

Report Launch

Pathways to Steer India's Buildings Sector Towards a Net-Zero Future

18 March 2024 | 10:30 AM to 1:00 PM | India International Centre, Delhi

Concept Note

The buildings sector is uniquely interconnected with several other sectors in terms of energy demand and greenhouse gas (GHG) emissions. The electricity needed for the functioning of appliances and other purposes is regarded as operational energy and contributes to around 35% of India's total electricity demand. The energy required to manufacture building construction materials, referred to as embodied energy, is another major contributor to the energy demand and emissions from the buildings sector. For example, the buildings sector demands close to 60% of cement production, a material that is one of the highest in embodied energy and emissions. Furthermore, urban form and how cities are planned at a larger scale impact changes in land use and overall emissions. Therefore, the impact on indirect GHG emissions from the buildings sector is way more than direct GHG emissions (in the form of cooking fuels).

Currently, the buildings sector contributes to almost 30% of India's total GHG emissions directly and indirectly. Additionally, it can have a significant impact on an individual's well-being as it is closely tied to the necessities of life and development goals such as housing for all, access to quality healthcare and education, thermal comfort, and access to clean cooking fuels. Consequently, it emerges as a critical sector where developmental goals and climate action, encompassing both mitigation and adaptation, must synchronise as India progresses towards attaining the status of a developed country.

The Climate Mitigation Group at the Center for Study of Science, Technology, and Policy (CSTEP) has built the Sustainable Alternative Futures for India (SAFARI) model, which uses systems thinking and prioritises developmental goals—such as food security, housing, healthcare, education, power, water, and transportation—as the primary drivers of growth, in contrast to the focus on GDP only as a measure of development. This guarantees potential climate action scenarios are investigated without jeopardising general well-being and development. A thorough examination of the cross-sectoral effects of interventions is made possible by SAFARI's sectoral models that interlink with the buildings model.



In this project titled 'Pathways to Steer India's Buildings Sector towards a Net-Zero Future', we have delved into the intricate dynamics of India's buildings sector. We have examined various aspects, from energy consumption patterns to emissions footprints, to identify potential levers for effective decarbonisation using SAFARI. The key levers identified include use of energy-efficient appliances and electric cooking, the promotion of rooftop photovoltaics, the use of alternative construction materials such as autoclaved aerated concrete blocks and stabilised earth blocks, the use of alternative fuels (thermal substitution rates) in the cement industry, cement production process shares and the use of blended cement, steel production process shares, the use of hydrogen and electricity in the industry, and increased shares of solar and wind in the power sector. We devised three decarbonisation scenarios with these interventions: buildings-led interventions (BLS), industry-led interventions (ILS), and a combined scenario with BLS + ILS interventions. These scenarios offer insightful perspectives on the roadmap to decarbonising the buildings sector. Additionally, we have come up with policy recommendations for putting these interventions into action.

We will present key highlights from the report at our launch event scheduled for 18 March 2024 in Delhi. After the launch, we will host a panel discussion on 'Decarbonising India's Buildings Sector: Unifying Infrastructure, Code, Policy, and Partnerships'. Drawing from the insights of the report, we aim to discuss four key levers that can aid in decarbonising India's buildings sector:

- the design of buildings to improve thermal comfort,
- the implementation of various codes for energy efficiency and sustainability in buildings,
- the impact of policies in and around the housing sector, and
- the significance of instrumental partnerships in a multi-stakeholder sector.

Unifying all four aspects is crucial for working towards net zero in the buildings sector. We would also like to discuss the importance and possibilities of integration across these levers.

Through this event, we envision a collective effort to drive decarbonisation with informed decision-making, facilitating discussions on pathways to achieve net-zero emissions in India's buildings sector.

