BUSINESS AS USUAL PLUS SOME ACTIONS

An Alternate Look at India's (I)NDC

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List of Abbreviations

ADB	Asian Development Bank
AT&C Loss	Aggregate Technical and Commercial Loss
BJVJ	Bharat Jan Vigyan Jattha
CBDR-RC	Common but Differentiated Responsibilities and Respective Capabilities
CDM	Clean Development Mechanism
CO2e	Carbon Dioxide equivalent
CoP	Conference of Parties
CSR	Corporate Social Responsibility
EU	European Union
GCF	Green Climate Fund
GDP	Gross Domestic Product
GIM	Green India Mission
Gt	Gigaton
GW	GigaWatt
HDI	Human Development Index
INDC	Intended Nationally Determined Commitment
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MoEFCC	Ministry of Environment, Forest and Climate Change
MRV	Measurement, Reporting and Verification

MT	Million Ton
MW	MegaWatt
NAPCC	National Action Plan on Climate Change
NDA	National Democratic Alliance
NDRF	National Disaster Relief Fund
NICRA	National Initiative on Climate Resilient Agriculture
NMSA	National Mission on Sustainable Agriculture
PAT	Perform, Achieve and Trade
PESA	Panchayats (Extension to Scheduled Areas)
ppmv	parts per million by volume
PV	Photovoltaics
REC	Renewable Energy Certificates
REDD+	Reduced Emission from Deforestation and Degradation
SAPCCs	State Action Plans on Climate Change
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	US Dollar

Climate Conundrum and the Paris Paradox

Ajay K. Jha

Climate changehas been described as defining crisis of the century. Since preindustrial times the global temperature has risen by around 1 degrees Celsius. This has largely been the result of anthropogenic interventions mostly driven by burning of fossil fuels and large-scale deforestation. It is estimated that since Industrial Revolution we have burned one-third of the known conventional energy and also fell one-third of the forests. The result is high carbon concentration in the atmosphere (400 parts per million), extreme climatic events, melting of glaciers, rising of sea level, and desertification of vast lands etc. Besides these spectacular impacts, slow onset impacts has resulted into large scale extinction of flora and fauna, and scientists say that if unhalted we are moving closer to the seventh wave of mass extinction. From the last three decades global warming, climate change and environmental degradation have attracted global attention and have assumed huge political significance for the world. The fifth report of the IPCC tells us that if expedited efforts are not made, we stand a danger of seeing a rise in temperature to the tune of 4.5 degrees Celsius, which would be catastrophic. There have been hectic efforts at all level since the last two decades. The world leaders have agreed to limit the rise in temperature below 2 degrees Celsius. However, solutions seem to be eluding this resolve.

THE PARIS CONFERENCE (COP 21)

The two decades of global efforts led by the United Nations Framework Convention on Climate Change has underscored the urgent need to contain emissions from fossil fuels. However, the UNFCCC and the Kyoto Protocol, two global agreements to reduce emissions have largely remained unimplemented due to failure of the developed countries to comply with the mandate of the UNFCCC and the Kyoto Protocol and effect deep cuts in their emissions. The changed geopolitical situation and shifting of emissions from developed to developing countries, who have started developing in recent decades have created a rift between developed and developing countries resulting in a deadlock in negotiations. However, recent efforts have been able to create an understanding among the global community that irrespective of the historical debt, the crisis demands that each country contributes in resolution of the crisis to the best of their ability. The year 2015 is crucial for the fight against climate change as countries will seek to have a new agreement replacing the Kyoto Protocol, wherein, unlike Kyoto Protocol all countries will contribute towards reduction of emissions. From 30th November to 12th December, 196 countries will converge in the 21st Conference of Parties (CoP) of the UNFCCC at Paris. It is presumed that Paris agreement will lay a foundation of the agreement, which will determine the climate policy for many decades to come.

Preceding this Conference more than 146 nations have submitted their targets for reducing their emissions known as Intended Nationally Determined Contribution (INDC). The agreement is also supposed to address the issues of adaptation, financing, loss and damage, technological collaboration and cooperation, and capacity building in developing countries.

WHERE WE STAND NOW

The Kyoto Protocol asked the developed countries (industrialized and high income countries listed in Annexure 1) to reduce their emissions by 5%. Since the USA and developing countries were out of the Kyoto Protocol mechanism it covered only 54% of global emissions in its first period (2008-2012). In Durban in 2011 countries agreed to formulate another global agreement at Paris, which will be operational from 2020. In the period between the Kyoto Protocol and the new agreement, they decided to extend the Kyoto Protocol into a second commitment period from 2013-2020. The second commitment period covers only 14% of emissions as only few developed countries (including the EU) agreed to be bound by the second commitment period.

However, some of the countries namely the USA, Canada, Australia and Japan have actually increased their emissions during 1990-2012. The global emissions currently stand at approx 50 GT C02e, with China contributing 27%, the USA 17%, The EU 12% and India 6%. The UNEP's Emissions Gap Report, 2014 estimated that we are left with approx. 1000 GT of atmospheric space known as Carbon Budget and at this rate carbon budget will be exhausted by 2030. The global per capita emission needs to be halved (from 4t/person to 2t/person) between 2010 to 2050 to remain within a reasonable chance of limiting rise in temperature below 2 degrees Celsius.

While the countries understand the need for deep cuts in the emissions, and developing countries have always shown a willingness to contribute; new approaches to resolution proposed on the behest of developed countries, are in complete contravention to the historical responsibility of the developed countries, who have been responsible for 80% of the stock of GHG emissions since 1850s. The negotiations have seen a dramatic change from the top down approach (laid down in

the UNFCCC and the Kyoto Protocol) to Pledge and Review promoted by the USA, where no country is under any legal obligation to reduce its emissions! The new agreement will have to show its commitment to CBDR-RC, which is the most important principle of climate negotiations. This principle cannot be thrown to the winds in preference for future responsibilities, which brings more responsibility on the developing countries. Developing countries need atmospheric space based on their development needs and vulnerability.

INTENDED NATIONALLY DETERMINED CONTRIBUTIONS (INDCs)

The Lima CoP asked the parties to submit their Intended Nationally Determined Contribution (INDC) ahead of Paris CoP. 146 countries including China, the USA, the EU, India, Brazil, South Africa, Mexico have submitted their contributions. The submissions of INDCs have been a race to the bottom. Leading the pack is the USA, which declared to reduce emissions by 26-28% over 2005 level by 2025, which is actually a downgrade from its commitment made in the Copenhagen CoP. China declared that its emissions will peak by 2030 and 20% of its power will be contributed by non fossil sources. However, China did not mention its peaking limits, and may continue to spew 12-14 GT in 2030. The EU declared to reduce 40% emissions over 1990 level by 2030 and by 85-90% by 2050. However, the EU has already achieved 20% reduction in emission by 2012 and could have definitely gone more ambitious to retain its moral high positioning in climate negotiations.

India declared its INDC on 2nd October, 2015 wherein it committed to reduce 33-35% of its energy intensity by 2030.

