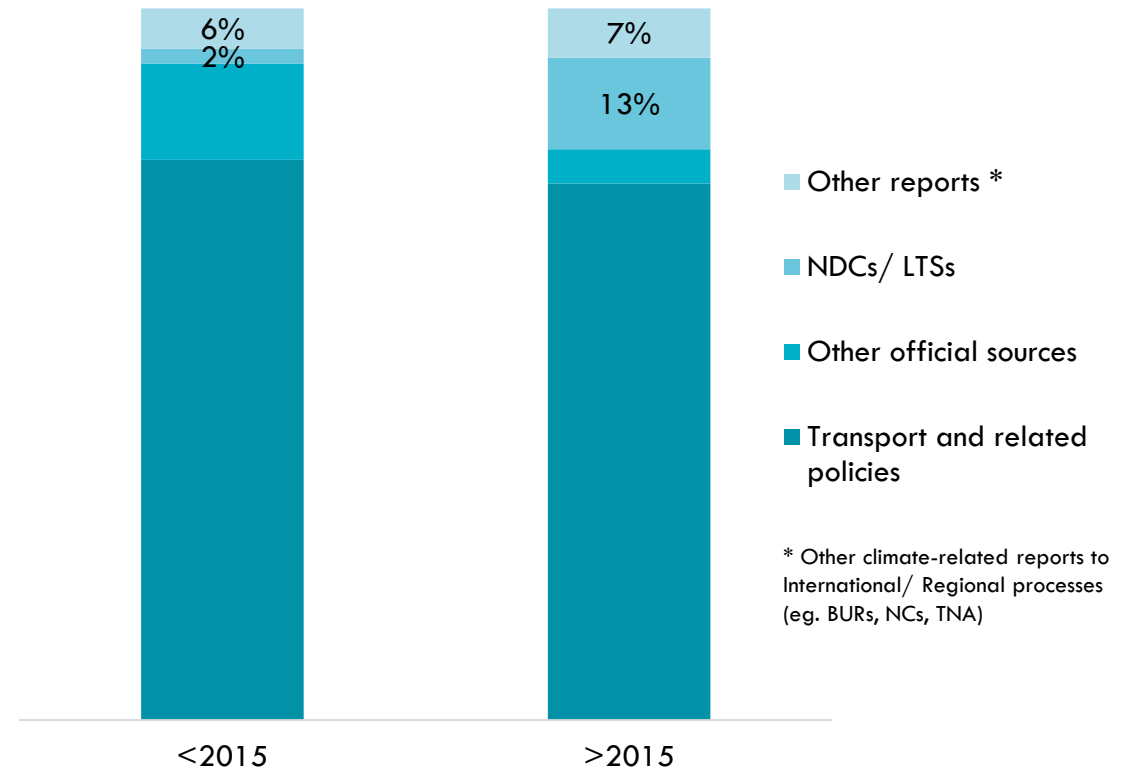
# Rail Policy Evolution: Pre- and Post-2015

Post-2015 shift shows more detail, stronger targets, but limited role of NDCs and LTSs

