

## **Rooftop solar: A catalyst for achieving net-zero emissions**

Indian government officials and stakeholders are deliberating whether India should set a target for net-zero greenhouse gas emissions by the mid-century. To achieve the target, the nation would need robust policymaking with innovative approaches using science and technology. One pathway is to focus on the deployment of clean energy technologies (solar, wind, biomass, and hydropower) on a large scale to reduce emissions.

To start with, India should think of meeting the growing electricity demand from various sectors—such as industry, transport, and power—with renewables. As of 31 March 2021, the nation’s overall electricity generation capacity stood at 382.15 GW, of which 53% is coal. Renewables are just 24% of the energy mix, with ~94 GW capacity. Solar contributes ~40 GW as of 31 March 2021. India’s renewable energy capacity should improve substantially to achieve the net-zero emissions target.

Since buildings account for a significant proportion of the total electricity consumption, they have a key role in reducing GHG emissions. The enormous rooftop photovoltaic (RTPV) potential of residential, industrial, commercial, and institutional establishments should be utilised to achieve net-zero emissions.

RTPV is widely accepted as one of the best applications of decentralised solar. Moreover, to decarbonise the nation’s transport sector, the Government of India anticipates the electric vehicle market to grow at a Compound Annual Growth Rate (CAGR) of 44% between 2020 and 2027. The charging infrastructure is also expected to add to the demand for distribution companies, and this can be met with distributed decentralised generation from RTPV systems.

Industrial electricity demand is slated to grow at 4.1% CAGR over the next 26 years. Using fossil fuels to serve this demand will lead to higher emissions. RTPV systems, on the other hand, have the potential to offset emissions to a great extent.

With cities and urban centres tapping into India’s abundant solar radiation, RTPV can act as the catalyst to meet net-zero emissions by 2050. However, RTPV has not taken off across the country as expected—with a mere 6.5 GW of the 40 GW target installed so far.

The Center for Study of Science, Technology and Policy (CSTEP) is organising a webinar to discuss these issues. The main objective is to look at the perspectives of different stakeholders in promoting RTPV to achieve the zero-emissions target. The webinar will have two sessions. Session 1 will have discussions on “India’s RTPV potential and strategies required to achieve RTPV targets”, and Session 2 will have discussions on “How RTPV can contribute to 100% GHG emission reductions in India by 2050”.

We hope that these deliberations can inform policymakers, distribution companies, regulators, and the Ministry of New and Renewable Energy as they work on the important task of framing policies and regulations on achieving net-zero emissions through sustainable energy technologies.