



**DISCUSSION PAPER**

# INDIA'S NDCs

## Key Messages



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## India's NDCs: Key Messages

- India's Nationally Determined Contributions (NDCs) must be seen in a holistic manner, the aim being to achieve sustainable development within the framework of 8 quantitative and qualitative NDCs.
- India's plan as per its quantified NDC targets is to:
  - » lower emissions intensity of its GDP by 33-35% compared to 2005 levels by 2030;
  - » increase total cumulative electricity generation from fossil free energy sources to 40% by 2030;
  - » create additional carbon sink of 2.5 to 3 billion tons through additional forest and tree cover.
- With total annual emissions of 1,884.3 million tons of CO<sub>2</sub> equivalent (Co<sub>2</sub> eq) (with LULUCF) in 2010 relative to a GDP of \$ 1,657 trillion in 2010, and per capita emissions of 1.397 metric tons in 2010, which is less than one third of world average, India's ambition is fairly substantial in social, political and environmental terms.
- India's NDCs have received high approval ratings in the international arena. Environmental groups such as Climate Action Tracker and Climate Transparency have placed India at the higher end of the scale in terms of performance compared with its G20 peers. India's NDCs are found to be consistent with a 2 degree pathway. They are also close to 1.5 degree pathways if certain conditions are met.



According to the Climate Action Tracker,<sup>16</sup> **India** is leading the G20 countries in closing the gap. Its NDC would lead to a warming of below 2°C, if all other governments' targets (worldwide) were in this range. Its NDC thus comes closest to the 1.5°C limit set by the Paris Agreement. The country remains on track to overachieve its NDC with the adoption of its National Electricity Plan released in April 2018. If India further abandons plans to build new coal-fired power plants, it could become a global climate leader and Climate Action Tracker would rate it "1.5°C-compatible".

*Source: Climate Transparency, Brown to Green Report (2018)*

- India's progress on achieving its NDCs has also been impressive. India's 1st Biennial Update Report (2015) (BUR1) on Greenhouse Gas inventories, based on the emissions estimates of 2010, shows that India's emissions relative to its GDP have already declined by a ratio of 12% from 2005 to 2010. The balance is likely

- to be achieved well in time if India is able to maintain a steady momentum in its current strategy of enhancing energy efficiency across industry, commercial buildings and appliances, energy transitions involving renewable energy, and positive afforestation rates.
- 71% of India's emissions were from the energy sector in 2010. Yet, the indications are that an aggressive policy on energy efficiency enhancement is likely to keep India's growth of energy consumption stable and sustainable.
- The energy intensity of the economy has fallen by 13% during the period 2012-2017 as against the G20 average decline of 11% during the same period. This is happening despite the fact that the energy intensity of emissions is seeing a moderate rise because of increasing energy access and greater use of commercial energy (as against existing bio-mass based energy in rural areas).
- Emissions intensity in industry has declined in India by a ratio of 9.8% during 2010-2015, as against G20 average of 8.2%. Continued progress in this area will depend on measures for technological innovations in fuels, incentives to avoid lock-in investments in hard-to-abate sectors, and respective demand management.
- India has one of the most ambitious renewable energy programmes (175 GWs by 2022) in the world and is likely to meet its target in terms of establishing 40% non-fossil fuel based capacity for electricity generation. As of October 2018, India has already established 124 GW<sup>1</sup> of renewable power generation capacity (from large & small hydro, solar, nuclear, wind and bio-mass), representing 35.8%<sup>2</sup> of its total installed electricity generation capacity of 346.05 GW. The share of new renewables which was only 2.15% of total electricity generation in 2005, has risen to 20.8% in 2018.
- The incremental cost of solar PV based energy generation is now lower than coal-based power. However, the challenges of addressing variability of RE for meeting the needs of balancing power through energy storage and creating infrastructure for

1 Large hydro 45.487 GW, Small hydro 4.5 GW, Wind 34.6 GW, Biomass: 8.9 GW, Solar 24 GW. Data source: CEA, Govt of India.

2 If large hydro power is excluded from this capacity addition, the achievement ratio is 20.7%

integrating RE into the grid at large scale and managing the grid operations will remain for quite some time.

- Technology for stationary electricity storage and evolved markets for storage based applications will be key drivers of India's electricity sector transition. Renewables plus storage applications must become cost- competitive with some sources of peaking and load-following power by the early to mid-2020s, if India is to meet its non-fossil fuel based power targets sustainably.
- Thermal power represents about 65% of the total installed capacity and contributes about 80% to the total generation mix in India. The National Electricity Plan (2022-27) envisions that India will require coal additions of 47GW till 2027 after the current projects in the pipeline (47.85 GW) are completed. Meanwhile, India has announced its intention of enforcing stricter emissions standards for coal power plants from 2020.
- There are signs of stranded assets emerging in the conventional/thermal power sector because of structural factors as well as emerging technologies. This may add to the overall costs of energy transition in the short term and will need to be handled carefully as part of overall strategy for just transitions.
- India is amongst the few countries of the world where forests are growing despite tremendous population and livestock pressures. India's forests act as a net carbon sink; about 12% of India's GHG emissions are offset by the LULUCF sector. India has a target of raising its existing 21.54% forest cover to 33% of the total geographical area through aggressive afforestation and green cover in Trees Outside Forests (ToF). This includes the goal of adding 2.5 to 3 bn tons of carbon stock to the existing stock of 7 bn tons. With

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the annual increase of carbon stock @ 19.50 million tons representing 71.5 million tons of CO<sub>2</sub> equivalent. India's targets are achievable if imaginative and participatory policies are in place.

- Preliminary estimates suggest that the restoration of open forests may not be sufficient to meet the NDC target. Action with respect to ToFs can contribute significantly to achieving the NDC target, especially through agro-forestry. Key challenges in the promotion of ToFs include market support to farmers, regulatory constraints, and institutional mechanisms.
- India has announced a National Electric Mobility Mission Plan 2020 and is implementing since 2015 a programme for Faster Adoption and Manufacture of Electric vehicles (FAME) which aims at incentivizing/ supporting manufacturing ecosystem and early adoption of electric and hybrid vehicles. The current focus (in the medium term) is on creation of adequate infrastructure for electricity charging stations across the country and raising the scale through large public procurements of EVs.

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- Increasing access and uptake of sustainable practices
- Reducing the adverse impact on environment and climate

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**Karan Mangotra**, Associate Director

Centre for Global Environment Research, The Energy and Resources Institute (TERI)  
India Habitat Centre, Lodhi Road, New Delhi- 110003

+91-11 24682100/ 41504900, E-mail: [mailbox@teri.res.in](mailto:mailbox@teri.res.in)

