

# Neither Brake Nor Accelerator

## Assessing India's Climate Contribution

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What does India's Intended Nationally Determined Contribution imply for its approach to climate negotiations? And what implications does it have for domestic development choices? This article examines India's INDC through each lens, to understand the implied logic with regard to India's complex climate–development choices, and with regard to its strategic international choices. It finds that the INDC reflects, as yet, an inadequate consideration of the climate and development linkages that should inform India's actions. The contribution reflects a strategic choice to be “middle of the road,” which neither disrupts the fragile diplomatic consensus nor creates pressure for more urgent global action.

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### 1 Context

With a flair for the dramatic, India uploaded its Intended Nationally Determined Contribution on climate change, or INDC, at 12:15 am on 2 October, the first few hours of Gandhi Jayanti, but simultaneously 8:45 pm on 1 October in Bonn, just in time to be included in the global accounting for climate contributions. At 38 pages, far longer than submissions by other countries, the INDC painstakingly makes the case for what India will do to address climate change and why. What does the INDC imply for India's approach to climate negotiations? And what implications does it have for domestic development choices?

To answer these questions requires laying out the recent historical context of climate negotiations. In 2007, at Bali, the climate negotiations began a shift from a “top-down” international process to a substantially “bottom-up” agreement, to be agreed in Paris in December 2015. Under the former, countries would have been bound to action under a global carving up of the emissions pie, informed by science; under the latter, each country will decide and justify, by itself, what it places on the table as climate action. The result is a series of such bottom-up country-by-country pronouncements.

The INDC-driven process is, in essence, a mutual non-aggression pact. Instead of arguing, as countries have for the past two decades, over what is a just allocation of carbon space and whether resulting emission limitation obligations would undermine competitiveness, the INDC approach sets all this aside—“do what you can and let's see what it adds up to.”

The logic of this process is each country starts with its national context to build a climate pledge. The hope is that a learning-by-doing approach will demonstrate that addressing climate change also yields

other development advantages, such as lower air pollution and greater energy security. Indeed, there is growing evidence of at least some of these “co-benefits,” but there is also uncertainty about their magnitude and actual costs (Rao et al 2015).

Next, the idea is that an iterative process of such pledges will build trust among nations and lead to a virtuous cycle of more ambitious pledges over time. But, to be realised, this process requires that no nations (at least big ones) are extreme laggards, and at least some create forward momentum. But separating leaders and laggards is not easy, because there is no agreed benchmark for what counts as ambitious action. However, in the prevailing political climate, there is a presumption towards a charitable interpretation of all INDCs, in order to sustain diplomatic agreement.

Informed by this logic, for India (as for any country), formulating its INDC involves answering two sets of questions. First, based on an understanding of complex climate–development links, what are India's interests and what could India pledge? This requires an understanding of climate-development synergies, costs of action, and costs to India of climate impacts. Second, in an international context, what is in India's strategic interest to place on the negotiating table? Larger foreign policy considerations also play a role.

In the rest of this article, we examine India's INDC through each lens, to understand its implied logic with regard to India's development choices, and with regard to India's strategic international choices. In brief, we find that the INDC reflects an, as yet, inadequate consideration of the climate and development linkages that should inform our actions. The resultant INDC reflects a strategic choice to be “middle of the road,” which neither disrupts the fragile diplomatic consensus, nor creates pressure for more urgent global action, including enhanced commitments by industrialised countries.

### 2 INDC Overview

The framing parts of the INDC seek to infuse India with a moral voice on climate change by invoking Mahatma Gandhi

and an Indian predilection for a “nature-friendly lifestyle.” These rhetorical devices are unconvincing, given the empirical realities of India’s local pollution and resource base. More substantively, the INDC rehearses, as it should, long-standing elements of the Indian negotiating position: that an agreement should address all components—adaptation, finance, technology, capacity—and not just mitigation; that considerations of equitable access to carbon space are most significant; and that the Paris outcome must be based on the principle of equity and “common but differentiated responsibility and respective capabilities.”

The document also does a convincing job of contextualising India’s development challenge, highlighting the low base of energy consumption, the future challenges of infrastructure development, urbanisation and demographic changes. This is particularly salient since in this round of negotiations large emerging economies, such as Brazil, South Africa and China, have shifted from an emissions intensity approach to one that signals an absolute peak from which their emissions would decline, usually a form taken by industrialised countries. It was imperative for India to show that it was in a different position from these countries, and this section does so adequately.

