Ahmedabad University

POLICY BRIEF

URBAN TRANSPORT & SDG 13: CLIMATE ACTION

This document is a part of series of six policy breifs that identify interactions of the urban transport with six UN Sustainable Development Goals (SDGs); SDG1: No Poverty, SDG3: Good Health & Well-being, SDG5: Gender Equtiy, SDG8: Economic Growth, SDG11: Sustainable Cities & Communities, and SDG13: Climate Action.

SUSTAINABLE DEVELOPMENT GOALS

About

This policy breif is part of the OPTIMISM (Opportunities for Climate Mitigation and Sustainable Development) project. OPTIMISM is an international multi-stakeholder partnership and research network funded by the UK Natural Environment Research Council as part of the research council's "Towards a Sustainable Earth" program. The international team consists of four partners: (i) Imperial College London, UK, (ii) Lund University, Sweden, (iii) Waseda University, Japan; and (iv) Ahmedabad University, India. Dr. Darshini Mahadevia (Principal Investigator-India) and Dr. Minal Pathak (Co-Principal Investigator) lead the project team placed in India that is supported and funded by the Department of Biotechnology (DBT), Government of India. The project team in India consisted of Dr. Chandrima Mukhopadhyay, Saumya Lathia, Amitkumar Dubey, Kanika Gounder, Bandish Patel, and Saleem Yatoo.

Adopting a whole-systems perspective, the OPTIMISM project uses the United Nations Sustainable Development Goals framework to analyze (i) the change in human development and the environment amidst rapid and extensive climate action and (ii) the role of insights from sectoral-SDG interaction in creating policies and practices that enable a transformational change. This document is a part of series of six policy breifs that identify interactions of the urban transport with six UN Sustainable Development Goals (SDGs); SDG1 - No Poverty, SDG3- Good Health & Well-being, SDG5 - Gender Equtiy, SDG8 - Economic Growth, SDG11- Sustainable Cities & Communities, and SDG13 - Climate Action. The document stems from a literature review of over 250 publications.

Authors: Darshini Mahadevia, Saumya Lathia, Shaurya Patel, Kanika Gounder, Minal Pathak, Chandrima Mukhopadhyay

Contributors: Bhavya Patodi, Isha Iyer and Kanika Bajaj.

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SDG 13: Climate Action

What's the Goal & Why Does It Matter?

The Goal: Take urgent action to combat climate change and its impacts

About 3.6 billion people live in contexts that are highly vulnerable to climate change. The global temperature has already rise by 1.1°C above the pre-industrial level, with melting glaciers, extreme weather events, and the rising sea levels [i]. Impacts of climate change vary between and within the countries [i][ii]; more frequent and more severe incidences of extreme weather events (floodings, heavy precipitation, droughts, heatwaves, coldwaves), displacement of humans, increase in poverty & hunger - all affecting the climate adaptability and resilience, especially of the most vulnerable groups [i]. By 2030, medium- to large-scale disasters are likely to increase by 40% [iii], and an estimated 700 million people are at risk of displacement by droughts alone [ii]. By 2100, about one-third of land globally will suffer at least moderate drought, and sea-level rise will be around 30-60 centimenter [iii].

In 2019, the concentration of global greenhouse gases (GHG) reached 59 ± 6.6 GtCO2-eq, about 12% (6.5 GtCO2-eq) higher than in 2010 and 54% (21 GtCO2-eq) higher than in 1990. This is the highest increase in average decadal emissions on record. The average annual rate of growth slowed from 2.1% yr–1 between 2000 and 2009 to 1.3% yr–1 between 2010 and 2019 [i]. To limit warming to the 1.5°C target of the Paris Agreement, the GHG emissions must peak before 2025, and then they must decline by 43% by 2030 and net zero by 2050. Countries, through their Nationally Determined Contributions (NDCs), are attempting to cut emissions. However, current commitments are not sufficient to meet the Paris Agreement target, instead, we are on the track of global warming of 2.7°C to 3.4°C temperature rise [iv]. Taking urgent action to combat the climate crisis and its dangerous impacts is, therefore, imperative to the well-being of the planet and people.

What is its relationship with Transportation?