Share of Rail-specific targets compared to other modes



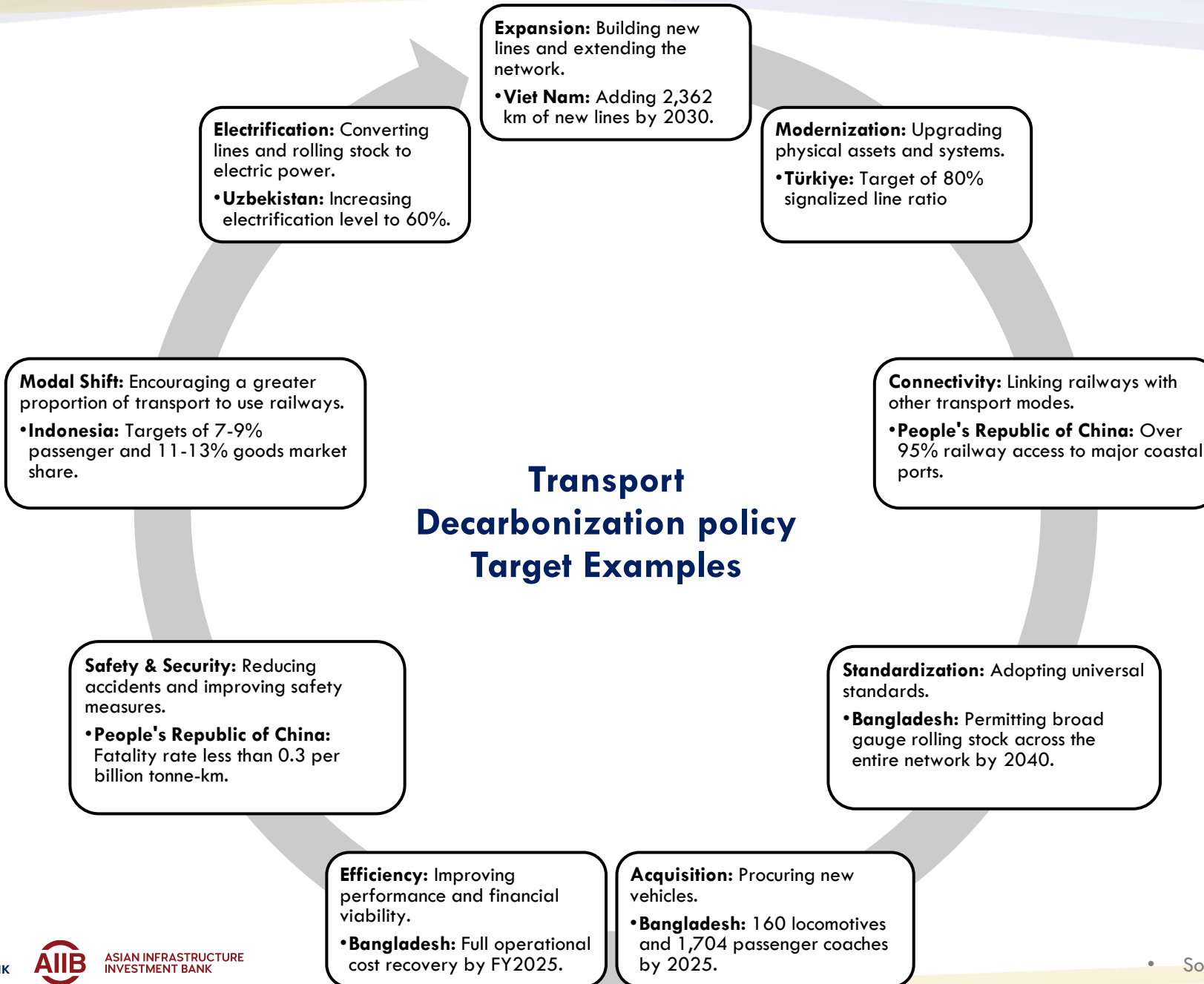
Share of Rail-specific policy measures by document type



\* Other climate-related reports to International/ Regional processes (eg. BURs, NCs, TNA)

