Realising Net-Zero 2070

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The much-awaited announcement of India's net-zero target and enhanced nationally determined contributions (NDC) were declared at the opening ceremony of COP26 United Nations Climate Change Conference. The five commitments made by India are: (1) Increase fossil-free installed capacity to 500 GW by 2030, (2) Fulfil 50% of energy requirement with renewable energy (RE), (3) Reduce total projected CO2 emissions by 1 billion tonne between now and 2030, (4) Reduce emission intensity of GDP by 45% in 2030 with respect to 2005 levels, and (5) Achieve net-zero emissions by 2070.

Given that the energy sector is currently heavily dependent on fossil fuels and several developmental goals are yet to be met, the road ahead to net-zero transitions will be tough for India.

Current scenario

Post the NDC commitments under the Paris Agreement in 2015, India has been promoting RE, but the increase in non-fossil-fuel-based electricity generation between 2015 and 2020 has been only 3.2%. It is also important to note that nearly 33 GW of coal power plants are under construction, and 29 GW are at the approval stage in India — with about 18% increase in coal-based installed capacity expected in the coming years. Additionally, many inefficient or old coal plants are still generating electricity. The recent privatisation of domestic coal production for economic recovery has also put us at risk of high carbon lock-in.

With India committing to net-zero by 2070, phasing out of carbon-intensive assets to reduce emissions is a must and this will adversely impact the economy, particularly in the states of Chhattisgarh, Odisha, and Jharkhand — where the primary employment

and income source is coal. Transition to clean energy threatens the jobs of 2 crore people engaged in the coal sector. Similar is the case of other energy sectors such as transport and industry. The Indian government has introduced policies and targets for alternate fuels, such as ethanol blending (20% by 2025), compressed natural gas (CNG), and electric vehicles (EVs) (30% by 2030). Despite the clean transport polices and targets, fossil fuel consumption in road transport is rising, with the sale of EVs currently standing at 1%.

In short, with its fast-growing population and a fossil-fuel-dependent economy, India's current pathway needs to address several challenges to transition to a low-carbon one. There is a need for significant sector-specific changes at all levels of technology, finance, and bureaucracy for enabling clean energy transitions.

Road ahead

A net-zero status by 2070 in India will first require re-evaluation of the guidelines and policies, while also accelerating its developmental goals. One way to achieve this is by a gradual phasing-out of older coal power plants, and a review and/or rejection of proposed new plants in the near term. In addition, development of grid infrastructure and market mechanisms to increase storage uptake also needs due attention to tackle intermittency of RE-based electricity generation.

Likewise, in the transport sector, EVs are deemed to be the most promising decarbonisation option, since ethanol adoption could affect food supply and CNG would still have tailpipe emissions. Targeting two-wheelers and the fleet segment for electrification can be financially viable and impactful too. Leapfrogging to EVs with lesser investments in CNG and diverting the savings from ethanol could help in achieving the target of 30% EV penetration. Higher taxes on fossil fuel vehicles may discourage their purchase, while tax receipts can fund EV incentives. Coupling the EV charging stations with decentralised solar-based electricity would have a greater impact. States such as Delhi and Goa have already begun setting up solar-powered EV

charging stations. An EV charging policy (for private as well as public chargers) focussing on solar/RE power would encourage and ease this installation.

Hydrogen is also being increasingly considered as an alternative fuel to decarbonise road transport, especially in the freight and industry sector. Extensive technology transfer from developed nations would be required for implementing efficient decarbonisation measures with this technology.

All these interventions require huge investments, which is an additional burden for developing nations. Developed nations need to bear a proportionate burden of historic responsibilities, yet have provided only $80 billion to their developing counterparts so far.

During COP26, India has been raising the issue of climate justice, urging the developed nations to provide $1 trillion to developing nations by way of climate finance. Additionally, funding will also need to come from multinational and bilateral banks. A legally binding framework for such fund flow, along with verifiable tracking, will be required to ensure they are actioned and do not remain promises.

At the national level, the central government may have to issue updated guidelines for revision of the State Action Plans on Climate Change (SAPCC), so as to ensure they are aligned to the enhanced NDC targets.

To sum up, India has to undertake several activities immediately for transitioning to low-carbon pathways. This includes setting up sectoral action plans and redrafting of current policies for achieving an enhanced NDC 2030 target. This would also boost assurance to plan a net-zero pathway. Further, India would also need to keep the flame burning on the consistent collaboration with developed nations for technology transfer and finance.