Decarbonization of Transport- Policies, Constraints and Solutions

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Transport- Economy and Emissions

- Transport drives the economy
- Connects workers with jobs and delivers goods for industry -facilitates backward and forward linkages
- Transport plays crucial role in spatial policy –location decisions
- National Determined Contributions: 10% of all GHG emissions
- 25% of all emissions arising out of energy sector
- Transport emissions have shown 44% p.c. increase (2013-2018)
- Emissions' Scenario: Projected Growth in urbanization (37%) and increase in contribution of manufacturing (13%) to GDP

Transport – SDGs and Climate Resilience

- Overarching nature, deep linkages to other goals -
- SDG 3 has a target related to road safety; (13/100k against 3/100k)
- SDG 11 aims at the provision of safe, affordable, accessible, and sustainable transport systems especially to the vulnerable population (60% against 82%; 77 % in India and 76 % in Bangladesh)

- Indirectly linked SDG targets : ambient air pollution (Target 3.9), sustainable cities (11.6), climate change adaptation (Target 13.1)
- Climate resilient infrastructure –extreme events like GLOF

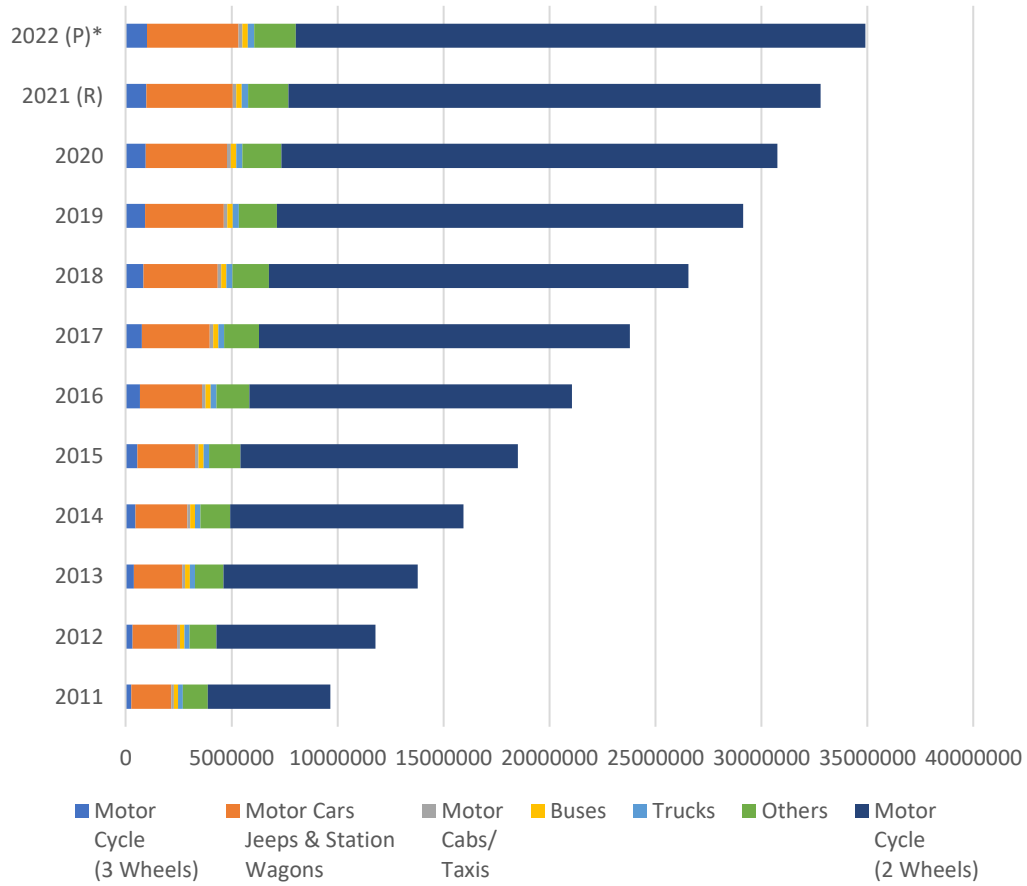
Transport Sector Overview

- Outlook of Transport Sector in the country- relevant policies determining:
    - Affordability and ease of use of private vehicles
    - Investment in public transport
    - Modal preference for freight movement
- Cost of Transport Inefficiencies is estimated 4-6 % of national GDP
    - cross-subsidy to passengers at the expense of freight in railway,
    - preference of road over rail for freight movement
    - protection of SOE-Pakistan International Airlines,