It also builds up on its plan to have 175 GW of clean energy by 2022 and promised that by 2030, 40% of its installed capacity of electricity will be produced from non fossil sources. It also commits to improve its carbon sink to absorb 2.5 to 3 billion tonnes of carbon dioxide. However, India has sought international financial support to be able to do this. It estimates that it will require an investment of USD 2.5 Trillion till 2030. India's INDC puts up a commitment, which will result in significant saving of emissions and huge boost to renewable energy. India has been also called to be more ambitious in improving its energy intensity, however, largely India's INDC has been as more progressive than that of the developed countries. Developing countries have shown more commitments with small countries like Morocco and Ethiopia putting up brave INDCs with putting up peaking years and ambitious emission reduction programmes.

According to an analysis produced by the UNFCCC secretariat on 2nd November, these pledges fail to prevent rise in temperature below 2 degrees Celsius. Even if all these pledges are implemented in the right earnest, the rise in temperature will be in the range of 2.9 to 3.5 degrees Celsius. The analysis by Stern et al shows that the reduction pledges from the USA, EU and China (contribute 45% of total emissions together) will overshoot two times the target of 2030 of 35 GTC02e.

The most important thing about these pledges is that developing countries pledges exceed developed countries pledges by almost three times! Another gap in mitigation promise is that developed countries are not coming up their emissions reduction for the period before the new agreement. Not only have they failed to reduce their emissions, but also renegade on their promises to provide financial assistance. As against the Copenhagen promise of providing USD 100 billion every year

after 2020, the commitments to financial support have failed to go beyond trifle USD 10 billion. They have performed equally poorly on technology transfer and capacity building. Definitely, developed countries need to show more ambition.

CHALLENGES BEFORE PARIS COP

The CoP will devote its attention largely to four areas, (i) a universal agreement with its binding and non binding parts, (ii) to incorporate disparate and variously laid down INDCs into the agreement, (iii) coming up with a dynamic financial assistance mechanism trying to reach the scale of promised USD 100 billion, and (iv) scaling up Agenda of Solutions, which includes intentions of private sector, non state actors and local governments to contribute towards climate stabilization. Even at this time there is no agreed text for negotiation.

After the November Pre CoP the text for negotiation in Paris stands at 55 pages with approx. 1500 brackets, which are yet to be agreed upon. However, there is some clear writing on the wall, emissions cuts will not be mandatory, flexible mechanisms will continue, more carbon markets will be proposed and more accounting loopholes and false solutions will be created. One critical thing that more than 80% of the fossil fuels need to be left under ground to be able to limit the temperature rise beyond 2 degrees Celsius, hardly finds any mention in the draft text and less reverberation in the negotiations. We still hope that the Paris CoP will rise to the occasion, lay a strong foundation for a clean future of coming generations, and will restore global faith in multilateralism.

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India's INDC: Climate-threatening Coal Continues to Call the Shots

Soumya Dutta

Before examining India's INDC - which was submitted on 2nd October, the birth anniversary of Mahatma Gandhi (and the International Day of Non-violence), it will be prudent to take a brief look back at the how INDCs themselves came to be accepted as the primary climate plans globally.

Back in 1997, when the Kyoto Protocol, the first international agreement to tackle the threat of climate change was formulated, the idea was that each of the 37 rich (Annex 1) countries that contributed the most to cumulative carbon dioxide emissions, would have a "legally binding commitment" to reduce a given percentage of their greenhouse gases from 1990 levels within a given period (2008 to 2012), called the "first commitment period". The idea also was that these reduction percentages would increase in the second commitment period, and so on. In the hugely hyped Copenhagen climate summit (Conference of Parties no. 15 or CoP-15), the rich countries mounted pressure on "emerging economies" to join the mitigation (emission reduction) efforts. The until-then sacrosanct and accepted principle of Common but Differentiated Responsibilities based on Respective Capacities (CBDR-RC, meaning those who have caused more emissions problem and have more economic capacity will contribute more to the solution) was effectively thrown out. The new norm, accepted in the next CoP (CoP-16

in Cancun, Mexico 2010), was "Pledge and Review", meaning each country would have to pledge certain emissions reduction from their baseline emissions (or emissions projection for major developing countries). These would be reviewed by a mechanism (MRV) in the United Nations Framework Convention on Climate Change (UNFCCC) for their cumulative adequacy in keeping the global atmospheric CO2-equivalent concentration within 450 ppmv (parts per million by volume) and the global annual average temperature rise within 2 degrees Celsius above pre-industrial times. But the UN member country governments found even that unacceptably 'strong', and by the time climate negotiations reached Warsaw during CoP-19 in 2013, the new norm was diluted even further to Intended Nationally Determined Contributions (INDC)! Perhaps in a few years the governments will find even these as unacceptable and will turn to 'Tentative Intended NDC' or 'TINDC'!

Thus, while the total greenhouse gas emissions increased from around 33 billion tonnes (Gt) of carbon dioxide equivalent (CO2e) in 1990 to about 53 Gt in 2013, the mitigation action continuously got less stringent and smaller, sliding from legally binding commitments through pledges to intended contributions! In between, the United Nations Environment Programme (UNEP) has been publishing Emission Gap Reports, highlighting the huge gap between the amount of emission reduction needed to keep the temperature rise within 2 degrees Celsius and that being offered by the governments. Even the proposal that these INDCs be evaluated by the UNFCCC and contributions enhanced accordingly, has not been accepted, with only a token review by UNFCCC now targeted. The Intergovernmental Panel on Climate Change (IPCC) calculated in its 5th Assessment Report, that for a reasonable chance of global average temperature remaining within 2 degrees Celsius

above pre-industrial levels, total global emissions must peak by 2020 at no more than 44 GT, and then drastically reduce by over 80 per cent from 1990 levels by the year 2050. A quick analysis of 127-odd INDCs submitted by early October shows that the 2020 emissions will be close to 60 billion tonnes, way over the 44 Gt target, even if nations meet their INDC pledges. And the very acceptance that each nation will 'freely' decide, based on national circumstances, what their contributions will be (without a care for what happens to the global climate as a result), and even these are only 'intended', clearly shows that there is a huge farce being played on the world's most vulnerable people and countries. Paris is going to host the 21st CoP, from 30 November to 11 December 2015, and announce the "great achievement" of a new "universal climate treaty". Even this pathetically inadequate 'treaty', or 'an outcome with a legal force' will be coming into effect only by 2020, and by that time emissions will be nearly 60 Gt. In reality, the world will be committed to great climate chaos in decades to come. This is the real nature and value of the INDCs.