The INDC next turns to the framework for climate policy in India, followed by a sprawling section on “India’s Progress” in addressing mitigation and adaptation. Interestingly, however, the actual INDC is pulled into a separate, and subsequent section, which is based on a far smaller, tighter list of bulleted points. Particularly notable are an overarching emissions intensity pledge and sector-specific mitigation pledges for 2030: to reduce emissions intensity by 33%–35% from a 2005 baseline; to increase share of non-fossil fuel-based electricity to 40% of total capacity, with the “help of” transfer of technology and low cost finance; and creation of an additional carbon sink of 2.5 to 3 billion tonnes of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) through forest cover. The entire section is subject to two qualifications: the INDC does not bind India to any sector-specific mitigation obligation, and successful implementation is contingent on an ambitious global

agreement. Based on this overview, we turn to unpacking, contextualising and understanding key aspects of the INDC.

### 3 Interpreting India’s Emissions Intensity Pledge

What does India’s emissions intensity, or emissions per unit of gross domestic product (GDP), pledge imply in a domestic context and for the international negotiations? Part of the interpretive challenge is that there is no single accepted benchmark by which to judge such pledges.

One approach is to examine what India could feasibly achieve given the domestic context. By this benchmark, the 33%–35% reduction pledge is, perhaps, on the conservative end of the spectrum. A recent analysis of national energy modelling studies shows that this pledge falls at the low end of “reference” scenarios (continuing with existing policies) and the high end of “policy” scenarios (with additional policy effort) (Dubash et al 2015). As Figure 1 suggests, the target may correspond to relatively low levels of policy effort or even to the normal course of events. This is but an indicative measure, as benchmarking against scenario studies carries pitfalls: different models capture different realities; and given rapid social and economic changes, there is a great deal of uncertainty in forecasting the country’s development trajectory. Notably, the available studies do not look at the development co-benefits of climate action, and so provide only a partial assessment of India’s interests.

Another approach is to examine what the pledge implies in terms of international comparisons across absolute and per capita greenhouse gas (GHG) emissions, even while there are strong disagreements on how to interpret international comparisons, given considerations of equity. Moreover, these calculations are strongly shaped by assumptions about future growth rates (Table 1). Using the INDC’s 2030 GDP estimate of Rs 397 trillion (2011–12 prices) the intensity target translates to

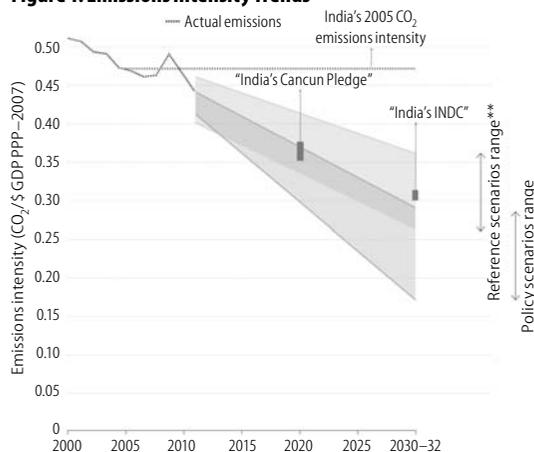
2030 emissions of 7,567–7,800 million tonnes (MT) CO<sub>2</sub>e. However, this GDP estimate corresponds to an annual growth rate of 8.6%, which is at the very high end of historical averages, and probably unrealistic over 15 years. Lower growth rates yield more moderate numbers in the range of 4,500–6,000 MT CO<sub>2</sub>e. By way of context, by 2030, global emissions required to stay within a 2°C temperature rise are estimated to be 42 gigatonnes (Gt) CO<sub>2</sub>e (UNEP 2014), although an estimated sum of current INDCs exceeds this amount (Climate Action Tracker 2015).<sup>1</sup>

**Table 1: India’s Projected 2030 GHG Emissions under the Intensity Pledge\***

GDP growth rate to 2030	6.5%	7.5%	8.6%
Total GHG in 2030 (million tonnes CO <sub>2</sub> e)	4,644–4,787	5,867–6,047	7,567–7,800
Per capita GHG in 2030 (tonnes CO <sub>2</sub> e)	3.1–3.2	3.9–4.0	5.0–5.2

\* 2005 total emissions are consistent with India’s National Communication to the UNFCCC; base year 2005–06 GDP is from RBI; 2030 population is from the INDC.