Transport Policy 2018

- **Integrate urban land use planning and transport development; Transit Oriented Development**

- Priority for passenger transport by road will be **non-motorized transport** and **public transport**



Number of Registered Vehicles in Pakistan (2011-2022)

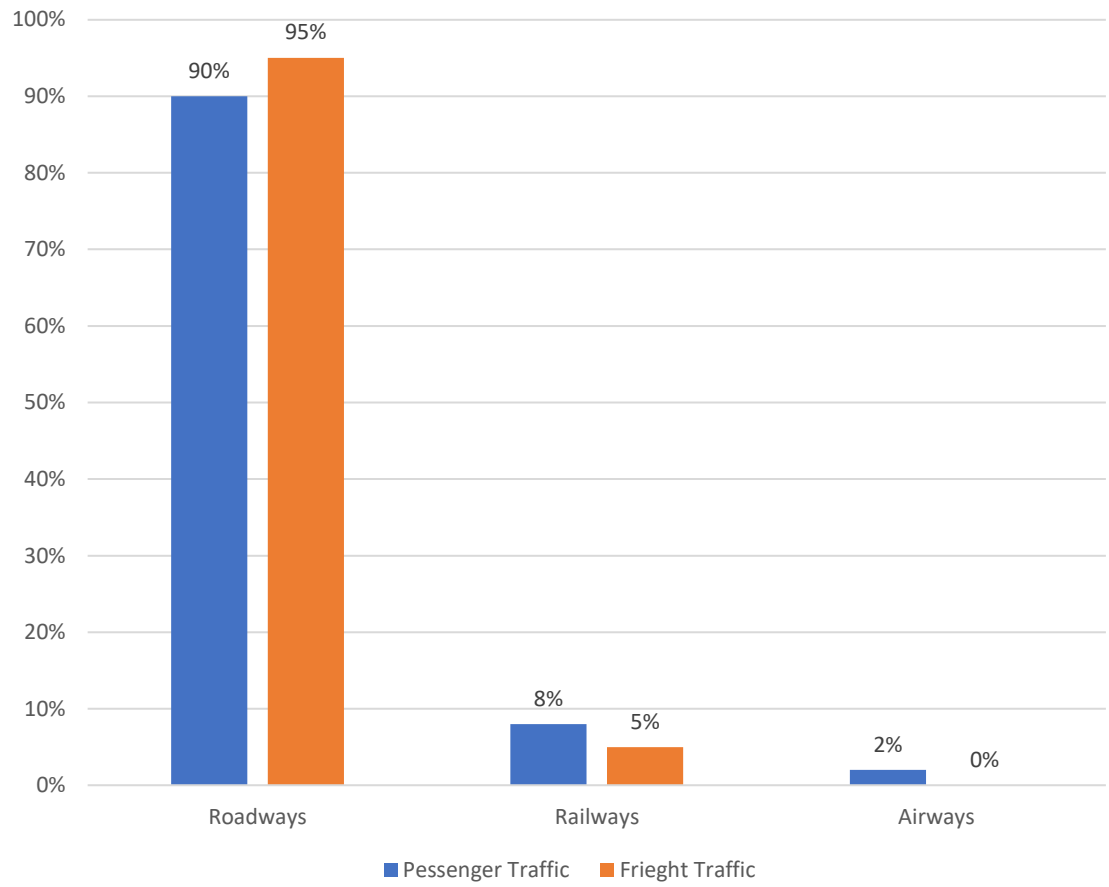
Transport Policy 2018

Predominance of roads in **freight transport will be shifted to rail**

The trucking industry continues as the main player in freight carriage;

underdeveloped, unregulated and informal,

Highly fragmented, with dominant firms owning 1-5 vehicles



Domestic Modes of Road Transport -2021

Policies and Outcomes

- More roads fight urban congestion – last decade road length 2X
- Car financing by commercial banks - increased by 8X

- More vehicles than before – Induced demand-Increased more than 2X
- 2-wheelers increased by 3X