Let us focus on the Indian INDC and a few of its stand-out features. One, it categorically refuses to commit to any peak emission level, unlike most other major economies. Several studies have projected the India's gross emissions to reach anywhere between 4 and 7 billion tonnes by 2030, and a more realistic figure is around 5 Gt. Second, it also refuses to commit to any year by which its emissions will peak and then start falling, essentially saying our emissions will keep growing.[1] While claiming that "few countries in the world are

1 The frequently made comparison between India and China is not really fair. About this, the Indian government's claim is valid: that you cannot put a USD 2 trillion economy with roughly 2 tonnes CO2 per capita per year emitting approximately 7% of global CO2 and a USD 10 trillion economy with roughly 8.4 Tons per capita emission emitting 29% of global emissions – in the same category, while the population of the two countries are fairly close at 1,270 million and 1,360 million. China's clever positioning of 2030 or earlier as its peaking year of emissions has put pressure on other major/ emerging economies to follow suit.

as vulnerable to the effects of climate change as India is with its vast population that is dependent on the growth of its agrarian economy, its expansive coastal areas and the Himalayan region and islands", India's INDC says we will continue to emit more climate-threatening CO2, by burning more CO2-intensive coal! When your actions do not match your positioning, it's called hypocrisy. But if one asks – is India's INDC good, bad or ugly? The answer would be – it depends how you look at it. If one compares India's INDC with others, no one is good, so in comparison, India's seems not-so-bad. But surely it is blind, stubbornly pro-dirty-industry and somewhat stupid.

HUGE EXPANSION OF COAL

India's INDC claims that coal is necessary for uplifting "the largest proportion of global poor (30%), around 24% of the global population without access to electricity (304 million), about 30% of the global population relying on solid biomass for cooking and 92 million without access to safe drinking water". The reality is that from 1991 to 2011, India increased its centralised installed power capacity by three times (from around 63,000 MW to 187,000 MW), while merely reducing the number of unserved/ unconnected population from 54 per cent to around 25 per cent, while another 25 per cent gets coal power in nominal quantities, of a few hours of electricity each day. This shows that centralised big power is really not being used for the stated purpose. A simultaneous rise in per capita emissions (from 0.79 T/person/year in 1990 to nearly 1.9 tons/ person/year in 2014) and large rise in total coal consumption (from 249 million tons in 1990 to 745 MT in 2014) shows that these three times per person rise in coal consumption and 2.5 times in carbon emissions are serving only the well-off (as the poor are often not connected to the coal power grid, or get only

a few hours of coal-produced electricity per day). And the other claims of coal's benefit, such as providing clean drinking water to 92 million without that access, ignores the fact that coal mining and burning is consuming and contaminating massive amounts of freshwater, denying the same poor their traditionally available natural drinking water sources.

India's INDC looks at coal as the continued major energy source and still claims good climate action. The world today consumes about 7,800 million tonnes of coal each year, and combined with about 3,995 million tonnes of oil (all petroleum products) consumed every year, these two (along with gas, the third largest) are by far the primary contributor to CO2 emissions. In the year 2012, coal, oil and gas contributed roughly 43%, 33% and 18% of global CO2 emissions (Global Carbon Project data), adding up to 94% of the total. Thus, any meaningful climate mitigation action has to reduce these carbon-intensive fuels drastically. And out of these three, coal is the most CO2 emission intensive, as it contains little more than half of the energy per tonne compared to oil, which is a hydrocarbon (getting energy from burning both carbon and hydrogen, in contrast to coal getting its energy from burning mostly carbon). So it makes eminent sense that climate action has to target reduction in overall coal use.

In sync with its claim in the INDC that coal will remain the mainstay of energy in India for decades to come, the Modi government seems to be far more committed to increasing coal production by dismantling most environmental and social regulatory frameworks and pushing aside environmental laws and concerns. The current domestic coal production of about 570 million tonnes (from all sources) is targeted to be raised to 1 billion tonnes by around 2020. Soon after this announcement, a further enhanced target of 1.5 billion tonnes was announced.

Considering the import of around 200 million tonnes in 2014-15, the domestic consumption in 2014-15 would be around 770 mt, and the CO2 emission from burning this alone close to 1.6 billion tonnes (considering higher ash content in Indian coal, and also taking into account lignite-burning, a lower conversion factor of 2.0 is used)!

Another large hidden emission rise from increased coal production is from large-scale deforestation. Most of the new coal mine areas in India have thick forest cover, like the hugely contested coal mining (and won by grassroots resistance to the mine) in Mahan forest/coal block in Singrauli district of Madhya Pradesh. As tens of thousands hectares of good forest land is targeted to be mined for coal, emissions from deforestation is sure to rise sharply.

India's INDC claims – "Coal based power as of now accounts for about 60.8% (167.2 GW) of India's installed capacity. In order to secure reliable, adequate and affordable supply of electricity, coal will continue to dominate power generation in future". That means India will continue to use the most CO2-emission intensive source as its biggest energy source, to 2030 and beyond! Most of India's older coal power plants are very inefficient, with an average coal to electricity energy efficiency of less than 30%. Only a few recent super-critical boiler based plants have a somewhat higher 37-38% coal-to-electricity efficiency that they claim. On top of that, because all of these are large centralised plants located far from the load centres, about 24 per cent of the generated power is lost in transit (called AT&C loss). Thus India's centralised coal power infrastructure gets only about 23% of the energy in the coal burned to user points. The rest adds to wasteful carbon emissions serving no one. Even if all the new big coal plants use super critical technology, as the INDC claims, and these work at 37% efficiency, and

the national AT&C losses are brought down to 20% (a lot of long pending asks), the coal-to-user-point-electricity efficiency will still be a low 29.6%, with over 70% of the burned coal wastefully adding climate-threatening CO2.

The INDC also claims that the Rs 200 per tonne of coal cess is a great carbon tax mechanism, "The coal cess translates into a carbon tax equivalent, using the emission factor for coal, of around USD 2 per tonne". One need to recall that during the heyday of carbon credits through CDM (Clean Development Mechanism), the price per tonne of CO2 reduced was over USD 20, and even that was not enough for reducing emissions from polluting entities.

The other large coal consumers are steel and cement production, and if the INDC's target of reduction of emission intensity by 33-35% is achieved, this will be reducing coal consumption and emission growth in these industries (cement industry has another, inherent CO2 emission mechanism, from its production itself, using whatever energy source). INDC claims that India has already improved its economy wide energy intensity by 12% from 2005 to 2012, and this is a remarkable achievement. Even so, there are a large number of both supply side and demand side reduction opportunities, and if pursued with even these not-so-aggressive targets of 33-35%, the coal consumption growth in many industrial activities will come down.

India's dogged defence of its unbridled right to more carbon space (also termed 'development space', as if 'development' is synonymous with burning carbon), to economic growth, has created this stubborn 'national' stand that we cannot accept any limit on coal burning. The government thinks it's essential to consume very high carbon-based energy to achieve a high Human Development Index. As the INDC says, India's present

per capita energy consumption is 'only' about 0.6 tons/person/year (2011) and – "It may also be noted that no country in the world has been able to achieve a Human Development Index of 0.9 or more without an annual energy availability of at least 4 toe per capita. With a HDI of 0.586 and global rank of 135, India has a lot to do to provide a dignified life to its population and meet their rightful aspirations." Does this hypothesis stand the test of reality ? Even in our own neighbourhood, Sri Lanka, with a per capita CO2 emission of about 0.83 T/person/year, less than half India's, has achieved a much higher HDI of 0.75 compared to India's 0.586. Maldives HDI of 0.698 is also much higher than India's with far lesser CO2 emission per person. Bangladesh emits 1/4th our per capita CO2, and has a HDI close to India's, at 0.558. So that argument falls flat.

