

BENGALURU

# Strong urban transport policies will help mitigate climate change

**Ashish Verma**

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**Electrification of vehicles, levying an extra tax on vehicle purchase, no car roads and other policies can reduce greenhouse gas emissions significantly**



The global climate is transforming due to increased greenhouse gas emissions. Globally, the response to climate change has been through mitigation to reduce these emissions. Urban transportation is the second leading source of carbon dioxide (CO<sub>2</sub>) emissions due to its dependency on fossil fuels. The growing number of vehicles and road infrastructure-based supply in Indian cities is viewed as the essential driver of climate change and relevant consequences affecting cities' sustainability.

# THE HINDU

CONTRIBUTION (INDC). INDC aims to curtail the greenhouse gas (GHG) emission intensity of its Gross Domestic Product (GDP) by 33-35% by 2030 from the 2005 level. Despite the mitigation measures being taken, some climate-change effects are inevitable due to the constant feeding of emissions into the atmosphere.

In the Climatrans study done by IISc Sustainable Transportation Lab (IST Lab), sustainable transport measures for Bengaluru were analysed to understand the urban transport sector's emission mitigation potential for the pollutants CO, HC, NO<sub>x</sub>, CO<sub>2</sub>, and PM<sub>2.5</sub>. Suitable policies were identified under the planning, regulatory, economic and technological instruments grouped under four policy bundles.

The policy bundles' mitigation potential is quantitatively evaluated in terms of Vehicle Kilometres Travelled (VKT), exhaust emissions, and greenhouse gas emissions. The study also estimated the carbon emission intensity and consumer surplus for different mode users associated with the policy bundles. The findings from sustainable transport scenarios for the design years 2030 and 2050 are compared with business as usual (BAU) scenarios of the respective design years.

Policy bundle 4, which is a mixture of policies from all the instruments, including technological improvements such as electrification of all buses and cars in the city - demonstrated a critical decrease in VKT and emissions when compared with the other policy bundles. It calls for levying an extra tax on vehicle purchase; implementing no car roads; pricing for causing congestion; provisions for parking and riding; providing infrastructure for active transport; providing separate lanes for high-occupancy vehicles and promoting carpooling; mixed building with high density along the main corridors and ensuring that all cars and buses on electricity.

Each of the four policy packages is also evaluated concerning the four energy mix scenarios for electricity generation. Emissions results revealed that scenario with bundle 4 policies

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The decline in CO<sub>2</sub> emissions is as high as 66% and 74% for 2030 and 2050, respectively.

Next, a methodological approach to formulate the adaptation strategies for Bengaluru from urban transport to urban flooding was done. The adaptation strategies were evaluated based on various parameters to reduce the impact of flooding. The policies are specifically aimed to enhance the transportation system's resilience, specifically against urban flooding, which is a likely consequence of climate change, reduce its impacts, and strengthen the system's adaptive capacity. The study showed that a proper combination of land use and infrastructure policies can help improve urban transportation's resiliency to a greater extent.

One of the climate change effects is the severe and extreme precipitation resulting in flooding. The uncontrolled expansion of human-made structures is creating more impervious urban areas. These changes, coupled with intense rainfalls and inadequate flood channelling infrastructure, lead to urban flooding. Adaptation is seen as the necessary tool to address these climate change effects. The combined impact of flooding, rapid urbanization and vehicular growth has become a looming threat to the transportation system. These factors affect developing economies disproportionately. There is an urgent need for the transport infrastructure to adapt to these climate change effects to reduce human and economic losses.

*(Dr. Ashish Verma is professor, Transportation Systems Engg. (TSE) and Convenor, Indian Institute of Science (IISc) Sustainable Transportation Lab.)*

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