



India's Green Growth Imperative

DHRUBA PURKAYASTHA

India Director at CPI

India's commitments under the 2015 Paris climate agreement, which aims to limit global warming to well below 2° Celsius relative to pre-industrial levels, include three quantifiable objectives. By 2030, the country aims to reduce the emissions intensity of its GDP by 33–35%, ensure that renewable energy sources account for about 40% of its installed power capacity, and, through afforestation, create an additional carbon sink of 2.5–3 billion tons of carbon dioxide equivalent.

INTERNATIONAL OBSERVERS LIKE Climate Action Tracker and Climate Transparency regard India as one of the few G20 countries to be “2°C compatible” and on track to fulfill its so-called nationally determined contributions (NDCs) under the Paris accord. But even if India achieves its NDC targets and adopts measures to help keep global warming to 1.5°C, on current trends its CO₂ emissions in 2030 could be about 90% higher than in 2015.

India must therefore decarbonize more, and fast. But India also needs to invest in manufacturing and infrastructure to improve its competitiveness, create enough jobs to lift one-third of its 1.3 billion people out of poverty, and increase its chances of meeting the United Nations Sustainable Development Goals (SDGs). Achieving these objectives without drastically increasing CO₂ emissions will require India to pursue a radically different green growth strategy.

This will not be easy. True, with renewable energy sources currently accounting for 140 gigawatts, or 37%, of India's 380 GW of installed power capacity, the country looks set to

achieve its 40% target by 2030. But only 15.5% of the electricity consumed in India is clean, while the remainder is sourced through fossil fuels. That is primarily because large additions of renewable-energy capacity do not translate into lower CO₂ emissions in linear fashion. The effect instead depends on the capacity utilization of renewable sources, the grid's capability to absorb variable power, and the flexibility of power systems to ramp up during peak loads.

Moreover, while India is the third-largest emitter of greenhouse gases (GHGs), its per capita electricity consumption is among the world's lowest, at about one-third of the global average. But it is imperative that the country's electricity consumption increases as the economy continues to develop.

The energy sector alone accounts for 78% of India's GHG emissions, while industry is responsible for 7%, and agriculture and land use 10%. Within the energy sector, industry is the biggest consumer of electricity, using 42% of India's output. As the country's low per capita resource consumption rises toward the global average, and with demand for carbon-

intensive commodities such as steel, cement, and chemicals expected to grow, electricity consumption is likely to increase at least threefold between 2014 and 2030.

Structurally transforming the Indian economy will entail a shift in the share of GDP from agriculture to industry and services, accompanied by a reduction in energy poverty and improved access to reliable electricity. This would be the required development trajectory for achieving the SDGs, but it would result in India increasing its CO₂ emissions.

So, how, and to what extent, can India decarbonize? The solution lies in deploying clean technology on a large scale, reducing the cost of finance, and pricing and paying for CO₂ emissions mitigation.

To promote both decarbonization and economic development through a green investment and growth strategy, policymakers should consider adopting a sequenced approach. They could start by investing in large-scale renewable-energy projects, before electrifying transportation, and then expanding and integrating distributed green energy for cleaner electricity access.

The next step would be to create additional rural non-farm livelihoods in agro-processing (such as milling, grinding, crushing, and packaging), storage, and warehousing. After that, policymakers should aim to increase energy efficiency in heating, cooling, lighting, and electric motors. India also will need to adopt clean technologies such as carbon capture and storage, hydrogen as a fuel and reducing agent for steel, and green cement manufacturing. And, it must expand its forestry-based carbon sinks on a massive scale.

Speeding up decarbonization in line with India's NDC calls for massive investments totaling some \$2.5 trillion by 2030. Moreover, most emission-mitigation technologies require large upfront capital investments relative to subsequent operating costs, which is why India's

\$2.5 trillion

SPEEDING UP DECARBONIZATION IN LINE WITH INDIA'S NDC CALLS FOR MASSIVE INVESTMENTS TOTALING SOME \$2.5 TRILLION BY 2030.



▼ PASSENGERS TRAVEL IN GOVERNMENT-SUBSIDIZED E-RICKSHAWS IN NEW DELHI.

▲ A FARMER BURNS STRAW STUBBLE AFTER HARVEST IN AMRITSAR.

relatively high cost of finance is an important factor. And increased risk perceptions of the country – including climate-related financial risks – make it difficult to reduce borrowing costs for climate investments. Large-scale green investments in India therefore may not provide adequate risk-adjusted returns.

That means India requires interventions from government and intergovernmental institutions to enable finance to flow toward decarbonization investments. These measures could include creating pooled or specific risk-mitigation mechanisms to “de-risk” finance; shifting investments from banks to financial markets; reducing reliance on credit ratings for lending and investment; measuring, registering, and pricing carbon mitigated incrementally beyond NDC targets; and compensation for additional perceived risks borne by banks and institutional investors.

The risks are indeed high. A long coastline, widely varying seasonal monsoons, and significant dependence on agriculture make India highly vulnerable to the effects of climate change. This is

evident from increasingly frequent cyclones, droughts, and erratic temperatures across the country.

India therefore requires climate-adaptation investments that would preserve ecosystems and reduce coastal erosion while protecting livelihoods. Because the private sector usually perceives core adaptation investments as economically unviable, the public sector must lead by making suitable investments and developing public-private-partnership business models to attract private investors.

Indian policymakers should thus regard meeting national climate targets under the Paris agreement as only a first step. The far bigger challenge is to foster sustainable green growth that provides a better future for India's people while also helping to protect the planet. **IS**

Dhruba Purkayastha is India Director at the Climate Policy Initiative and Director of US-India Clean Energy Finance.