The other major reality that the INDC – in stubbornly pushing coal as salvation logic - fails to internalize is that coal burning has huge external costs, over and above climate change impacts. Some estimates show increased premature deaths of over 100,000 per year, with increased disease burdens an extra. If we include coal's adverse impacts on health, agriculture, water resources, air quality, soil pollution etc, the development / HDI rhetoric seems very hollow.

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India's INDC and the Big Push for Renewable Energy: A Brief Look

Soumya Dutta

Early this month, India submitted its Intended Nationally Determined Contribution (INDC) to the UN Framework Convention on Climate Change. This is basically the conditional plan of what actions our government will take to tackle the threat of climate change. Conditional, because some actions are made contingent upon receiving international climate finance. Following the recent announcements of the NDA government, the ambition level on various "renewable energy" options have been up-scaled from those of the earlier governments. And the INDC has received a mixed response, with its renewable energy part drawing lots of praise even from the normally critical global civil society. Let's take a brief but close look at the renewable component of this INDC.

It must be understood clearly that the renewable energy applications India are pushing for are overwhelmingly for providing electricity, with few exceptions like solar water heaters and concentrated solar thermal applications, and are thus targeted to replace a small part of India's total energy basket than people realize. Even at 30% urbanization and at a per capita GDP of about USD 1,410, India consumes only about 15-16% of its total energy in the form of electricity/ power, which is a much smaller part than developed or even several developing countries. Thus, when our INDC targets having 40% of electricity from

'renewable sources', it is talking of getting 40% of roughly 20-24% (assuming higher levels of urbanization in 2030, from about 400 million people now to 610 million, and the higher per capita income levels then) of our total energy consumption from non-renewable to renewable sources. Or only about 8-9% of total energy basket is to be from renewables with this target – not a very ambitious figure. Out of the remaining 76-80% or so of non-electrical energy, coal-oil-gas will still provide the lion's share, along with traditional biomass, with nuclear providing only a small portion of electricity – again.

Having clarified that, it is no doubt a far more ambitious renewable target than any given so far, or even more ambitious than several other countries. And it is imperative for any safe climate goal that all nations move away from fossil carbon fuels, with the fastest shift from the most emission intensive of them all – coal. The Indian INDC does not follow that logic, saying that coal consumption will increase drastically and will remain our energy mainstay for decades more to come, thus negating the very logic of bringing in the INDCs, which are supposed to be primarily climate action pathways.

This government had earlier announced, and the INDC repeats that by 2022 itself, India will try to have an installed solar electricity capacity of 100 GW, up from today's 4 GW. It pledged installed wind power capacity of 60 GW up from today's 24 GW, and 6 GW of micro hydro from todays 4 GW and another 10 GW of biomass based power from current 4.4 GW. The total renewable power installed capacity target by 2022 would be 176,000 MW. In the operative part in page 29 of INDC, the target is put thus – "To achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030 with the help of transfer of technology and low cost international finance including

from Green Climate Fund (GCF)." If we consider the earlier projections of around a thousand gigawatts of total installed capacity by 2032, the 40 per cent figure indicates close to 400 GW by 2032. If we take out 63 GW of nuclear and roughly another 100 GW of big hydro (all non-fossil sources, though not renewable), we are left with a roughly 237 GW of installed renewable capacity, compared to about 37 GW today, a 6.4 fold increase in 15 years. Quite remarkable if achieved.

Now, if we take into account the 18-20% plant load factors generally achieved in wind and solar electricity plants, compared to about 70-75% in coal or nuclear power plants, the 'levelized generation capacity' of these 237 GW 'installed capacity' renewables would be equivalent to about 66 GW only, compared to about 600 GW of coal & gas based capacity then. Not a high renewable electricity generation after such an "ambitious goal" !

Now to some other problems of the way these are being implemented. With the best high efficiency (16-17% efficiency in field conditions) non-tracking solar PV panels and efficient placement, the land requirement would be two hectares per MW installed, but the kind of lower efficiency solar PV panels being used in most Indian installations and with associated facilities, the land requirement in Indian plants is about 3-4 Hectares per installed MW. If we assume that out of the 237 GW of renewables, about 150 GW will be solar by 2030-32, this entails a land requirement of 4,50,000-5,50,000 hectares (assuming only a small portion are roof-top or over built structures) or about 4,500-5,500 sq kms. This is a huge amount of land in densely populated India, and very few places in our country can afford to have large scale land based mega solar power plants, without getting into land conflict. Another conflict that is already emerging is from giving away scarce water resources in

arid/ desert areas (best suited for solar PV) for washing their panels, while the local pastoralist communities are not only losing their grazing land to these solar parks, but also their only lifeline water sources in these drylands. Though there are areas like the western parts of the Thar desert or some parts of Rann of Kutchh, where the population density and intensity of other economic activity is very low, the way out would be to make the locals economically benefit from this use of their common lands. Another obvious solution is to have as much installations on built structures and multi-use facilities, like roads, canals, parking sites etc.

Wind turbines create another kind of problem, though actual land requirement is very small (many operators have actually taken far larger land – probably with future commercial interests, leading to land conflict with villagers). The low-frequency infra-sound is disturbing when other sounds die down in the nights. In rural areas where good wind sites are present and wind farms are coming up, people often sleep outside during non-winter months. Complaints of continuous humming inside the head, of dull pain etc are common in these wind-farm surrounded villages, as the minimum required distance to reduce these have not been maintained. There are bitter struggles going on at this moment in Rajasthan's Jaisalmer and Jodhpur districts where villagers are strongly protesting wind turbines disturbing their sleep, and spoiling their unique tourism heritages. If solar and wind has to grow smoothly – which we need, these irritants need to be taken serious note of and rectified. With biomass, there is even more serious concerns. A large part of the poor in India used either free-collected biomass or that from the local market. If biomass is diverted to electricity generation in large scale, these poorest of Indians will suffer further energy deprivation.

In the good cause of phasing out fossil fuels, renewable energies will be our tools, but without taking these and more serious concerns, we will create new problems and crises. Ultimately, we will have to raise the question of level of energy consumption, from whatever source. Too much of even renewable energy extraction from nature, will have serious adverse consequences, though lesser than fossil fuels. Thus, moderation in energy demand, saving and sharing energy will have to be the bedrock of these renewable energy policies.