**Figure 1: Emissions Intensity Trends**



\* The range of study end-years is 2030–32.

\*\* Reference scenarios are not comparably defined, but in general, attempt to reflect full implementation of currently committed policies.

Figure 1 is modified from Dubash et al (2015), and is only broadly illustrative of emissions intensity trends because the studies use different methodologies, and it is based on approximate GDP growth rates using model assumptions. The lighter gray (top) range represents reference scenarios, and the darker gray (bottom) range represents policy scenarios.

On a per capita basis, India’s emissions will be much lower than other countries, and lower than the 2012 global average of 6.6 tonnes per capita (WRI CAIT 2015). For comparison, emissions for China and the US are predicted to converge at approximately 12 tonnes per capita in 2030 (Carbon Brief 2015). These numbers suggest, in a continuation of the discussion on India’s historical role, that India will contribute an ever larger share of annual global emissions but that given our low per capita

emissions, these emissions are justified and necessary to enable development.

Because there are multiple applicable metrics, a series of global indices try to synthesise responsibility for climate change, capability to address it and concerns of equity, with different emphases on each. Based on an equity-focused metric, India is assessed as broadly meeting its “fair share” of effort while many other countries do not meet theirs (SEI 2015). Another index focused only on ambition of mitigation effort ranks India as “less ambitious” (BNEF 2015). And a third that combines assessment of different equity and capability indices ranks India’s INDC “medium” (Climate Action Tracker 2015).

Taken together, the discussion here suggests that based purely on domestic potential, India’s headline emissions intensity pledge (not considering specific additional sectoral actions) is conservative. However, when benchmarked against international composite indicators (which differ widely in their approach and focus) India ranks in the middle of the pack. A more complete view requires also looking at sector pledges.

#### 4 Implications of Fossil Fuel Free Target

A central, and concrete, element of India’s INDC is to achieve 40% share of electricity from fossil fuel free (FFF) sources, supported by a domestic objective of achieving 175 gigawatt (GW) of renewable energy (RE) by 2022. To understand this pledge requires making assumptions about different sources of FFF electricity, as well as the likely total size of India’s electricity sector in 2030. A key question is: will RE be a substantial share of India’s future electricity system?

Based on our analysis, the 40% FFF target could translate to RE capacity addition of anywhere in the range of 150–276 GW. The lower end of this range is driven by an INDC assumption of adding 63 GW of nuclear energy, from a current base of about 5 GW. This seems highly improbable. If we, instead, use a more realistic (yet ambitious) assumption of 17 GW of nuclear energy by 2030, the range for RE increases to 196–276 GW, depending on the total size of the grid.<sup>2</sup> The rest of our calculations uses this range.

To place this in context, the high end of this range amounts to adding almost the entire size of India’s current capacity (278 GW) only in RE over 15 years, a substantial task (CEA 2015). Moreover, the numbers suggest India will make a substantial addition to global RE demand (perhaps second to China) in the next 15 years.<sup>3</sup>

However, the domestic implications for India’s electricity is made more complicated by the additional intent to achieve 175 GW of RE by 2022. If fulfilled by 2022, India will almost certainly install more RE than the 196–276 GW estimates for 2030, and therefore overachieve the long-term FFF target. But doing so implies that RE expansion will be front-loaded, setting a high bar in the next seven years when RE costs are likely to be relatively higher and conditions for RE absorption into the grid less conducive. Figure 2 demonstrates two possible trajectories to the FFF goal in 2030, one via the 2022 target and one without (using the low nuclear addition assumption).