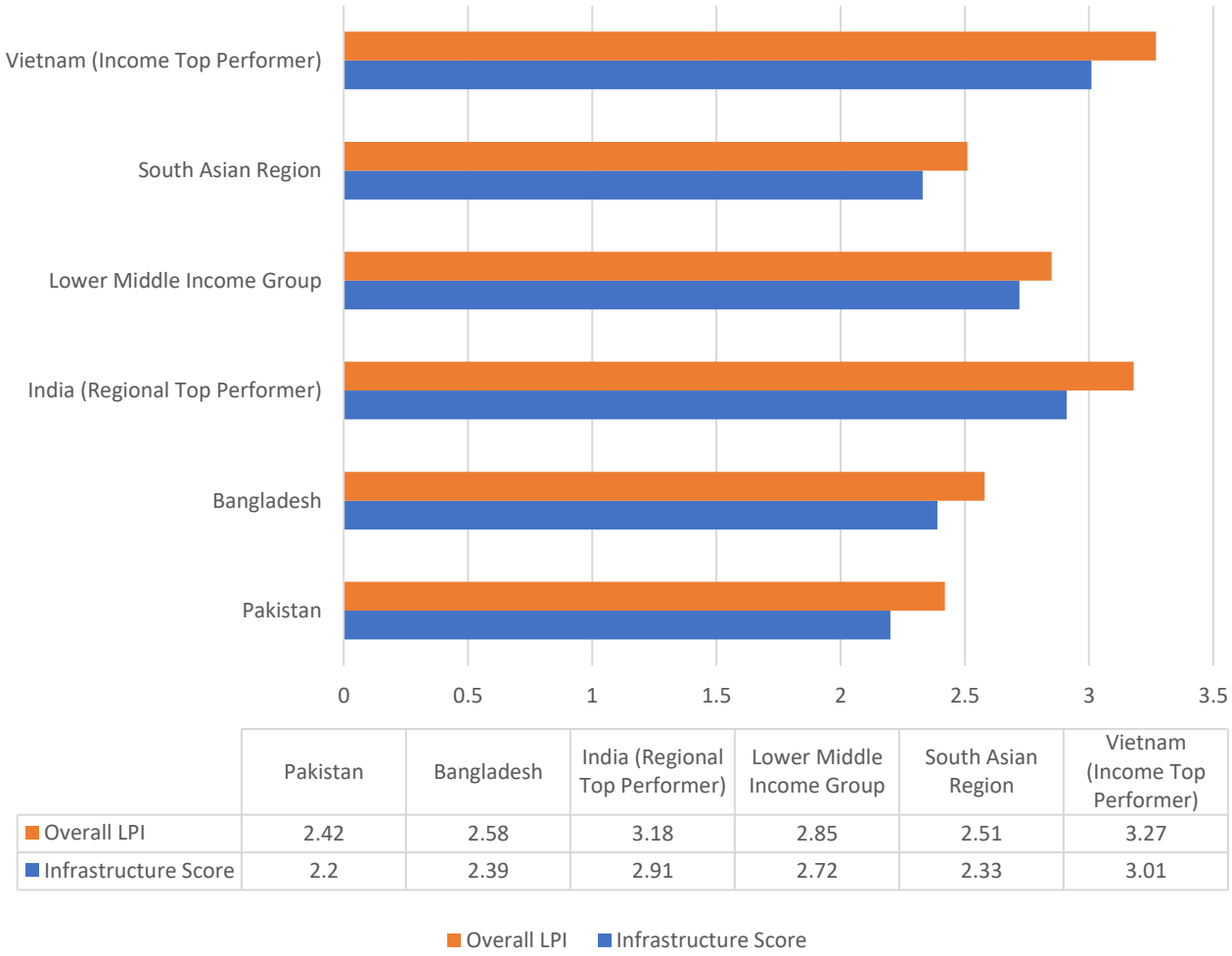
- Share of rail freight transport has declined- 86% in 1950 to 5% in 2022
- Outdated fleet- 2/3-axle -60% fleet-trucks – slow speed-delayed deliveries
- Poor competition with large public entity: NLC

Freight Sector Performance

Logistics Performance Index- World Bank indicator of ease of goods transportation