India's INDC and the World's Largest Carbon Offset Project

Soumitra Ghosh

India's recently released Intended Nationally Determined Contribution (INDC) submission to the United Nations Framework Convention on Climate Change (UNFCCC) carries a tagline: working towards climate justice. The Indian government, and its Ministry of Environment, Forests and Climate Change in particular, want us all to believe that the INDC outlines a policy framework and specific action points that lead us to climate justice. Because we use the same phrase while critiquing international climate negotiations in general and also, more specifically, domestic climate policies to offer concrete examples of what is not climate justice, this sudden assertion on the part of the government that its policies of extracting and burning more fossil fuels, and 'streamlining environment and forest approvals'[1] connote climate justice presents us with a fine dilemma. Leading environmental groups in India (for instance, the Centre for Science and Environment) have hailed the INDC submission as 'fair and ambitious'[2] — thus agreeing with the government's position — and left us in the lurch. Where is the justice, what is fair and ambitious, we ask ourselves? Is it all rhetoric sans action, an endless topsy-turvy world in which known things and words are made to stand on their head? Apparently, nothing makes sense any more, or worse, makes the wrong kind of sense. After going through

the text of India's INDC submission, the latter proves true: by dint of poor verbosity co-mingled with unsubstantiated data, the INDC document reasserts India's usual position regarding emissions, which means that it must be allowed to burn coal, and destroy forests for coal and other 'non-coal' energy harvesting, in the interests of rural electrification, poverty alleviation and now, climate justice. This short note briefly explores the connotations of the phrase in the context of forests, as expressed in the INDC.

"India's environment policy is anchored in the Constitution of India, Article 48-A of the Constitution states that ***"The State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country"****.... The Indian development process is guided by the aspiration of making India prosperous and progress on the path of* ***"Development without Destruction"****.(INDC, Section II, Policy Framework).*

Indeed? According to India's union minister for Environment, Forests and Climate Change Prakash Javadekar's statements made in the Parliament, development projects have been approved on more than 1.84 lakh hectares of forest land in the last six years.[3] This, however, does not matter: he has also said that forest diversion is in essence reforestation, because for each hectare of forest being diverted, at least another hectare is being planted.[4] Following this gem of impeccable logical reasoning, the INDC keeps on reiterating that India has registered an increase in forest cover, "from 23.4% in 2005 to 24% of the geographical area in 2013", and this has resulted in an overall increase in carbon stock in India's forests, "..about 5%, from 6,621.5 million tonnes in 2005 to 6,941 million tonnes in 2013". Both these sets of figures are unsubstantiated, and based on calculations which keep on being challenged.[5] Moreover, plantations by forest department in India more often than not do not exist on the ground, and

compensatory afforestation hardly takes place.[6] The scam in this is so obvious that even internal audits by state forest department have started to notice it.[7]

Ground reality and hard empirical data, however, have little or no space in the inverted reality of India's carbon world. The INDC talks of raising ten million hectares (mha) of new plantations (5 mha in forest areas, and 5 mha in lands outside recorded forest area), capable of sequestering "100 million tonnes CO2 equivalent annually". Thus, "an additional carbon sink of 2.5 to 3 billion tonnes of CO2-equivalent through additional forest and tree cover" will be created by 2030". The finance for creating this gigantic 'sink' will come from internal, domestic sources, says the INDC, which is in sync with what the Environment Minister had earlier said in his Independence Day message this year: "…$ 9 billion by 14th Finance Commission and $ 6 billion through Compensatory Afforestation Fund Bill will soon be made available…will definitely increase…carbon sink we are creating (italics added)."[8]

Fifteen billion dollars for financing ten million hectares of plantations by 2030. A new sink of 3 billion tonnes. What lies behind these wonderful, mind-blowing figures? How can India hope to raise, let alone spend, $ 9 billion (the amount mentioned by the Finance Commission) on new plantations, without involving the private sector, and a fast-growing global market in forest carbon? The INDC forgets to mention that the Ministry of Environment and Forests has prepared a blueprint for privatising India's forests, and already sent a guideline to various states and union territories to identify suitable 'degraded' forest land for leasing out to private companies for raising plantations.[9] It also ignores the fact that India's overall compensatory afforestation figures reach nowhere near the statutory target, one major reason for which is non-availability

of land outside recorded forest areas.[10] The target of raising 5 million ha of additional (hitherto non-existing) 'tree cover' in non-forest land within the next fifteen years might be ambitious, but not physically achievable without another organized bout of land-grab.

Raising plantations on forests with the help of the private sector will badly compromise India's forest communities' access to their forest commons: the MoEFCC guidelines make it clear that only 10-15 per cent of a particular forest area leased out to a private company will remain open to local communities. Otherwise also, plantations-as-sinks do not promote increased community access to forests; in order to be successful as 'carbon sinks', they have to plug all leakages. In other words, routine community activities such as extraction of firewood, small timber, non-wood forest produce and grazing of livestock have to stop in such sinks. This, in turn, calls for prima facie violation of statutes like Forest Rights Act and PESA, both of which provide for not only a range of forest rights to communities, but also powers to regulate access over forests they customarily use.

At the end, we are left with two possible scenarios. One, there will not be new plantations on ten million hectares (or five million, or even one), hence no additional sinks. Either land will not be available, or the plantations will not materialize. Two, notwithstanding scenario 1, community access and control over forests will be under severe attack as private players enter in a big way in the forestry sector, and the climatically 'just' Indian state will oversee the process.

Finally, there is one inescapable reality. Forests will be mined (coal for thermal power generation and industrial use), dammed (large and medium hydro electricity projects, as renewables), built upon and enclosed (large wind power projects, renewable once again, wild life conservation areas for tourism). The net

upshot is that India's emissions will reach probably somewhere around 5 billion tonnes of carbon dioxide equivalent by 2030, leading to planetary disaster.[11] Let us not worry,though: India's new forest sink will offset half of this. Add projected emission reduction from other mitigation measures like nuclear, large hydro, clean coal and so on. Thus, the INDC gives us a no net emission scenario and the biggest,grandest,greatest carbon offset project ever conceived. Hurrah.

END NOTES

1 "…initiatives like Make in India, Digital India, creating National Industrial Corridors, streamlining environment and forest approvals, labour reforms and undertaking other measures for the ease of doing business have also fuelled the spurt in their growth rates. Amidst all this, policies to enable industries reduce their energy consumption play a critical role as an instrument for sustainable environment", INDC, Secton 1.2, Enhancng Energy Efficency in Industries.

2 http://economictimes.indiatimes.com/news/politics-and-nation/green-bodies-welcome-indias-indc-on-climate-action/articleshow/49196294.cms. "India's INDC is fair and is quite ambitious, specifically on renewable energy and forestry. It reflects its development challenges, aspirations of large numbers of poor people and the realities of climate change," said Sunita Narain, director general, Center for Science and Environment.

3 Press Trust of India, New Delhi, August 13, 2015. See http://www.business-standard.com/article/pti-stories/1-84-lakh-hectare-of-forest-land-diverted-for-non-forest-use-115081301268_1.html, accessed on October 17,2015.

4 See http://indianexpress.com/article/india/india-others/dont-say-diversion-of-forest-land-say-reforestation-prakash-javadekar/#sthash.MyGASSx3.dpuf), accessed on 17 October, 2015.

5 See previous issues of Mausam, available at http://www.thecornerhouse.org.uk/resources/results/Mausam.

6 Ibid, and Ghosh, S, Basavaptna, S et al, Multiple Displacements: A Critical Look into Cases of Forest Diversion and Allocation of Land for Compensatory Afforestation in India, forthcoming.