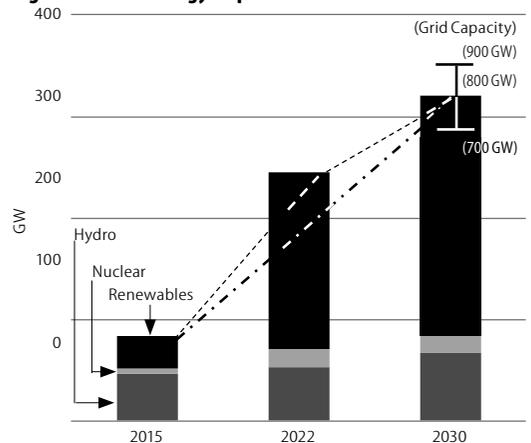
Capacity addition only tells part of the story; understanding the actual implications require exploring how much electricity *generation* comes from RE. Based on simplifying assumptions, we estimate that under the 40% FFF pledge, while the RE component will account for about 28%–31% of grid capacity, it will provide a smaller 13%–14% share of electricity generation.<sup>4</sup>

Including nuclear and hydro, the FFF share of generation by 2030 is likely to be around 21%–22%, which means that fossil fuel sources, including coal, will provide about 78%–79% of generation in 2030. The bottom line is that even with large RE capacity addition, coal generation (currently about 70%) (CEA 2012) is still likely to be substantial.

In emission terms, projected increases in RE would displace about 5% of India’s total GHG emissions, if the current share of electricity in total emissions remains.<sup>5</sup> While this is not a trivial portion it also suggests that a focus on RE cannot entirely substitute for attention to other sectors.

Significantly, the numbers above represent a likely *minimum* floor of future RE and therefore FFF contributions to India’s

Figure 2: India’s Energy Map



2030 electricity generation. These are likely to increase under any of the following conditions: RE technologies mature and their capacity factor improves; grid management improves considerably allowing RE to be used for greater periods; India overachieves the 40% FFF target, which is likely if we reach 175 GW of RE by 2022.

Taken together, the FFF pledge, which is likely to lead to substantial RE increases, strengthens the overall intensity pledge. However, the combination of separate FFF and RE pledges causes confusion about how they will be implemented and their implications for domestic electricity choices. And given the total impact on emissions, it cannot substitute for a complementary attention to other sectors.

#### 5 Mainstreaming Climate Change into Development?

The lengthy section on “India’s Progress” is intriguing because it holds out, even partially, the promise that India plans to mainstream climate change into development. It covers a vast swathe of sectors, including energy, urban development, agriculture, water, coastal protection and so on by building on various national climate missions. Hitherto, India approached climate negotiations as a diplomatic exercise, and deliberately limited international discussion of domestic policy, other than through its reporting on actions. In this context, the detailed articulation of domestic initiatives, in a forward-looking pledge for the international negotiations, is a new step. In addition, preparation of the INDC required bureaucratic engagement at high levels across various government ministries.

As a long-term signal to the bureaucracy, this is potentially significant.

While the step towards embracing the mainstreaming of climate change is to be welcomed, there are several ways in which this section is a missed opportunity. First, a more structured conceptual framework for laying out this progress would have helped. For example, for mitigation, an effort to identify key areas for avoiding high carbon lock-in would have highlighted initiatives such as rail freight, which is currently buried in a morass of more pedestrian initiatives. Grid reform, central for accelerating RE, is conspicuous by its absence. The adaptation discussion could have focused on India's approach for identifying particularly vulnerable sectors and regions for adaptation, drawing on the state action plans given that few other countries have embarked on subnational planning at this scale—but instead receives a scanty single paragraph.

Second, in both mitigation and adaptation, an effort to identify where initiatives help promote other development goals—using the co-benefits framework which is the conceptual underpinning of the National Action Plan on Climate Change—and where these actions diverge from development initiatives and impose costs would have lent heft to this section. In sum, the section largely reproduces the existing conceptual weaknesses of India's sprawling climate change actions, rather than serving as an opportunity to tighten and focus this apparatus.

Third, given the overtones of climate justice that have long animated Indian climate debates, this section on Indian progress is also an opportunity missed to mobilise government and civil society to have a serious conversation on how to promote climate justice internally. What does a climate mainstreaming approach that takes equity and justice seriously look like?

Finally, by the requirements of the international process, in the current political climate of looking at the positive gloss on country actions, the long list of domestic climate activities helps India to meet the threshold of diplomatic respectability. But in future communications, when emphasis is likely to shift to transparency and reporting aspects,

greater precision and clarity will undoubtedly be required.