Ranks Pakistan at 122 out of 160,

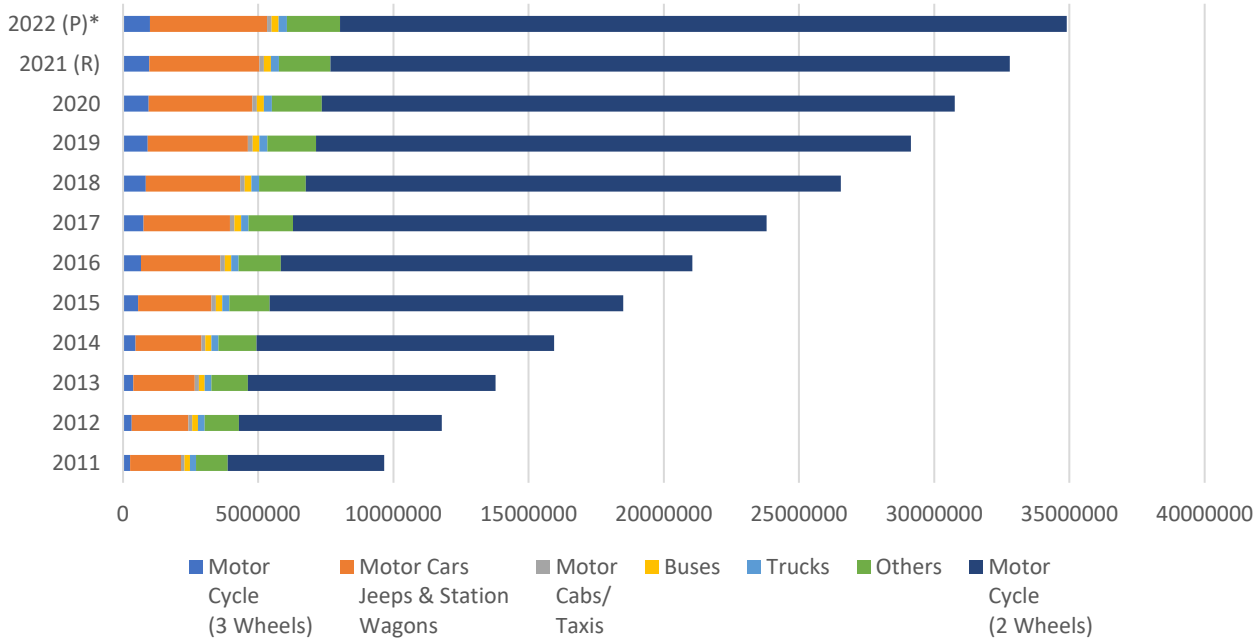
India ranked 44 and Bangladesh 100



	Pakistan	Bangladesh	India (Regional Top Performer)	Lower Middle Income Group	South Asian Region	Vietnam (Income Top Performer)
Overall LPI	2.42	2.58	3.18	2.85	2.51	3.27
Infrastructure Score	2.2	2.39	2.91	2.72	2.33	3.01

Where to focus for decarbonization?

- Pakistan contributes approximately 1 % to the global GHG emissions
- Among the countries most vulnerable to climate change – recurring heatwaves, floods
- Within transport sector, most emissions from road passenger vehicles (60%), road freight vehicles (38%).
- Time to implement Transport Policy, EV Policy, National Clean Air Policy
- Decent documents but have weak implementation framework
  - *High-priority actions involve a target of 30% of new vehicles sold in various categories to be electric by 2030 and a switch to Euro-5*