7 http://timesofindia.indiatimes.com/city/nagpur/Panel-for-Rs-45L-recovery-from-forest-officials-in-plantation-scam/articleshow/49344251.cms, accessed on October 17, 2015.

8 Press Information Bureau, Government of India, Ministry of Environment and Forests, Environment Minister's Message on the Occasion of Independence Day, August 15, 2015.

9 http://www.hindustantimes.com/india/govt-to-allow-pvt-sector-to-manage-40-of-forests/story-yOiG4TO4kA2kvykxXNTEBK.html

10 Report compiled by the office of Comptroller and Auditor General, India (CAG) on Compensatory Afforestation and CAMPA, 2013, available at, http://www.saiindia.gov.in/english/home/our_products/Audit_Report/Government_Wise/union_audit/recent_reports/union_compliance/2013/Civil/Report_21/index.pdf . Also, Ghosh & Basavaptna, ibid.

11 Nagraj Adve and Ashish Kothari, 'A Flawed Climate Road Map', Economic and Political Weekly, L (42), October 17, 2015.

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What India's INDC does not Tell you about its Forests

Souparna Lahiri

India's INDC submitted to the UNFCCC this October makes a commitment to the international committee including its statement 'to create an additional carbon sink of 2.5 to 3 billion tonnes of CO_2 equivalent through additional forest and tree cover by 2030.'Behind this commitment lie a series of claims that it has also made in the INDC.

i. India's forest and tree cover has increased from 23.4% in 2005 to 24% of the geographical area in 2013.
ii. It has been successful in improving carbon stock in its forests by about 5%, from 6,621.5 million tons in 2005 to 6,941 million in 2013.
iii. Initiatives like Green India Mission (GIM) aim to further increase the forest/tree cover to the extent of 5 million hectares (mha) and improve quality of forest/tree cover on another 5 mha of forest/non-forest lands along with providing livelihood support.
iv. India is expected to enhance carbon sequestration by about 100 million tones CO_2 equivalent annually.

That they are implementable is substantiated by the proposed allocation and raising of a whopping USD 12 billion of which USD 6.9 billion is devolved under the Compensatory Afforestation Fund (CAMPA).

An understanding of the current status of the India's forests and how the data on forests is managed brings out a simple truth. That India's INDC hides more than it reveals to the global community.

REALITY OF FOREST COVER

In India, data related to forests and forest cover, and since 2001, tree cover, is compiled, assessed and analysed by the Dehradun based Forest Survey of India (FSI), an institution functioning under the Ministry of Environment and Forests.

According to the FSI, India's recorded forest area as per the revenue records of land use is 768,436 sq. kms which is 23.38% of the country's geographical area (GA).[1] The FSI in its periodic reports provide data on forest cover and since 2001 also provides data on tree cover outside of forests (TOF). Together, it provides a data of forest and tree cover which India's INDC has so proudly shown to have increased to 24% in 2013.

The FSI includes all areas down to 1 hectare in extent and having forest cover (more than 10% canopy density) irrespective of whether they are within or outside the recorded forest areas to assess the forest cover in India. Therefore, forest cover data actually covers more than the natural growth forests including plantations of various hues and canopy cover of more than 10% outside the recorded forest area and does not in essence provides data on the change in the natural growth forests – which could indicate whether deforestation has stopped, decreased or growth of natural forests has increased.

For example, the 198 FSI assessment indicates that the forest cover was 640,819 sq km (19.49% of the GA) where as the 1999 assessment recorded a forest cover of 637,293 sq km of forest

1 The FSI Reports can be accessed at fsi.nic.in

cover (19.39% of the GA) indicating a loss of forest cover to the tune of 0.10% of the GA. However, the 2001 FSI assessment shows a sudden increase of forest cover to the tune of 675,538 sq km (20.55% of the GA). While the increase in forest cover in 2001 is attributed to the using of high resolution satellite data and digital technology, the net increase in forest cover does not indicate anything on the actual health of the natural grown forests located mostly within the recorded forest area.

The difference in data of forest cover of 2001 and that of the recorded forest area of the country also indicate that there is a vast swathe of recorded forest area in the country which is completely denuded of natural growth forests indicating massive deforestation even after the enactment of the Forest Conservation Act in 1980 to stop deforestation of country's forests.

Various statistics over the years indicate that between 1980 and 2007, 1,140,177 ha of forest land were diverted for nonforest purposes. Out of this around 311,220 ha were cleared between 2003 and 2007. The current Minister in Charge of the Environment, Forests and Climate Change (MoEFCC) has himself made a statement in the Parliament that more than 184,000 ha of forests have been diverted for non-forestry purposes during the last five years. The annual loss of forests from diversion in India is estimated to be a staggering 35,000 ha and more. The Forest Advisory Committee (FAC) under the MoEFCC, in its meeting on September 30 this year was reviewing proposals which would account or a further diversion of 3,414.84 ha of forests.

Therefore, deforestation in India has not stopped and is continuing. But, to claim that India is one of the lowest deforestation countries (as claimed in the INDC), these set of data on forest cover and now forest and tree cover together is being projected to hide the stark reality.

INDIA'S WOOD STOCK AND GROWING CARBON STOCK

FSI, over the years, has been compiling the data on wood stock in India's forests. However, it started linking the data of wood stock to that of growing carbon stock only from its 2005 assessment. FSI says that India's carbon stock is estimated by synthesizing the data of the volume of wood stock calculated both within the forest cover and the trees outside forest cover (TOF).

In 2005, the wood stock derived from forest cover was 4602.038 m.cum and that from TOF was 1616.244 m.cum resulting in a total wood stock of 6218.282 m.cum. Where as in 2013, the total wood stock reduced to a total of 5658.046 m.cum. But, the FSI data on growing carbon stocks translate this actual reduction of wood stock in 2013 to that of 6,941 million tonnes in comparison to that of 6,621.5 million tones in 2005 showing an increase of 5%! There is no explanation on the part of the FSI to show why and how a reduced wood stock can result in increased carbon stock. This manipulated and somewhat dubious set of data is now being used by the Indian Government in its INDC to claim that its carbon stock from the forests has increased over the last 10 years.

IMPACT OF INDIA'S GROWTH TRAJECTORY

India's INDC has clearly stated that the country is going through rapid urbanization and paints a scenario of huge infrastructure and energy deficits. Translating the present Prime Minister's slogan of 'make in India' in to reality will mean rapid industrialization also. But, the INDC has failed to account for the impact of this rapid urbanization, industrialization and developing of infrastructure, mining and energy projects on India's forests.

In states like Maharashtra and Rajasthan, the concentrated solar parks and the wind power projects have already made their incursions into forest commons, destroying the livelihood of local communities. The loss of huge tracts of pristine evergreen and rainforests to mega hydro projects in the Himalayan states and the north eastern part of the country is continuing and it is estimated that a further deforestation of a minimum of 70,000 ha may happen if even half of the hydro projects in pipeline in the States of Himachal Pradesh, Sikkim and Arunachal Pradesh are commissioned.[2]

India is justifying its continued coal mining by offsetting through a cess on coal mining to invest in renewable energy. In 2009, India's MoEF had identified an area of 12,006 sq kms of forests containing 993 coal blocks as No-Go or inviolate areas for mining. Today, it seems that only 7.86 percent of that proposed No-Go zone will remain inviolate for coal mining.

