

THE LONG ROAD TO NET ZERO

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Future course: An aerial view of a solar park in Karnataka. | Photo Credit: [Getty Images](#)

The story so far: With the announcement of a net zero emissions target for 2070 by Prime Minister Narendra Modi at the 26th Conference of the Parties (COP26) to the United Nations Framework Convention on Climate Change (UNFCCC) in Glasgow, India has joined a high-profile group of countries. Others with net zero goals include major emitters such as the United States, the United Kingdom and the European Union with a 2050 target, and China aiming for 2060. A dozen countries besides the EU have a legal enactment towards the goal.

Net zero, which means balancing out man-made national greenhouse gas (GHG) emissions by removing an equal amount from the atmosphere, can be achieved only through a structured programme that relies on sharp emissions reduction, wide support for clean energy innovation and adoption of green technologies.

India's well-founded argument against committing itself to strict emissions goals is that it has historically been one of the lowest emitters of GHGs, and the impetus has to come from the developed economies that had the benefit of carbon-intensive development since the Industrial Revolution. The country represents about 7% of today's global emissions, and has committed itself to a net zero deadline 49 years away. According to the World Bank, in 2018, India had per capita emissions of 1.8 tonnes, which is markedly lower than 15.2 for the U.S., 5.4 for the U.K. and even the middle-income countries' average of 3.7 tonnes. A projected per capita emissions figure in 2030 for India is 2.4 tonnes under the Paris Agreement. India's absolute emissions volume stands third, after China and the U.S.

Mr. Modi's net zero plan, which he described as "*panchamrit*", or the five nectar elements, includes raising renewables capacity to 500 gigawatt (GW) by 2030, share of power from renewables to 50%, and reducing carbon intensity of the economy by 45%. These represent a rise from the Paris Agreement pledge of 175 GW from renewables, 40% share of power, and reduction of emissions intensity of GDP by 33-35%.

Analysis of India's growth path points to rising GDP per capita, with a rise in carbon emissions in the short term, primarily from energy. There is pressure from absolute increase in population and consumption, but population growth is slowing. A greater share for services in GDP is positive for emissions cuts, but there is no indication of when India's emissions, heavily influenced by coal and other fossil fuel use, will peak.

In terms of sectoral GHG emissions, data from 2016 show that electricity and heat account for the highest share (1.11 billion tonnes), followed by agriculture (704.16 million tonnes), manufacturing and construction (533.8 million tonnes), transport (265.3 million tonnes), industry (130.61 million tonnes), land use change and forestry (126.43 million tonnes), other fuel use (119.04 million tonnes), buildings (109.2 million tonnes), waste (80.98 million tonnes), fugitive emissions (54.95 million tonnes), and aviation and shipping (20.4 million tonnes).

To align all national economic activity with emissions reduction with the aim of containing global warming to well below 2 degrees Celsius or even 1.5 degrees Celsius (Paris Agreement goals), India needs to create a legal mandate for climate impact assessment of all activities. This can facilitate investment by dedicated green funds. Public sector institutions promoted by the government, co-operatives and even market mechanisms will participate.

The 500 GW renewables target needs a major boost, such as channelling more national and international climate funding into decentralised solar power. Rooftop solar, estimated at 7,701 megawatt (MW) installed capacity as of June 2021, could be scaled up by modernising unattractive State-level regulation. The problem with expansion of rooftop solar, which registered 53% year-on-year growth in 12 months, is resistance from State electricity utilities, although costs are reducing.

Another emerging sector is green hydrogen production because of its potential as a clean fuel. India has a National Hydrogen Mission now in place. The fuel can cover major sectors such as power and steel production (shifting from coal) and automotive (fuel cell vehicles), while green ammonia, with potential uses in energy storage, shipping, and as a base for hydrogen production, are promising areas. This can steadily decarbonise big sources of emissions as industry leaders explained at COP 26. Since renewables will be at the core of green hydrogen production, India's solar power potential will help in exporting it to global steelmakers, for instance.

India's urban solid waste management will need to modernise to curb methane emissions from unscientific landfills.

These plans need a political consensus and support from State governments. Net zero will involve industrial renewal using green innovation, green economy support and supply chains yielding new jobs. It also needs low carbon technologies, zero emission vehicles, and renewed cities promoting walking and cycling. Industry will need to make highly energy-efficient goods that last longer, and consumers should be given a legal right to repair goods they buy. Preventing the release of stored carbon in the environment, such as trees and soil, has to be a net zero priority.

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