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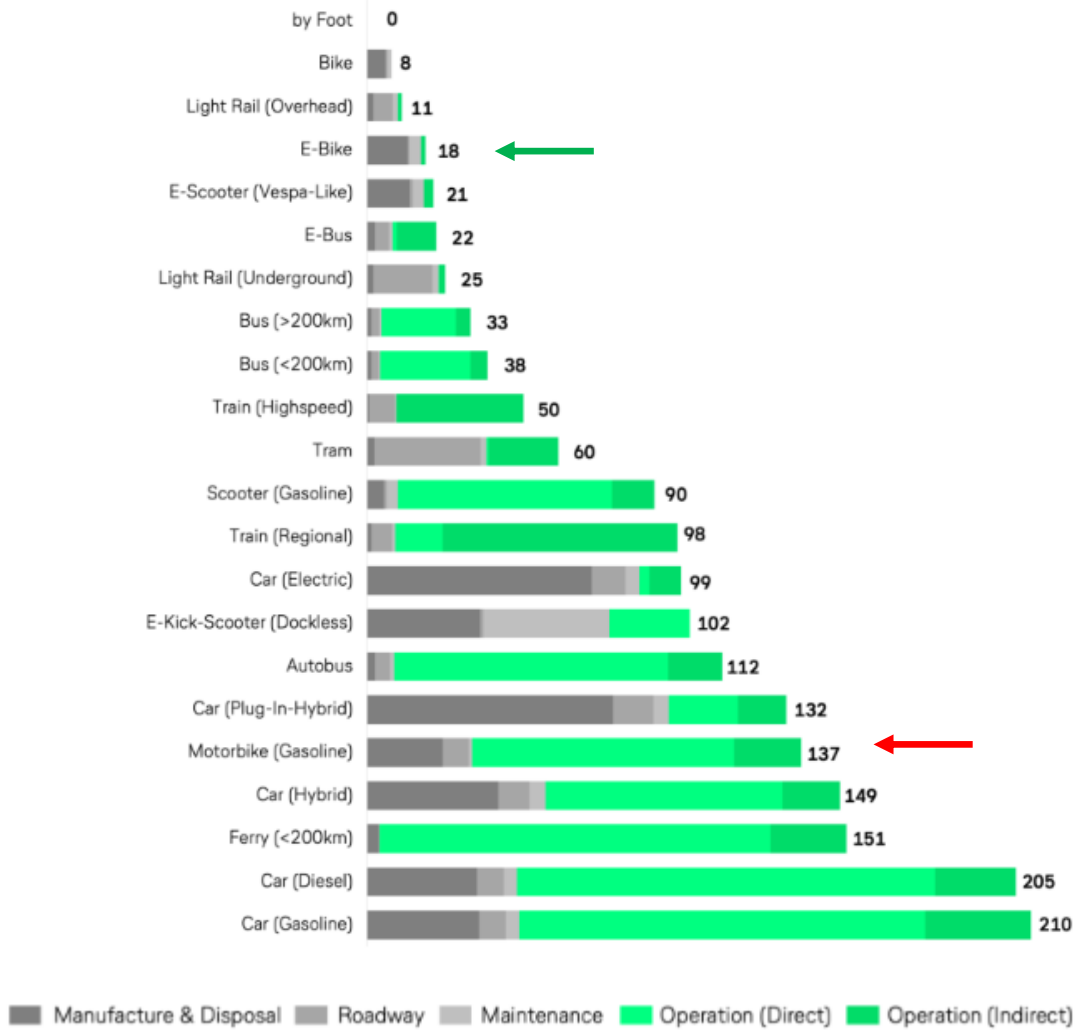


Average CO2 Emissions for Various Transport Types (gCO2/passenger-km)