The government has already tweaked the Gram Sabha (village council) consent that is mandatory for forest clearance as per the Forest Rights Act 2006 for linear projects like highways and corridors. Similar destruction is on the anvil in the north eastern states for continued extraction of oil and natural gas to be followed by shale oil. None of these impacts have been accounted for in the INDC.

REFORESTATION, AFFORESTATION AND REDD+

Shri Prakash Javadekar, the Minister for India's Environment, Forests and Climate Change, has in a recent statement[3] has set the tone for deforestation for development debate. He asked ministry officials to replace the word 'diversion' of forest land

2 Estimated by the author taking into projects in the pipeline

3 Jay Mazoomdaar, Don't say 'diversion' of forest land, say 'reforestation', say Prakash Javadekar, The Indian Express, July 29, 2015

with 'reforestation' in all communications since "For every diversion of forest land for a project, a condition for clearance says that compensatory afforestation on equal area of non-forest land is a must. So ultimately, it is reforestation only. This is all about thinking positive and using the right expression."

Therefore, unleashing this huge and ambitious reforestation and aforestation of 10 million hectares of land under Green India Mission and REDD+ programme through plantations. But, how have plantation programmes fared in India?

According to The Thirty-Sixth Report of the Lok Sabha[4] Secretariat Committee on Estimates (Fifteenth Lok Sabha) on 'National Afforestation Programme' (NAP), February 2014, the outcome of the NAP, launched in 2002, had been negative. Though a total of Rs. 3044 crore had been spent since the launch of the programme with a target area of 1.94 million ha, at the end of 2011, the total area under forest cover had declined by 367 sq km. The Minister himself, is reported to have commented that the survival rate of trees planted under various afforestation programmes in the country is only 10-20 per cent.

Various reports by the Controller and Auditor General (CAG) of Accounts have, for long, observed that plantations by forest departments in India more often than not do not exist on the ground. Even the internal audits by state forest departments have started to notice it now. And lastly, India has never been able to fulfill its compensatory afforestation targets. It is getting more difficult now as land outside forests is becoming unavailable. Unless, the government involves itself in to an organized land grab mission.

The ambitious Green India Mission and REDD+ programme is also high on the scale of finance. How is India going to mobilize USD 12 billion as claimed in its INDC? Off course,

4 Upper House of the Indian Parliament

the projected USD 6.9 billion will come from the continued deforestation a la the compensatory afforestation fund which is accumulated from the money paid by the developers for every acre of forests diverted (read deforested) for their projects to take off, but greening 10 million hectares of India's land will need more than the USD 6.9 billion committed by the Finance Commission.

The recent guidelines of the MoEFCC to turn India's forests in to a PPP project could be the answer. According to these guidelines, 40% of the degraded forests will be handed over to the private sector. The very areas where majority of the forest communities are located and are life line for them providing livelihood opportunities.

The guidelines issued by the Forest Policy Division of Ministry of Environment, Forests and Climate Change, admits that the public funds are limited and the Government is unable to 'meet funding requirements for restoration of degraded forests'. In view of this inability, 'degraded forests with forest cover not more than 10% are proposed to be made available to different agencies including industries requiring timber and other forest produce for their end use'. The guidelines further state that there is a need to look at various options including how various stakeholders including the private sector and industries can contribute in improving and restoring the forest landscapes of the country apart from meeting the country's vital requirement of various products.

While the guidelines contend that the local community shall have full right to grasses and fodder growing on the 100% of the areas earmarked for PPP, the entitlements of the local community to other NTFPs will be restricted to only 10-15% of the earmarked area, thus violating the Forest Rights Act 2006 and Panchayat Extension to Scheduled Areas Act 1996 which

not only recognizes collective and community rights over forest resources and their access to forests, but also confer rights to regulate non-forest activities, diversion of forest land and any other activity that adversely affects the wild animals, forest and biodiversity.

Therefore, India's commitment to create an additional carbon sink of 2.5 to 3 billion tones of CO_2 equivalent through additional forest and tree cover by 2030 is nothing but a veil to hide India's continuing deforestation and privatization of India's forests.

India's INDC remains silent on that.

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India's INDC: Drumming up Climate Finance

Souparna Lahiri

On a first reading of India's INDC, it seems that the Indian government has taken a bold step by trying to mobilize climate finance mostly from internal resources, including budgetary support. Its Intended Nationally Determined Contribution (INDC) says that "Maximum share of India's current climate finance comes from budgetary sources, as most of the resources for adaptation and mitigation are built into the ongoing sectoral programmes" (p. 26). But it goes on to reveal in the next paragraph that: "India is not relying solely on budgetary resources and is experimenting with a careful mix of market mechanisms together with fiscal instruments and regulatory interventions to mobilize finance for climate change." Only towards the end of the text does it reveal that India is well short of mobilizing climate finance if it has to implement its proposed climate change actions between 2015 and 2030. According to the INDC India requires up to USD 2.5 trillion between 2015 and 2030. The current financial mobilization and future estimates are actually nowhere near this whopping target!

While the INDC does indicate budgetary support, uses fiscal instruments with possible quantum of internal resource mobilization and a slew of highly ambitious regulatory interventions, it does not mention clearly the market mechanisms that it wants to experiment with and very strangely

failed to record also external finance and credit facilities that it is currently accessing. This includes the Clean Investment Fund, World Bank, Asian Development Bank, bilateral funds, carbon market funds through CDM, private sector and Exim banks.

The submission, therefore, lacks clarity on resource mobilization with a clear distinction between adaptation and mitigation fund. It is a somewhat confused reading between National Action Plan on Climate Change (NAPCC), State Action Plans on Climate Change (SAPCCs), various national policies addressing climate concerns such as the National Policy on Environment, National Policy for Farmers, National Electricity Policy and Integrated Energy Policy, fiscal instruments like coal cess, cuts in subsidies, increase in taxes on petrol and diesel, a highly ambitious regulatory regime without a strict implementation plan and market mechanisms including Perform, Achieve and Trade (PAT) and Renewable Energy Certificates (REC).

India's reliance on coal cess at this juncture to mop up resources for its clean energy projects goes against the spirit of its much-touted low carbon economic growth and reaching even a paltry target of reducing its 2005 emissions intensity by 33%-35% by the year 2030. Destructive coal mining will continue, precious forests will be lost, livelihoods will be lost, rights of forest people will be violated, to justify mobilization for financing clean energy and renewable projects. The INDC also, perhaps deliberately, fails to correlate a huge investment of USD 6 billion in its ambitious plantation and eco-restoration programme through GIM, REDD+ and increased carbon stock, forest and tree cover – an investment mobilized out of deforestation and forest diversion for non-forest activities – to a concrete climate change action plan other than saying that carbon sequestration will be enhanced by 100 million tonnes of CO2-equivalent annually and transform India's forests in to a net carbon sink.

