Decarbonization of Transport-Policies, Constraints and Solutions

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Green Industrialization in Pakistan: Integrated Policy Strategies for a Sustainable Future
October 17-18, 2023
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)
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
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
Number of Registered Vehicles in Pakistan (2011-2022)

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

Less access to and limited use of public transport

Inefficiencies in Freight Transport

Non-adoption Low Carbon Fuel Standards

Switch to public transport, Electric Vehicles and NMT

Solve First and Last mile connectivity,

Modal switch to railways, Improve Road Freight Efficiency

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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