Source: ATO National Policy Tracker

## Transport Decarbonization policy Target Examples



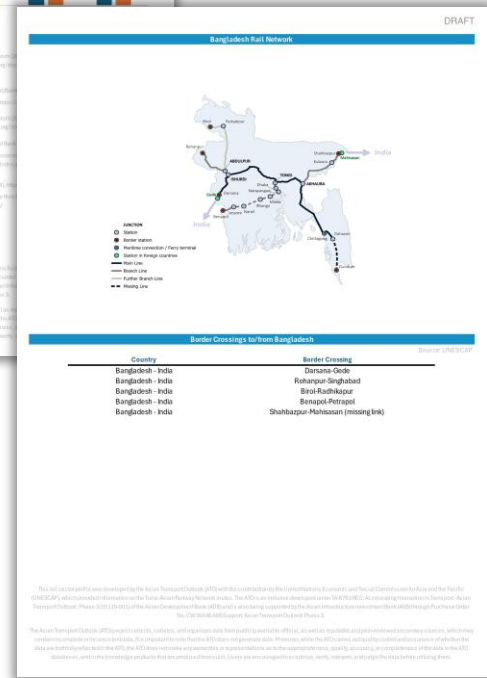
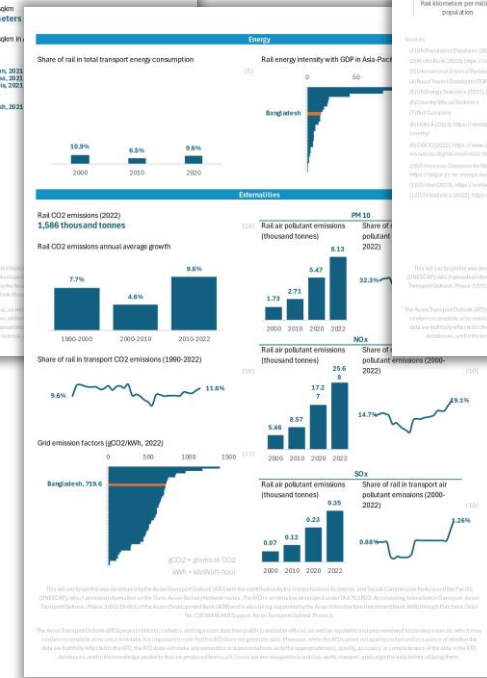
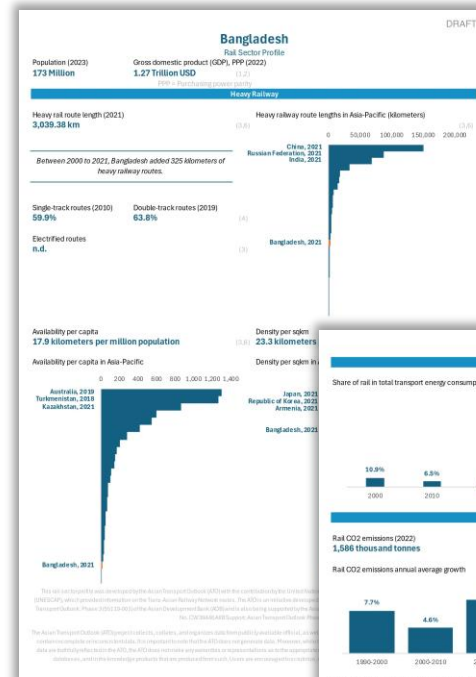
# Key Takeaways

1. **Road still dominates growth & national investments** – roads attract 63% of future transport investments, while heavy rail grows slowly (1.2% vs 1.5% for roads).
2. **The need is urgent - Rail is low-carbon but vulnerable** – contributes just 1.5% of emissions, amounts to 2% of the region's transport infrastructure but disproportionately carries 26% of climate-related transport infrastructure losses.
3. **ODA and PPP financing trends are shifting** – rail now captures over 50% of ODA and 20% of PPP investments, showing stronger donor & private interest.
4. **Urban rail investment share is rising** – metro investments are estimated to match heavy rail, signaling a historic shift toward rapid transit systems.
5. **On the other hand, Policy momentum is strengthening** – Since 2015, rail-specific targets have grown to one-third of all targets, with measures becoming more detailed and wide-ranging. However, NDCs and LTSs still capture very few rail actions, meaning national transport policies remain the main driver.

# Rail Sector Profiles in Asia-Pacific

## Data, Trends, and Policies for Advancing Sustainable Rail Development

- Infrastructure: Route lengths, electrification, single/double track, MRT & LRT expansion, density per capita/area
- Operations: Passenger & freight trends (PKM/TKM), energy use, electrification & clean energy share
- Environment: Rail's CO<sub>2</sub> and pollutant share; impact of efficiency & electrification
- Investments & Digitalization: Public/private/ODA/PPP funding; digital readiness for efficiency & tech integration
- Policies & Targets: Infrastructure, electrification, climate mitigation/adaptation, national rail strategies



<https://asiantransportobservatory.org/analytical-outputs/railsectorprofiles/>

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

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