FINANCE FOR ADAPTATION

The INDC has addressed the issue of adaptation through five missions in the sectors related to agriculture, water, Himalayan ecosystems, forestry, capacity building and knowledge management. A huge number of missions, schemes, policies and programmes have been lined up as strategies and actions. This makes it difficult to distinguish those which are particularly directed at combating climate change and those which are purely developmental interventions. The Indian government has also declared setting up of a National Adaptation Fund to the tune of USD 55.6 million, but a detailed break-up and institutional framework is missing.

The interventions range from National Food Security Mission, National Mission on Sustainable Agriculture (NMSA), Pradhan Mantri Krishi Sinchayee Yojana, National Initiative on Climate Resilient Agriculture (NICRA), National Agroforestry Policy (NAP), National Water Mission, National Mission for Clean Ganga to controversial Coastal Regulation and Management, increased protected area network and disaster management. While most of the missions and schemes are supported from the Union budget, the crucial operational part and targeted financial mobilization is missing in the text. Only in the case of National Disaster Relief Fund (NDRF), it is mentioned that it is financed through a levy of cess while the scaled down Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) with an annual budgetary allocation of USD 5.5 billion is included in the text.

Considering that the INDC text itself mentions that India will need USD 206 billion (at 2015-2016 prices) between 2015 and 2030 to fund its adaptation activities, there is nothing in the text to indicate India's financial strategy to mop up this huge deficit

other than relying on its budgetary support, internal resources of the related ministries and intended international support.

FINANCING MITIGATION

India's mitigation strategy and interventions include:

- Promotion of clean energy through wind energy, solar power, biomass energy, hydropower, nuclear power, and clean coal
- National Smart Grid Mission and Green Energy Corridor
- Enhancing Energy Efficiency
- Developing Climate Resilient Urban Centres
- Solid Waste Management
- Swachh Bharat Mission
- Green Transportation Network in terms of Dedicated Railway Freight Corridors, Mass Rapid Transit System (MRTS)
- Green Highways
- International road transport corridor covering Bangladesh, Bhutan, India and Nepal (BBIN)
- Manufacturing of Hybrid and Electric vehicles
- Fuel Efficiency Programme
- Afforestation
- Pollution control and monitoring
- Private sector contribution to combating climate change – CSR, Carbon Disclosure Project, GreenCo Rating etc.

Of all these, the INDC text indicates indigenous finance mobilization in the context of promoting clean energy, green energy corridor, solid waste management, green highways, and afforestation. Private sector contribution through CSR is also indicated. While the clean energy and renewables are financed through coal cess and infrastructure bonds, what is missing is the crucial contribution of external finance from, carbon markets,

multilateral banks, bilateral funds and exim banks, especially for super-critical thermal power plants, wind and solar energy and renewable energy evacuation and what is the future of such external financial assistance.

The text does not indicate how the energy efficiency programme, development of smart cities, new urban renewal mission, dedicated railway freight corridor, international road transport projects, fuel efficiency and manufacture of hybrid and electric vehicles programmes will be financed.

According to the text, till 2014-15, the coal cess has resulted in a collection of USD 2.7 billion, infrastructure bonds are supposed to bring in another USD 794 million. The ADB estimates that for energy sector alone, India will need USD 7.7 billion. The text does not indicate the financial modalities of the USD 6 billion green energy corridor projects to extract renewable energy.

The expenditure of USD 397 million on solid waste management has come in as grant-in-aid to states over the last few years; the text is silent on the period starting 2015. The green highways policy to develop 140,000 km long tree line with plantations is formulated on the basis of setting aside of 1% of the civil cost of road projects.

The INDC is ambitious enough to eye the CSR fund generated through 2% of the annual corporate profit amounting to USD 3.5 billion annually to invest in climate actions.

The funding of the country's most ambitious afforestation and eco restoration programme to develop India's forests as a huge carbon sink (to justify increasing emissions) for future carbon trading is deeply problematic. Like the unholy correlation between coal cess and funding of clean energy, this afforestation programme and the current fund of USD 6 billion earmarked for this programme has been mobilized on the basis of collecting Net Present Value (NPV) out of deforestation

and diversion of forests for non-forest activity. And this unholy nexus will continue, India will see more deforestation, more mega projects, industries and mining on forest land since the INDC text has projected a figure of USD 12 billion to be mopped up by 2019-20 for funding the development of India's carbon sink. What this really hides is the intent to turn the India's forests into carbon sink while continuing to deforest, earn and fund this programme to develop a carbon market within the country. The recent guidelines to hand over 40% of the degraded forests to the private sector is a sign of tying up Indian forests to carbon trading.

Among all these highly ambitious pronouncements, holy or unholy nexus, what is missing of course is how India intends to fulfill its own target of USD 834 billion (at 2011 prices) that it requires for its mitigation activities till 2030.

IN CONCLUSION

The INDC has tried to juggle with various financial instruments, including putting down vague and notional figures of fund mobilisation and shown expectations for greater international support for its climate actions and tried to provide a semblance of a targeted action plan for 2030 with a 'means of implementation'. Yet, the text clearly lacks a more detailed plan of implementation including a clear institutional framework and financing strategy.

Without a detailed and credible implementation strategy supported by a suitable institutional framework, financial instruments and mechanisms, it will be difficult for the rest of the world and the global community to accept India's current INDC on its face value. Ambitious pronouncements and unachievable targets will simply not work.

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The Great INDCian Rope Trick

Soumya Dutta

Our Intended Nationally Determined Contribution
Is supposed to tackle the threat of climate change,
But nowhere there is any mention or indication
Of what our peak emissions will be, or even a range.

We do not even want to say when we will peak
Though science says by 2020 peak we must,
Our obsession China has played the game slick
Said - theirs will peak by 2030, not really fast.

We in India will keep burning more and more coal
And generate dirty power by the terawatt hour,
For supposed uplifting of the poor, the stated goal
Who cares if coal makes the poor lives even more dour.

It does not matter that forests cover most a new coal site
For India's economic growth, some sacrifices are must,
In today's macho world, you're right if you have might
And what the powerful does, is always deemed just.

We will happily mine more coal, one billion ton and more
We do not care if the whole world is moving from coal,
Rivers and coasts we pollute, and foul the earth to its core
The dirtiest fuel we love, that's our strange climate goal.

Yes, we will install hundred gigawatts of PV solar
And happily dam the rivers – medium, big and small,
That is likely to give us 40 per cent of renewable power
Where will the displaced millions go? It's their call.

Of course we are good at more energy efficiency
Super critical we will go, have ACs with many star point,
But that cannot be enough for energy self sufficiency
It's the poor who need energy, not the new Casino joint.

Nuclear power, 63,000 MW and more we must have
Let dangerous nuclear waste pile up all around us,
All these planners and designers are foolishly brave
Fukushima-Chernobyl realities are overcome thus.

We will go on a big forest planting spree, like mad
And three gigatonnes of carbon we sequester by that stunt,
Will take away forest access, make forest people sad
These are our climate actions, blind, regressive and blunt.