Limiting Global Warming

Mitigating GHG emissions from the transport sector will directly contribute to overall GHG emissions. About 15% of global emissions come from the transport sector, out of which passenger cars alone contribute to 40% of the transport sector emissions [v]. Limiting warming to the Paris Agreement target of 1.5°C with no or limited overshoot likely requires a 40% to 70% reduction in transport emissions by 2050, compared to 2020, and limiting warming to 2°C likely requires a 15% to 45% reduction in transport emissions by 2050, compared to 2020 [iii]. Increased urbanization generates passenger transport demand; 51% of global passenger km travelled in 2015 occurred in urban areas. When rapid urbanization isn't accompanied by a robust public transport network, it leads to rapid motorization; lack of investments in public transport translates into poor quality of service provisions, pushing people to rely on private vehicles [vi][vii][viii]. India and ASEAN countries' increasing dependency on 2 & 3-wheelers has increased their CO2 emissions by 260% [ix][x]

An accelerated decoupling of emissions from the transport sector is crucial to advance climate action [i][xi][xii][xiii]. Several low-carbon strategies are being tested across the globe; long-term strategies involve changes in land-use and urban form to promote compact development and net-zero urban economic activity [xix][v]; short- & medium-term strategies involve decreasing travel demand [xx], a shift towards non-motorized transport (NMT) and public transport (PT) [xxi], increasing vehicle occupancy [xxii], and increasing the share of cleaner fleet such as electric and hydrogen-based vehicles [xxiii]. Studies worldwide show improvement in public transport systems – upgrading existing networks, adding new transit modes (Bus Rapid Transport/ Light Rail Transport/ Metrorail),

expanding coverage, and improving last-mile connectivity – substantially reduce emissions while generating ample co-benefits[1] [xxiv][xxv]; for example, investments in public transport can generate close to 4.6 million jobs by 2030 [xxvi][xxvii]; improving non-motorized transport and last-mile access to public transport in tourist towns/ areas enhance visitor satisfaction, annual footfalls, and economic outcomes while securing economic viability of local transport systems [xxviii].

Advancing Mitigation and Resilience with Improved Governance in Transport Sector

Evidence from both developed and developing countries shows the decoupling of emissions in the transport sector [v]. For example, China & Europe has shown the most change and many cities across the world are demonstrating a decoupling of transport-related emissions through net-zero urban economic activity [v]. Low-carbon urban transport requires a comprehensive and holistic approach. Although comprehensive transport planning determines the efficiency, and sustainability transportation systems, cities in the Global South often resort to an ad-hoc and piecemeal approach [xxix]. While these cities grapple with rapid urbanization and its impacts on existing infrastructure and service provision, they also often lack political will, financial, technical or institutional capacity to implement comprehensive plans and policies [xxx]. This creates a significant challenge to address climate action at required speed and scale.

Literature highlights the significance of comprehensive planning and policies at all levels of governance; aligning sectoral goals with Nationally Determined Contributions (NDCs) sets the vision for sectoral pathways; for example, Government of India's Lifestyle of Environment (LiFE) Mission, aimed at enabling sustainable behaviour change identifies transport as a core sector [xxxi]; similarly India's National Action Plan on Climate Change (NAPCC) highlight the role of non-motorized transport in emission reduction [xxxii] Integrating different sectoral policies, for example, renewable energy policies with transport sector policies- have a very high mitigation potential [xxxiii][xxxiv]. Ensuring demand-side and supply-side policies increases the speed and scale of decarbonization; for example, electrification of transport via Government of India's Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME) policy) and Production Linked Incentive (PLI) scheme [xxxv]. For example PLI Scheme in India – the ridesharing & mobility companies are aiming to transform their fleet to 100% electric vehicles [xxxiii]. Regulatory support by the government to shared services/ MaaS may lead to the acceleration of innovation in technology through involvement of the private sector in service-delivery [xxxvi] (13.2 and 13.3).