Challenges

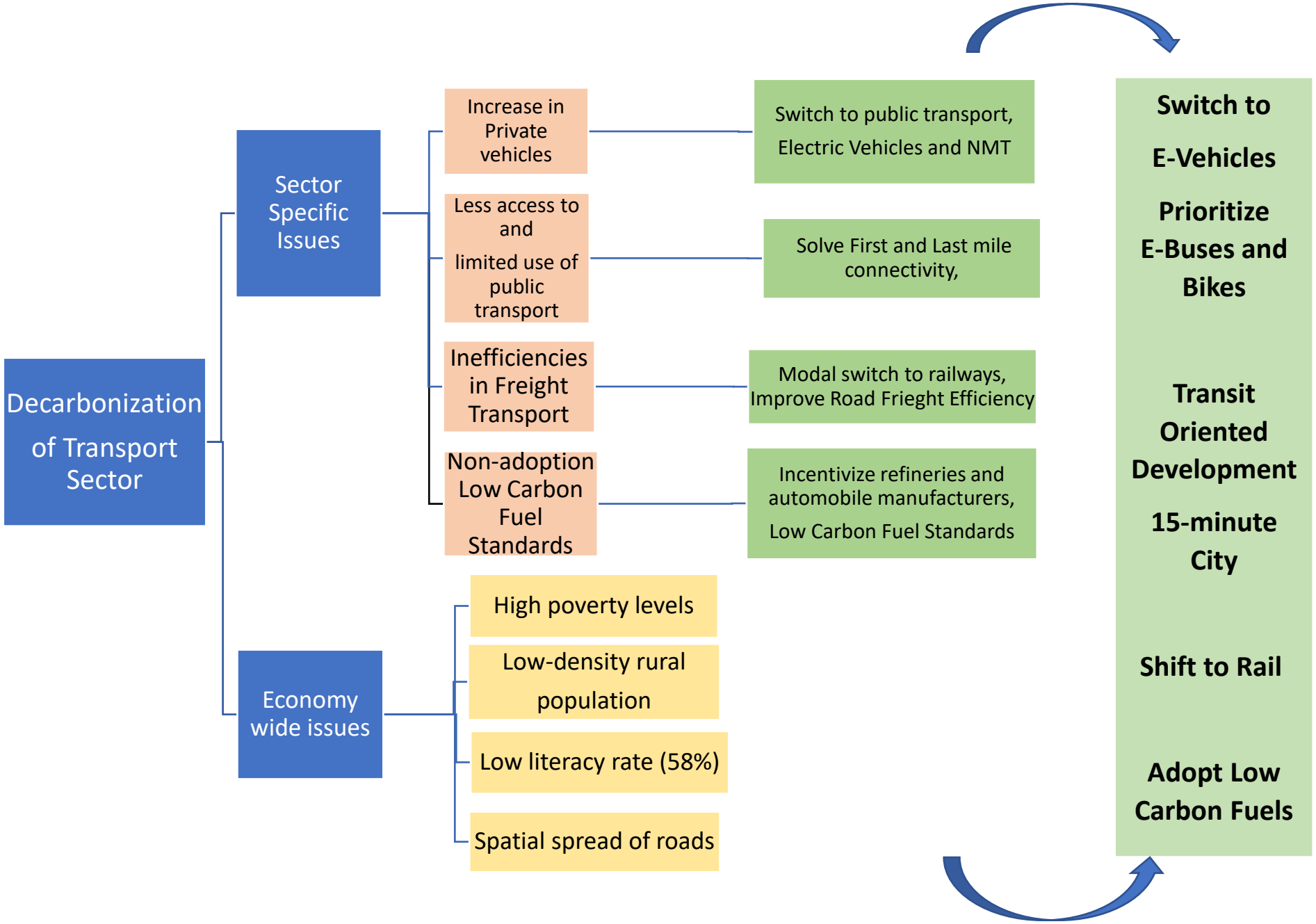
- Macro-level challenges like high % rural population and spatial spread of population
- Horizontal growth of cities--urban sprawl
- Optimal public transport usage design, first and last-mile connectivity issues
- Low HDI and high poverty rates
- Sector-specific challenges that hinder the path to decarbonization, despite state-level commitment observed in policy formulation.
  - Switch to low carbon fuels- technology upgrade
  - electric vehicles charging stations-infrastructure investment

Sectoral Challenges -Decarbonization of Transport

- Involvement of Multiple Stakeholders
- Mass adoption of EVs:
  - Investment in infrastructure needed to establish a network of charging stations.
- Switch to Low Carbon Fuels: Euro 5 in 2020
  - Oil refineries and automobile manufactures sought two years time – not yet compliant
- Electric bikes and Buses- six companies are in electric motorbikes market while licenses issued to 31 companies recently
- BOI and SBP

Recommendations

- ASI (Avoid, Shift, and Improve) approach
- Focus on three identified sector-specific issues
- Firstly, policy gaps allowing massive urban sprawl need to be revisited- adoption of transit-oriented development approaches-compact mixed use urban design-15 minute cities
- Secondly, the freight sector needs efficiency improvements, both in operations and emissions, and a support for conscious shift to rail
- Thirdly, cross-cutting interventions -adoption of better-quality fuels and transition to electric vehicles
- Finally, successfully tap and utilize green finance


Decarbonization of Transport Sector
Sector Specific Issues
Increase in Private vehicles
Switch to public transport, Electric Vehicles and NMT
Less access to and limited use of public transport
Solve First and Last mile connectivity,
Inefficiencies in Freight Transport
Modal switch to railways, Improve Road Frieght Efficiency
Non-adoption Low Carbon Fuel Standards
Incentivize refineries and automobile manufacturers, Low Carbon Fuel Standards
Economy wide issues
High poverty levels
Low-density rural population
Low literacy rate (58%)
Spatial spread of roads
Switch to E-Vehicles
Prioritize E-Buses and Bikes
Transit Oriented Development
15-minute City
Shift to Rail
Adopt Low Carbon Fuels

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