## 6 Clarity on the Role of International Support

A key area for greater precision and clarity is the conditionality of actions on international finance and technology support. Here, the text sends mixed signals. The FFF target is to be achieved with “the help of” internationally provided technology and finance. Moreover, the “successful implementation” of the entire INDC section is contingent on international support with reference to key articles in the United Nations Framework Convention on Climate Change (UNFCCC 2015).

The text also contains preliminary numbers on the extent of finance required, signalling conditionality, but these contain inconsistencies. The sum of the adaptation and mitigation estimates, \$206 billion (2014–15 prices) and \$834 billion (2011 prices) respectively, is less than the overall number of \$2.5 trillion (2014–15 prices) needed by 2030. This suggests the numbers are not based on a careful reckoning of concrete plans. Internationally, the \$2.5 trillion price tag is significantly higher than what other countries have put forward (Carbon Brief 2015), further underscoring the need for a sound analytical basis for India's calculations.

At the same time, there are signals that not all action is conditional. Only “successful” implementation is contingent on international support, which suggests that India may be willing to make *efforts* towards achievement of pledges, but is not obliged to actually *fulfil* them unless support is forthcoming. There is also a discussion on mobilising domestic resources, suggesting ongoing domestic actions described are not explicitly linked to international support.

This double-sided language suggests India will take actions with its own resources, but also holds strongly to the UNFCCC principles that developing country actions are to be enabled by support. It suggests an evolving interpretation that the *extent* of actions will be tied to support. Going forward will involve developing greater clarity on which specific actions require support—and the explicit rationale

for that support would help operationalise this approach.

## 7 Conclusions

As the last of the large economies to submit, India's INDC was anxiously awaited. Would India support the fragile global consensus on how to structure a global climate deal? By presenting an INDC that lays out a modest intensity target, supplementary sectoral mitigation actions, a carefully ambiguous stance on international support, and sprawling discussions of other mitigation and adaptation actions, India signalled consistency with the global consensus. In the prevailing generous environment of a mutual non-aggression pact, with all countries keen to avoid a brawl, India's INDC did what was necessary to avoid applying the brakes to the international process. In this approach, India is very much part of the pack; many other countries have also adopted a similarly contained approach to their INDC.

At the same time, the Indian INDC does not provide a forward impetus to the negotiations. As a country highly vulnerable to the impacts of climate change, the likely failure of aggregate national pledges to fall short of what science suggests is required, should be a cause for concern. India has made a strategic decision to submit a middle of the road INDC, but there are grounds to consider whether our broader interests in a more effective climate deal merit pressing the accelerator in the future, thereby also putting more pressure on developed countries for enhanced commitments.

The choice between brake and accelerator can only be driven by a careful understanding of domestic climate–development links. The INDC suggests that this understanding is, as yet, incomplete. National modelling studies do not examine these linkages adequately. The FFF target reveals some inconsistencies about the trajectory towards higher renewable energy. Assumptions about future electricity use and GDP figures are not explained and their implications are not examined. Precision and clarity on an implementation road map, and costs and financing requirements are lacking. And it is as yet unclear how India's domestic actions will

promote justice internally, to match our commitment to it externally.

The starting point for a more assertive international position, therefore, has to be a more complete domestic understanding. The INDC process, and, indeed, the last five years of climate missions and plans, provide a useful base for this exercise. And the most intriguing possibility to emerge from the INDC is that of mainstreaming climate change. In the context of a heated domestic debate about links between the economy and the environment, the INDC provides high-profile support for the importance of responsible environmental stewardship, providing an opening for further bridging local and global debates. This is a foundation worth building upon.

#### NOTES

- 1 See Table ES1 in UNEP (2014).
- 2 Nuclear estimate of 17 GW and grid estimates of 700 GW, 800 GW and 900 GW, are consistent with government studies, for example, India Energy Security Scenarios (NITI Aayog 2015). INDC 2030 estimate of 2,499 TWh (terawatt hours) of electricity demand most closely corresponds to the 700 GW range.
- 3 For example, the US may add between 50–250

GW of solar and wind by 2040 (see Fig 8 in US EIA (2015)) while China is estimated to add about 630 GW of RE (Teng 2015).

- 4 Assuming an overall grid capacity factor of 0.55, consistent with the earlier part of the last decade, calculated by authors using CEA data.
- 5 Electricity generation currently accounts for about 38% of India's emissions (INCCA 2010).

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