In addition, finance and investments in NMT and Intermediate Public Transport (IPT) can help in mitigation of climate change. A disproportionate share of funds facilitates the use of private vehicles, while the needs of NMT users are ignored [xxxvii]. Studies show that unless active transport modes (pedestrians and bicycles) investment increases, CO2 emissions from transport cannot be substantially reduced [xxxviii]. Enhancing pedestrian facilities is associated with decreasing preference for motorized modes and hence lesser CO2 emissions. (13.2 and 13.3). High use of Intermediate Public Transport (IPT) can bridge the first-last mile connectivity challenge in the transport sector and help reduce emissions. Government exemptions on tax and incentive subsidies on loans in IPT is key in upgrading/retrofitting towards latest clean transport technology [xxxix]. Old fleets lead to more air and noise pollution as well as GHG emissions [xl] Disaster management authorities have crucial role to play for climate resilience in cities. Cities are highly exposed and vulnerable to other natural and climate change-induced disasters, such as cyclones, floods, heatwaves, coldwaves, and droughts. Evidence suggests of integrating transport planning with disaster management plan can help increase climate resilience of a city and reduce fatalities during a disaster [xli].

How can transport empower and advance climate action?

What can states do?

States can take the following climate action through urban transport:

- Align regional transport strategy towards country's net-zero target.
- Update State-Level Urban Transport Benchmarks to align with the Paris Agreement and SDGs.
- Introduce strict carbon-intensity and efficiency standards.
- Promote electrification of vehicles and charging infrastructure through provision of finance on both demand & supply side.
- Promote R&D in battery technologies for heavy-duty vehicles.
- Introduce standards for battery production & manufacturing. Example for critical materials diversifying supply/materials, recycling materials or using them more efficiently.
- Build transport technology transfer programme that helps emission reduction.
- Promote cities to build a Scope 3 Greenhouse Gases Emission Inventory for the transport sector to improve science-policy interface.
- Significantly increase investment and finance for PT, IPT and NMT infrastructure.
- Update by-laws and regulations to advances use of PT, IPT and NMT.
- Promote cities to develop monitoring mechanism to assess the impact of urban transport interventions on SDG13.
- Promote programs and strategies that enable sustainable behavioral choice (E.g. Government of India's Lifestyle for Environment (LiFE) Mission.

What can cities do?

Cities can take following climate action through urban transport:

- Integrate Low-Carbon Mobility Plans with statutory planning process and Disaster Management Plans.
- Update development control regulations and land regulations to ensure compact development.
- Monitoring Scope 1,2 & 3 emissions to align with the Paris Agreement and Net-Zero country targets.
- Exercise financial mechanisms to demote the use of private vehicles, like congestion pricing, increased road tax for internal combustion engine (ICE) vehicles, high price of paid parking.
- Regular maintenance of non-motorized transport infrastructure and upgrade and expand public transport and non-motorized transport infrastructure.
- Ensure public transit stops have adequate supporting infrastructure for non-motorized transport users (ex. bike-stands, parking, etc.)
- Promote park-and-ride programs by providing adequate supporting infrastructure
- For cities that have a multi-modal public transit system, enable fare- and mode-integration.
- Promote ridesharing/shared-mobility applications.
- Regulate and organize IPT to enable a switch from personal vehicles.
- Incentivize clean vehicles and clean fuels.
- Encouraging sustainable and innovative transportation solutions, such as electric bikes and ride-sharing services.
- Allowing cycles on public transport such as buses or metro or rail for improved first-last mile connectivity.
- Provision of smart and state-of-the-art charging infrastructure to advance adoption of electric vehicles in the city.
- Mandate EV charging infrastructure for new developments and incentivize the same for older developments.

Footnotes

[1] For more information on co-benefits please refer other policy briefs from this series.

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Appendix

SDG 13 Targets

13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

13.2 Integrate climate change measures into national policies, strategies and planning.

13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation,

adaptation, impact reduction and early warning.

13.A Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible.

13.B Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities.

*Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.

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Ahmedabad University

Contact Us

School of Arts & Sciences, Ahmedabad University, Commerce Six Roads, Navrangpura, Ahmedabad – 380009, Gujarat, India; Email: artsandsciences@ahduni.edu.in; Phone: +91.79.61911502

OR

Global Centre for Environment and Energy, Ahmedabad University, GICT Building, Central Campus, Navrangpura, Ahmedabad 380009, Gujarat 380009 Email: gcee@ahduni.edu.in; Phone+91.79.61911000